

KOLOKIUM PENDIDIKAN NUSANTARA

19 Disember 2017 | Fakulti Pendidikan, UTM

Prosiding

Editor
Ahmad Nabil Md Nasir
Muhammad Sukri Saud
Yusri Kamin
Budi Santosa
Tri Kuat

Anjuran :

Fakulti Pendidikan
Universiti Teknologi Malaysia



Universiti Ahmad Dahlan, Jogja
Indonesia



<http://educ.utm.my/>

Edisi Khas 2017

AHMAD NABIL MD NASIR, MUHAMMAD SUKRI SAUD, YUSRI KAMIN, BUDI SANTOSA, TRI
KUAT, 2017

Hak cipta terpelihara. Tidak dibenarkan mengeluarkan ulang mana-mana bahagian artikel, ilustrasi, dan isi kandungan prosiding ini dalam apa jua bentuk dan cara apa jua sama ada dengan cara elektronik, fotokopi, mekanik, atau cara lain sebelum mendapat izin bertulis daripada Fakulti Pendidikan, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor Darul Ta'zim, Malaysia.

Perpustakaan Negara Malaysia

Data Pengkatalogan-dalam-Penerbitan

Ahmad Nabil Md Nasir, Muhammad Sukri Saud, Yusri Kamin, Budi Santosa,
Tri Kuat, 2017

Prosiding Kolokium Pendidikan Nusantara ISBN 978-967-0194-76-9

Editor: AHMAD NABIL MD NASIR, MUHAMMAD SUKRI SAUD, YUSRI KAMIN, BUDI SANTOSA &
TRI KUAT

Pereka Kulit: FADHILAH OTHMAN

Diatur huruf oleh / Typeset by
AHMAD NABIL MD NASIR

Diterbitkan di Malaysia oleh / Published in Malaysia by
FAKULTI PENDIDIKAN
UNIVERSITI TEKNOLOGI MALAYSIA
81310 UTM Johor Bahru
Johor Darul Ta'zim, MALAYSIA.

Dicetak di Malaysia oleh / Printed in Malaysia by
PERCETAKAN LILY SDN. BHD
No. 55 Jalan Kebudayaan 6
Taman Universiti
81310 Skudai
Johor Darul Ta'zim, MALAYSIA.

PRAKATA

Prosiding Kolokium Pendidikan Nusantara mengandungi himpunan kertas kerja terpilih yang dibentangkan dalam Kolokium Pendidikan Nusantara, pada 19 Disember 2017 di Fakulti Pendidikan, Universiti Teknologi Malaysia. Kolokium yang dianjurkan bersama oleh Fakulti Pendidikan, Universiti Teknologi Malaysia dan Universitas Ahmad Dahlan, Jogja Indonesia, adalah sebahagian daripada aktiviti dalam merealisasikan memorandum persefahaman (MoU) yang telah ditandatangani bersama sebelum ini. Matlamat utama kolokium adalah untuk merapatkan hubungan antara pensyarah dan mahasiswa Fakulti Pendidikan, Universiti Teknologi Malaysia dengan pensyarah dan mahasiswa Universitas Ahmad Dahlan, Jogja Indonesia. Selain itu, kolokium ini turut diharapkan dapat menjadi wadah pertukaran idea, pengetahuan, dan pengalaman peserta dalam memantapkan program pengajian yang sedang diikuti di universiti masing-masing.

Pelbagai bidang pendidikan disentuh dan dibincangkan dalam kolokium ini yang memfokuskan kepada tema pendidikan teknik dan vokasional seperti peranan guru, keusahawanan, inovasi dalam pembelajaran serta kajian yang melibatkan industri.

Adalah diharapkan isu yang dibincangkan dalam kolokium dan artikel yang ditulis dalam prosiding ini dapat memberi manfaat kepada semua peserta. Semoga kejayaan mengadakan kolokium seperti ini akan memantapkan lagi usaha mengeratkan hubungan dan kerjasama dengan rakan-rakan dari negara rumpun serantau.

Sekian, terima kasih dan wassalam.

AHMAD NABIL MD NASIR
Ketua Editor

PROSIDING
KOLOKIU M PENDIDIKAN NUSANTARA

ISBN 978-967-0194-76-9

KANDUNGAN

| Bil. | Tajuk | Halaman |
|-------------|--|----------------|
| 1. | Efektivitas Peranan Guru Bimbingan Konseling Di SMP Dalam Memberikan Pembimbingan Karir Siswa Untuk Melanjutkan Ke SMK <i>Eko Rusyan Anan Prasetyo, Bambang Noor Achsan SD Muhammadiyah Bodon, Bantul Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 7 |
| 2. | Effectiveness Of Student Company Method In Practices Entrepreneurship To Grow Motivation And Attitude Of Mental Entrepreneurial Students SMK Muhammadiyah 1 Bantul <i>Yunita Restu Ika Wulangsih, Muhammad Sayuti, Tri Kuat SMK Muhammadiyah 1 Bantul Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 15 |
| 3. | Effectiveness Of The Application Of Learning Models Device Network Application Initiative Field Of Technology Skills Information & Communication <i>Purnad, Tri Kuat, Budi Santosa SMK Muhammadiyah Klaten Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 20 |
| 4. | CBT In The Workplace In Indonesian Vocational High School <i>Budi Santosa Universitas Ahmad Dahlan</i> | 26 |
| 5. | Implementation Of Edupreneurship Through The Teaching Factory In SMK Program Skills Hospitality(Case Study at SMK N 6 Yogyakarta) <i>Tri Kuat Universitas Ahmad Dahlan Yogyakarta</i> | 36 |
| 6. | Integrated Learning Based On Competence In SMK <i>Pangarso Ari Wibowo, Budi Santosa, Muhammad Sayuti SMK Negeri 1 Seyegan Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 43 |
| 7. | Kualitas Pengembangan Profesi Guru Prodi Teknik Instalasi Tenaga Listrik Di SMK Yogyakarta <i>Siti Zulaikhah, Bambang Noor Achsan, Jumintono Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 49 |
| 8. | Pelaksanaan Model Pembelajaran Teaching Factory Pada SMK Program Keahlian Teknik Ketenaga Listrik Kompetensi Keahlian Teknik Instalasi Tenaga Listrik Di Kabupaten Bantul <i>Mohamad Kusen, Tri Kuat, Budi Santosa SMK Negeri1 Pleret Magister Pendidikan Vokasi Universitas Ahmad Dahlan</i> | 55 |

9. Pendidikan Life Skills Kerajinan Perak Kotagede Di Sekolah Dasar Muhammadiyah Bodon Kotagede Yogyakarta 64
Andi Budi Rahmawanto, Budi Santosa, Muhammad Sayuti
SD Muhammadiyah Bodon, Bantul
Magister Pendidikan Vokasi Universitas Ahmad Dahlan
10. The Effectiveness Of Life Skills Education In Fostering Entrepreneurship Values And Interest Of Primary School Students 70
Bachtiar Kurniawa, Muhammad Sayuti, Tri Kuat
SD Muhammadiyah Bodon, Bantul
Magister Pendidikan Vokasi Universitas Ahmad Dahlan
11. The Teacher's Role In Increasing Employability Skills Students Of SMK Building Drawing Technique 79
Alrosyid Ridlo, Jumintono, Bambang Noor Achsan
SMK Negeri 1 Sedayu
Magister of Vocational Education, Universitas Ahmad Dahlan Yogyakarta
12. A Conceptual Paradigm for Incorporating Sustainable Thinking in Engineering Education in Nigeria 88
Nasiru Mukhtar, Muhammad Sukri Bin Saud
Department of Science and Technical Education, Bayero University, Kano, 3011, Kano, Nigeria
Department of Technical and Engineering Education, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia
13. Gaya Komunikasi Dan Pendekatan Pementoran Mentor Di Institut Latihan Perindustrian Negeri Johor 94
Dayangku Suraya Binti Awang Jafar, Mohd Zolkifli Bin Abd Hamid
Universiti Teknologi Malaysia
14. Identifying The Academic Needs For Infusing Green Skills In Building Costruction Courses: Students' And Teachers' Perception 113
Samaila Hamza, Aede Hatib Bin Musta'amal @ Jamal, Yusri Bin Kamin
Faculty of Technology Education, Abubakar Tafawa Balewa University Bauchi, Nigeria
Faculty of Education, Universiti Teknologi Malaysia UTM, Malaysia
15. Identifying The New Academia Learning Innovation Method Of Teaching In Technical And Vocational Education 119
Emmanuel Simon Yayock, Yusri Bin Kamin, Nornazira Binti Suhairom
School of Technical Education, Federal College of Education (Technical) Bichi, Nigeria
Faculty of Education, Universiti Teknologi Malaysia
16. Kajian Awal Mengenalpasti Masalah Yang Dihadapi Oleh Pelajar Dalam Kursus Perakaunan 127
Tono Hassan, Dayana Farzeeha Ali, Mohd Bilal Ali
Faculty of Education, Universiti Teknologi Malaysia
17. Kajian Awal Mengenalpasti Tahap Penguasaan Pelajar Bagi Kursus Pengurusan Ekonomi 138
Nusaila Johari, Dayana Farzeeha Ali, Mohd Bilal Ali
Faculty of Education, Universiti Teknologi Malaysia
18. Modul Yang Sukar dikuasai Oleh Pelajar Kursus Teknologi Pembinaan Di Kolej Vokasional Dan Faktor Yang Mempengaruhi Kesukaran Tersebut: Kajian Awal 145
Nurkhadijah binti Abdul Kadir, Dayana Farzeeha binti Ali, Nornazira binti Suhairom
Fakulti Pendidikan, Universiti Teknologi Malaysia, Skudai Johor
19. Pengaplikasian Seni Origami Dalam Pembelajaran Lukisan Kejuruteraan 154
Mohd Salehudin Marji, Aede Hatib Musta' amal, Nor Aisyah Derasid,

- Norzanah Rosmin
*Jabatan Pendidikan Teknikal dan Kejuruteraan Fakulti Pendidikan,
 Universiti Teknologi Malaysia
 Jabatan Kejuruteraan Elektrik Kuasa, Fakulti Kejuruteraan Elektrik,
 Universiti Teknologi Malaysia*
20. Pengurusan Risiko Keselamatan Dan Kesihatan Pekerja Dalam 162
 Kalangan Kontraktor Elektrik
 Mohd Azwan Md Yasim, Aede Hatib Musta' amal, Norzanah Rosmin,
 Nornazira Suhairom
*Sekolah Menengah Kebangsaan Pangkor, 32300 Pangkor, Perak,
 Malaysia
 Jabatan Pendidikan Teknikal dan Kejuruteraan, Fakulti Pendidikan,
 Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia
 Jabatan Kejuruteraan Elektrik Kuasa, Fakulti Kejuruteraan Elektrik,
 Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia*
21. Pilot Study On Innovation Perspective Of UTM Undergraduate 173
 Students: Rasch Model Analysis
 Nor Aisyah Che Derasid, Aede Hatib Musta' amal, Nor Fadila Mohd
 Amin, Abdul Rashid Husain, Mohd Salehudin Bin Marji, Norzanah Rosmin
*Department of Technical & Engineering Education, Universiti Teknologi
 Malaysia
 Department of Control and Mechatronic Engineering, Universiti
 Teknologi Malaysia
 Department of Electrical Power Engineering, Universiti Teknologi Malaysia*
22. Purposes And Benefits Of Industrial Training Program As Career 180
 Praparation For Undergraduate Engineering Students Across
 Various Universities In Malaysia
 Aini Najwa Azmi, Yusri Kamin and Muhammad Khair Noordin
*Department of Technical and Engineering Education, Faculty of
 Education, Universiti Teknologi Malaysia*
23. A Preliminary Study: Vocational College Needs Through Formation 192
 Strategic Collaboration With Automotive Industry
 Norisham Bin A.Rahim, Yusri Bin Kamin
Faculty of Education, Universiti Teknologi Malaysia
24. Kompetensi Pengetahuan Teknikal Guru Dalam Pengajaran Amali 202
 Di Kolej Vokasional
 Nur Shafiqah bt Suhaimi, Ahmad Nabil bin Md Nasir
Universiti Teknologi Malaysia

EFEKTIVITAS PERANAN GURU BIMBINGAN KONSELING DI SMP DALAM MEMBERIKAN PEMBIMBINGAN KARIR SISWA UNTUK MELANJUTKAN KE SMK

Eko Rusyan Anan Prasetyo¹ *ekorusyan@yahoo.com*
Bambang Noor Achsan² *bambangnoor23@gmail.com*
Jumintono² *masmintosragen@gmail.com*

¹*SD Muhammadiyah Bodon, Bantul*

²*Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRAK

Kebutuhan akan tenaga kerja terampil tingkat menengah oleh dunia usaha dan industri saat ini sangatlah tinggi. Sedangkan Sekolah Menengah Kejuruan (SMK) sebagai produsen tenaga terampil, masih jauh dari ideal bahkan semakin menjauh dari kebutuhan dan harapan masyarakat. Program pemerintah Revitalisasi SMK menjadi harapan untuk mengatasi masalah dimaksud. Namun demikian dari data menunjukkan minat lulusan Sekolah Menengah Pertama (SMP) untuk masuk ke SMK belum sesuai harapan. Lulusan SMP masih cenderung lebih memilih ke SMA yang nantinya bisa melanjutkan ke Perguruan tinggi dan mendapatkan gelar sarjana dengan harapan mendapatkan pekerjaan yang lebih baik ketimbang lulusan SMK. SMK hampir selalu jadi pilihan kedua setelah SMA. Orangtua dan murid pada umumnya lebih memilih SMA, tetapi karena daya tampung SMA terbatas, siswa dengan nilai lebih rendah terpaksa harus masuk SMK daripada tidak bersekolah. Disamping itu pemahaman yang kurang terhadap prospek kedepan setelah lulus dari SMK juga menjadi faktor penyebab minimnya minat untuk memilih SMK. Sangatlah penting pengetahuan dan pemahaman tentang pekerjaan/ketrampilan tertentu diberikan sejak dini, sejak jenjang SMP melalui peran guru BK. Sehingga diharapkan minat untuk menyenangi bidang pekerjaan tertentu akan tumbuh sejak awal, sebagai persiapan untuk memasuki jenjang pendidikan berikutnya, terkhusus ke pendidikan kejuruan.

Kata Kunci : *Karir, Minat ke SMK, Bimbingan Konseling*

Karir

Istilah karir dalam bahasa inggris “career” identik dengan kata task, position, job dan occupation. Karir merupakan bagian penting dalam kehidupan seseorang, bahkan sebagian besar waktu, tenaga dan pemikiran banyak tercurah ke hal-hal yang berkaitan dengan karir. Menurut Dewa Ketut Sukardi (1993) karir merupakan suatu rangkaian

peranan dalam kehidupan dimana jabatan adalah manunggal dari setiap individu. Muri Yusuf (2002: 58) lebih menegaskan bahwa dunia pendidikan merupakan pre-occupation, dunia pendidikan adalah awal penentuan karir seseorang.

Menurut Winkel (2005:114) bimbingan karir adalah bimbingan dalam mempersiapkan diri menghadapi dunia kerja, dalam memilih lapangan kerja atau jabatan /profesi tertentu serta membekali diri supaya siap memangku jabatan itu, dan dalam menyesuaikan diri dengan berbagai tuntutan dari lapangan pekerjaan yang dimasuki. Bimbingan karir juga dapat dipakai sebagai sarana pemenuhan kebutuhan perkembangan peserta didik yang harus dilihat sebagai bagian integral dari program pendidikan yang diintegrasikan dalam setiap pengalaman belajar bidang studi.

Bimbingan karir adalah suatu proses bantuan, layanan dan pendekatan terhadap individu (siswa/remaja), agar individu yang bersangkutan dapat mengenal dirinya, memahami dirinya, dan mengenal dunia kerja merencanakan masa depan dengan bentuk kehidupan yang diharapkan untuk menentukan pilihan dan mengambil suatu keputusan bahwa keputusannya tersebut adalah paling tepat sesuai dengan keadaan dirinya dihubungkan dengan persyaratan-persyaratan dan tuntutan pekerjaan / karir yang dipilihnya

Setiap individu memiliki berbagai pilihan karir, dan bagi siswa SMK kemandirian pada satu pilihan karir akan berpengaruh terhadap karir dan pekerjaannya. Ketepatan individu dalam menetapkan pilihan karir sesuai dengan kecenderungan karir dan pekerjaan yang akan ditekuni tentu saja menjadi salah satu bekal menuju kesuksesan.

Minat Melanjutkan Ke SMK

Minat pada dasarnya adalah penerimaan akan suatu hubungan antara diri sendiri dengan sesuatu di luar diri. Minat berhubungan dengan gaya gerak yang mendorong seseorang untuk menghadapi atau berurusan dengan orang, benda, kegiatan, pengalaman yang dirangsang oleh kegiatan itu sendiri (Djaali, 2008:34). Menentukan pilihan untuk melanjutkan sekolah tentu bukanlah persoalan mudah karena banyak faktor yang mempengaruhi. Faktor tersebut dapat dipengaruhi dari orang tua, saudara, teman sepergaulan, atau faktor minat jurusan tertentu di SMK. Setiap siswa yang akan menyelesaikan studinya di Sekolah Menengah Pertama (SMP) akan berhadapan pada berbagai pilihan khususnya tentang pilihan pendidikan, apakah akan melanjutkan pendidikannya ke SMA, SMK, atau mengikuti kursus, mencari pekerjaan atau menganggur.

Manggal (2007:351) menyatakan bahwa minat merupakan daya gerak yang mendorong seseorang untuk memberikan perhatian terhadap orang, objek atau kegiatan atau dengan kata lain alasan mengapa seseorang memberi perhatian dan berpartisipasi lebih terhadap objek atau kegiatan.

Pemilihan melanjutkan pendidikan ke SMK bukanlah suatu hal yang sederhana, mengingat akan sangat berpengaruh pada masa depan karir siswa bersangkutan. Sehingga untuk dapat melanjutkan pendidikan yang tepat tentu harus mempertimbangkan aspek kemampuan masing-masing siswa. Selain itu siswa juga perlu mengetahui faktor-faktor pendukung tentang kelebihan dan keunggulan sekolah yang dituju ataupun bermacam informasi sosialisasi tentang sekolah yang akan dipilih tersebut. Hal ini dimaksudkan agar siswa betul-betul dapat mengetahui dan memahami visi dan misi sekolah yang berkaitan dengan masa depan seseorang setelah tamat nanti.

Bimbingan Konseling

Guru Bimbingan dan Konseling (BK) adalah guru yang bertugas dan bertanggungjawab memberikan layanan bimbingan dan konseling kepada peserta didik di satuan pendidikan. Guru BK atau disebut juga konselor pendidikan merupakan salah satu profesi yang termasuk ke dalam tenaga kependidikan seperti yang tercantum dalam Undang-undang Republik Indonesia No. 20 tahun 2003 BAB 1 pasal 6 : “Pendidik adalah tenaga kependidikan yang ber kualifikasi sebagai guru, dosen, konselor, pamong pelajar, widyaisera, tutor, instruktur, fasilitator, dan sebutan lain yang sesuai dengan kekhususannya serta berpartisipasi dalam menyelenggarakan pendidikan”.

Sebagai pejabat fungsional guru pembimbing/ konselor dituntut melaksanakan berbagai tugas pokok fungsionalnya secara profesional adapun tugas pokok guru pembimbing menurut SK N. 84/1993 ada 5 yaitu; menyusun program bimbingan, melaksanakan program bimbingan, evaluasi pelaksanaan bimbingan, analisis hasil pelaksanaan bimbingan dan tindak lanjut dalam program bimbingan terhadap peserta didik yang menjadi tanggung jawabnya.

Seorang Konselor menempati posisi yang strategis dalam upaya pembinaan peserta didik, baik untuk tujuan preventif, kuratif, maupun rehabilitatif. Konselor yang ada di sekolah dalam hal ini guru BK tentunya harus memiliki pengetahuan dan wawasan yang luas mengenai tahapan perkembangan fisik, mental, sosial, spiritual di masa remaja. Corak kehidupan remaja, pemikiran tentang diri dan lingkungannya, gaya hidup yang dianut dan pandangan remaja perlu dipahami

dengan baik oleh seorang guru BK. Guru BK juga diharapkan menyiapkan diri dengan berbagai informasi mengenai macam pendidikan atau pekerjaan yang bisa dipilih sesuai dengan kemampuan dan kondisinya, termasuk cara memperoleh kesempatan dan persyaratan yang harus dipenuhi.

Latar Belakang Masalah

Menentukan pilihan untuk melanjutkan sekolah tentu bukanlah persoalan mudah karena banyak faktor yang mempengaruhi. Faktor tersebut dapat dipengaruhi dari orang tua, saudara, teman sepergaulan, atau faktor minat jurusan tertentu di SMK. Setiap siswa yang akan menyelesaikan studinya di Sekolah Menengah Pertama (SMP) akan berhadapan pada berbagai pilihan khususnya tentang pilihan pendidikan, apakah akan melanjutkan pendidikannya ke SMA, SMK, atau mengikuti kursus, mencari pekerjaan atau menganggur.

Siswa harus lebih dulu memikirkan arah kedepannya sehingga dapat menekuni apa yang seharusnya siswa kerjakan setelah tamat dan tentu harus memikirkan sekolah mana yang cocok sebelum melanjutkan pada jenjang pendidikan yang tinggi yaitu masuk ke SMA atau masuk ke SMK. Mungkin ada siswa yang memang memiliki minat yang tinggi, mungkin juga ada siswa yang tidak memiliki minat untuk melanjutkan studi di SMK, sehingga hanya sampai pada tingkat pendidikan SMP. Lain halnya bagi siswa yang ingin mengembangkan minat yang dimiliki, dengan bimbingan dan arahan yang tepat tentu cenderung akan memilih jurusan atau program studi di SMK yang sesuai dengan arah pilihan karirnya.

Peranan sekolah khususnya guru Bimbingan Konseling (BK) menjadi salah satu faktor yang mempengaruhi bagi calon siswa untuk menentukan pilihan sekolah umum SMA atau SMK. Telah kita ketahui bersama jika siswa memilih pendidikan ke SMA lulusannya direkomendasikan untuk melanjutkan ke perguruan tinggi dengan alasan di SMA tidak dibekali keahlian yang memadai untuk menghadapi dunia kerja, berbeda dengan Visi SMK yang membekali siswanya untuk memasuki dunia karir dan kewirausahaan (entrepreneurship).

Pemberian layanan informasi dan layanan bimbingan karir perlu dilakukan dengan tepat karena mengingat pentingnya memilih jurusan pendidikan yang sesuai akan sangat menentukan karir di masa depan. Salah pilih sekolah, salah pilih pekerjaan, seringkali menjadi akibat dari kurangnya informasi. Sehingga sangat erat hubungannya antara pemilihan sekolah dengan karir masa depan yang akan dijalani.

Layanan informasi dapat diartikan sebagai suatu layanan yang berguna bagi individu sebagai acuan untuk bersikap dan bertingkah laku sehari-hari, sebagai pertimbangan bagi arah pengembangan diri, dan sebagai dasar pengambilan keputusan (Prayitno, 2004). Sedangkan layanan informasi karir merupakan sebuah proses yang dinamis dalam menuju suatu sasaran pengetahuan mengenai dunia kerja dan pendidikannya. Dengan layanan informasi karir akan secara langsung bisa membantu para siswa untuk memahami dirinya dalam kaitannya dengan dunia kerja, pendidikan, sosial dan masalah-masalah kemasyarakatan lainnya. Kemampuan untuk memahami yang sesungguhnya tentang diri sendiri merupakan salah satu faktor yang penting dalam menghadapi berbagai aktivitas hidup. Pemahaman diri dalam kelanjutan pendidikan sangat penting dipahami oleh masing-masing siswa, karena merupakan penentu keberhasilan masa depan mereka.

Revitalisasi SMK yang digulirkan pemerintah menjadi sangat tepat untuk lebih memfungsikan guru BK di SMP dalam memberikan bimbingan karir bagi siswanya, dimana program revitalisasi SMK menitik beratkan bahwa SMK sebagai terminal pendidikan yang terakhir untuk menciptakan dan menyediakan tenaga terampil siap kerja.

Hal ini sesuai dengan Peraturan Menteri (Permen) Perindustrian Nomor 3 Tahun 2017 tentang Pedoman Pembinaan dan Pengembangan Sekolah Menengah Kejuruan Berbasis Kompetensi yang Link and Match dengan Industri. Menurut menteri perindustrian Airlangga, dalam pidatonya menegaskan program link and match mampu mencetak sekitar 600 ribu tenaga terampil yang sesuai dengan kompetensi kebutuhan tenaga kerja industri hingga 2019 mendatang.

Metodologi

Penelitian ini menggunakan metode deskriptif kualitatif yang bertujuan melukiskan dan memahami secara holistik fenomena dan mendalam peran guru BK dalam persiapan perencanaan karir siswa, bagaimana langkah-langkah yang dilakukan guru BK dalam membantu siswa untuk persiapan perencanaan karirnya khususnya peminatan untuk melanjutkan ke SMK, hal ini untuk mengungkapkan secara menyeluruh dan bermakna mengenai peran guru BK dalam persiapan perencanaan karir siswa.

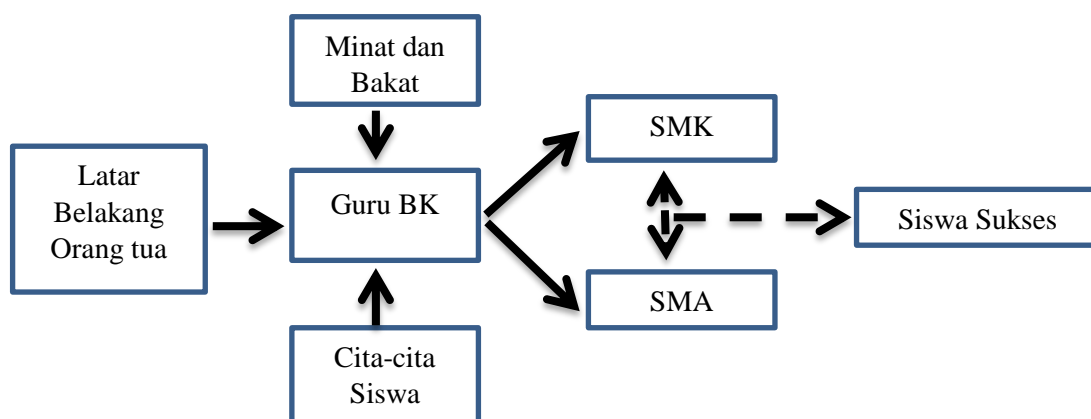
Penelitian ini dilakukan di SMPN 1 Banguntapan dan SMP Muhammadiyah Banguntapan Bantul Yogyakarta, sebagai perwakilan sekolah terfavorit negeri dan swasta di kecamatan Banguntapan. Teknik pengumpulan data merupakan langkah-

langkah yang ditempuh dalam mengumpulkan data untuk menjawab permasalahan-permasalahan atau hipotesis penelitian.

Pengumpulan data dalam penelitian ini dilakukan dengan teknik observasi ditandai dengan adanya interaksi sosial secara langsung antara peneliti dengan apa yang diteliti. Dalam metode ini peneliti mewawancarai sumber data yang telah disebutkan melalui pola wawancara terstruktur. Metode pengumpulan data berikutnya adalah dengan wawancara untuk mengetahui informasi secara lebih detail dan mendalam dari narasumber sehubungan dengan fokus masalah yang diteliti. Metode yang terakhir adalah dengan kuesioner (angket) yang dilakukan dengan cara memberi seperangkat pertanyaan atau pernyataan tertulis kepada responden untuk dijawab. Angket yang digunakan dalam penelitian ini adalah angket terbuka, dengan harapan dapat menggali informasi yang lebih dalam setelah dilakukan wawancara. Angket diharapkan dapat menjangkau informasi yang mungkin tidak dapat tersampaikan narasumber saat dilakukan wawancara.

Hasil dan Pembahasan

Penelitian ini diharapkan menyempurnakan model yang sudah ada bagi guru BK di SMP dalam memberikan layanan bimbingan untuk membantu siswa tentang kelanjutan studi khususnya untuk melanjutkan ke SMK. Model pelaksanaan bimbingan konseling bagi guru BK digambarkan dalam skema sebagai berikut:



Guru BK memegang peranan penting dalam kesuksesan kelanjutan pendidikan dan karir siswa. Faktor-faktor yang mempengaruhi pilihan kelanjutan studi bagi siswa SMP harus betul-betul di dalam diri seorang guru BK. Guru BK SMP agar lebih kreatif dalam melakukan sosialisasi tentang Dunia SMK, dengan dapat mendatangkan langsung contoh-contoh sukses di SMK guna memberikan arahan tentang jurusan-jurusan yang ada di

dalam SMK itu sendiri beserta keunggulannya, sehingga siswa SMP lebih mudah memahami dalam melanjutkan pendidikannya.

Hasil penelitian ini diharapkan membantu memecahkan permasalahan siswa tentang kelanjutan studi siswa, dan khususnya bagi guru BK penelitian ini dapat digunakan sebagai pedoman dalam pemberian layanan bimbingan dan konseling khususnya tentang minat studi lanjut dan karir siswa ke SMK, dan pada akhirnya bagi pemerintah diharapkan penelitian ini dapat membantu keberhasilan program revitalisasi SMK.

Daftar Pustaka

- , Keputusan Menteri Pendayagunaan Aparatur Negara No. 84 Tahun 1993
- _____, Peraturan Menteri (Permen) Perindustrian Nomor 3 Tahun 2017
- Arikunto, Suharsimi. (2006). *Prosedur Penelitian*. Jakarta : Rineka Cipta.
- Djaali. 2008. Psikologi Pendidikan. PT. Bumi Aksara. Jakarta
- Ismunandar, Arif. (2009). *Peran Guru Bimbingan dan Konseling dalam Meningkatkan Motivasi Belajar Siswa Kelas VIII di SMPP Ma'arif Sultan Agung Sayegan Sleman Yogyakarta*. Tidak diterbitkan, UIN Sunankalijaga Yogyakarta.
- Indonesia, P. R. (2003). Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional.
- Manggal , K, S.(2007). *Essentials Of Education Psychology*. New Delhi :PrenticeHall
- Mathedu. (2009). *Pengertian Minat*. Tuesday, October 20, 2009. <http://mathedu-unila.blogspot.com/2009/10/pengertian-minat.html> diakses tanggal Agustus 2017
- Muri Yusuf, (2002). *Kiat Sukses Dalam Karir*. Ghalia Indonesia.
- Poerwodarminto, W.J.S. (1996). *Kamus Besar Bahasa Indonesia* Jakarta : Balai Pustaka.
- Prayitno & Erman Amti. (2004). *Dasar-dasar Bimbingan Konseling (Edisi Revisi)*, Jakarta : Bina Cipta.
- Sudji munadi. (2013). *Faktor-faktor Yang Mempengaruhi Minat Siswa SMP Masuk ke SMK di Kota Pontianak*. Tidak diterbitkan, Universitas Negeri Yogyakarta, Yogyakarta.
- Sukardi, Dewa Ketut. (1993). *Bimbingan dan konseling*. Jakarta : PT. Bina Aksara
- Sukardi, Dewa Ketut .(2008). *Pengantar Pelaksanaan Program Bimbingan dan Konseling di Sekolah*, Jakarta: Rineka Cipta.

- Syamsuriadi. (2010). *Persepsi Tentang Peran Guru Bimbingan dan Konseling Dalam Pengembangan Diri Siswa SMP YPI Bintaro*. Tidak diterbitkan, Universitas Islam Negeri Syarif Hidayatullah Jakarta.
- Utomo, Handoyo. (2010). *Faktor-Faktor Yang Mempengaruhi Minat Siswa Smp Negeri Sekecamatan Tegowanu Kabupaten Grobogan Untuk Melanjutkan Ke Sekolah Menengah Kejuruan*. Tidak diterbitkan, Universitas Negeri Semarang, Semarang.
- Windarto, Rony. (2013). *Minat Siswa SMP Negeri Melanjutkan ke SMK ditinjau dari Sosial Ekonomi Keluarga di Kabupaten Bantul*. Tidak diterbitkan, Universitas Negeri Yogyakarta, Yogyakarta.
- Winkel, WS. (2005). *Bimbingan dan Konseling di Sekolah Menengah*. Jakarta : Gramedia

**EFFECTIVENESS OF STUDENT COMPANY METHOD IN PRACTICES
ENTREPRENEURSHIP TO GROW MOTIVATION AND ATTITUDE OF
MENTAL ENTREPRENEURIAL STUDENTS SMK MUHAMMADIYAH 1
BANTUL**

Yunita Restu Ika Wulangsih¹ *yunitarestu@gmail.com*
Muhammad Sayuti²
Tri Kuat²

¹*SMK Muhammadiyah 1 Bantul*
²*Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRACT

Student company is a program that facilitates students to form a company and manage the company with the purpose to provide experience to students to run the company's operations and conduct some business activities covering business planning, production, packaging to local and regional promotion activities. The purpose of this study to determine the effectiveness of student learning methods of student motivation in entrepreneurship, and to determine the effectiveness of student company learning methods of students' mental attitude in entrepreneurship. Based on data to be collected this research will use the type of quantitative data to know and analyze the effectiveness of student company that will affect entrepreneurship motivation and entrepreneurship mental attitude. The model used is simple regression. The results of this study indicate that the results of simple regression tests show the student company's variables, motivation and mental attitude has a significance value of 0.000, it can be concluded that student student methods are effective in influencing motivation and mental attitude of students in entrepreneurship. Adjusted R square value can be concluded the effectiveness of student company method in influencing entrepreneurship motivation is only 28.3% while the student company in influencing entrepreneurship mental attitude is only 39.3%.

Keywords: Student company, motivation, mental attitude, vocational high school

Introduction

Educational institutions that are growing rapidly because many of the current demand is Vocational High School (SMK). SMK has the potential to print a generation of ready-to-work according to the competence of expertise and prepare human resources that can be absorbed by the world of work and open their own business as an entrepreneur. Based on the results of initial observation in SMK Muhammadiyah 1

Bantul found various problems in the implementation of entrepreneurship education. Entrepreneurship learning process is still done conventionally, without giving the learners experience to do actively in learning, so that students often feel saturated with the material he studied. To overcome the above problems we need to develop in entrepreneurship learning. In improving the ability of learners and developing the ability to think, then the appropriate methods and learning models are needed. Appropriate entrepreneurship learning methods and models for honing cognitive, affective and psychomotor skills are student student simulations. Student company is a program that facilitates students to form a company and manage the company with the purpose to provide experience to students to run the company's operations and conduct some business activities covering business planning, production, packaging to local and regional promotion activities.

Application of entrepreneurship learning method that is student company method to cultivate motivation and mental attitude of learners in SMK Muhammadiyah 1 Bantul. There are several things behind the student student simulation on entrepreneurship learning process conducted in SMK Muhammadiyah 1 Bantul because the school has five areas of expertise competencies, each of which has a product that has sales value, while for the students' skills in marketing and entrepreneurship motivation is still lacking.

Research Methodology

Based on data to be collected this research will use quantitative data types to know and analyze the effectiveness of student company that will influence entrepreneurship motivation and entrepreneurship mental attitude of students in Vocational High School (SMK), especially SMK Muhammadiyah 1 Bantul. Based on the level of explanation, this study is classified into clausal associative research. Associative clausal research is a research that looks for relationship or causal influence is the influence of free variable (X) on the dependent variable (Y). The model used is simple regression because it contains two dependent variables (Y) and there is only one independent variable (X) with SPSS.22 application.

Result and Discussion

Research on the effectiveness of student company on entrepreneurship learning conducted in SMK Muhammadiyah 1 Bantul, there are 2 dependent variable that is entrepreneurship motivation and mental attitude. Independent variable in this research

there is only one that is student student method. Here is the result of a simple regression output between the effectiveness of student company methods on entrepreneurship motivation and entrepreneurial mental attitude.

Table 1 : Output correlation of entrepreneurship motivation

| | | Motivation | Student Company |
|---------------------|-----------------|------------|-----------------|
| Pearson Correlation | Motivation | 1,000 | ,539 |
| | Student company | ,539 | 1,000 |
| Sig.(1-tailed) | Motivation | | ,000 |
| | Student company | ,000 | . |
| N | Motivation | 100 | 100 |
| | Student company | 100 | 100 |

Regression test results output in table 1 shows the student company's variables have a significance value of 0.000 and on the variables that are influenced is entrepreneurship motivation also shows the same significance value. This number proves the two values of significance below 0.05 or 5% significance level, it can be concluded that student student methods are effective in influencing student motivation in entrepreneurship.

Table 2 : Output correlation of mental attitude entrepreneurship

| | | Mental attitude | Student Company |
|---------------------|-----------------|-----------------|-----------------|
| Pearson Correlation | Mental attitude | 1,000 | ,632 |
| | Studentcompany | ,632 | 1,000 |
| Sig.(1-tailed) | Mental attitude | . | ,000 |
| | Studentcompany | ,000 | . |
| N | Mental attitude | 100 | 100 |
| | Studentcompany | 100 | 100 |

Table 2 presents the results of simple regression correlation output on mental attitude variables and student company has a significance value of 0,000 and in the influenced variable that is entrepreneurship mental attitude also shows the same significance value. Figures significance of both student company's variable and mental attitude below 0.05 or 5% significance level, it can be concluded that student student methods are effective in influencing students' mental attitude in entrepreneurship.

Tabel 3 : Model Summary

| Variabel | R | R Square | | |
|-----------------|-------|----------|-------|---------|
| Motivation | 0,539 | 0,290 | | |
| Mental Attitude | 0,632 | 0,399 | 0,393 | 2,87306 |

| Variabel | R | R Square | Adjusted R square | Std. Error of the estimate |
|-----------------|-------|----------|-------------------|----------------------------|
| Motivation | 0.539 | 0.290 | 0,283 | 3,53056 |
| Mental Attitude | | | | |

Table 3 shows the output of SPSS.22 summary model on the entrepreneurship motivation variable known Adjusted R square magnitude is 0.283 which means as much as 28.3%. Adjusted R square value can be concluded the effectiveness of student company method in influencing entrepreneurship motivation is only equal to 28,3% while the rest 71,7% is explained by other causes outside of predetermined variable.

Model summary on mental attitude variable known Adjusted R square magnitude is 0.393 which means as much as 39.3%. so it can be concluded the effectiveness of student company method in influencing entrepreneurship mental attitude only equal to 39,3% while the rest 60,7% is explained by other causes outside of predetermined variable.

Acknowledgement

Student company for vocational school students in question is a program to facilitate students of SMK in learning management company by forming a student company that all forms of activities associated with the company is regulated and run by the students themselves. Provision of existing stock in the student company is a provision

in the form of skills and spirit to be able to have a mental independence. Students are trained to become corporate leaders such as the chief executive (CEO), financial director (CFO), and other important positions.

Testing the effectiveness of student company on motivation and entrepreneurship mental attitude using simple regression analysis that gives results on partial test or testing simultaneously or whole. Method student student effective in influencing student motivation and mental attitude of student in entrepreneurship because each have value significance 0.000 below 0,05 or 5% significance level. The next test gets the result that the effectiveness of student company method in influencing entrepreneurship motivation is only equal to 28,3% while next test bigger result that is 39,3%. effectiveness of student company method in influencing entrepreneurship mental attitude.

Reference

- Alma, B. (2001). *Kewirausahaan*. Bandung: Alfabeta
- Ambarwati, Susilo. (2012). *Implementasi Ekstrakurikuler SC (Student Company) Dalam Membentuk Jiwa Wirausaha Peserta Didik Di SMKN 2 Buduran Kabupaten Sidoarjo*. Volume 01
- Bukit, Masriam. (2014). *Strategi Dan Inovasi Pendidikan Teknologi Kejuruan*. Bandung: Alfabeta
- Creswell & Clark. (2011). *Riset Pendidikan*. Yogyakarta :Pustaka Pelajar
- Rupert & Evans. 1971. *Foundation of Vocational Education*. Company Columbus Ohio
- Sugiyono, (2008). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung. Alfabeta
- Sunaryo Wowo. 2013. *Dasar-dasar Pendidikan Vokasi dan Kejuruan* . Bandung: Alfabeta
- Thompson, J. F. (1973). *Foundation of Vocational Education Social and Pholisophical Concepts*. Paterson: Prentice.

**EFFECTIVENESS OF THE APPLICATION OF LEARNING MODELS DEVICE
NETWORK APPLICATION INITIATIVE FIELD OF TECHNOLOGY SKILLS
INFORMATION & COMMUNICATION**

Purnadi¹, *muhpurnadi@gmail.com*
Tri Kuat², *sonytrikuat@gmail.com*
Budi Santosa², *budisantosa@mpv.uad.ac.id*

¹ *SMK Muhammadiyah Klaten*

² *Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRACT

Competence of Vocational High School (VHS) students can be qualified, if students have competence in accordance with industry needs. The synchronization of the curriculum with the industry is absolutely necessary, so the school is not left behind by the development of the business world and the industrial world. The development of learning model should always be updated or done curriculum innovation, so that schools can synergize with DUDI. This study aims to (1) to know the implementation of the Device Network Application Initiative learning model, (2) to know the advantages and disadvantages of applying the Device Network Application Initiative learning model, (3) to know the effectiveness of the learning model of the Device Network Application Initiative for the Department of Technology and Information. The learning model of the Device Network Application Initiative (DNA Initiative) (the DNA curriculum) is the application of industrial curriculum to VHS education. Model innovation. The business world and the industrial world (*dunia usaha dunia industry/DUDI*) are more confident with students who get their learning materials of industry standard. This study uses a qualitative method. The research was conducted by observation, interview and documentation. Data analysis techniques using descriptive analysis techniques. Secondary data in the form of documentation is used to support the research. Focus Group Discussion by presenting DUDI, curriculum experts, industrial class managers, user / user graduates, teachers and testimonials, concluded that the implementation of the Device Network Application Initiative learning model for vocational students is very effective and appropriate. The contribution to schools is the implementation of Prosser's concept that schools are industrial environments or industrial replicas.

Keywords: *VHS competence, DNA curriculum, DUDI*

Introduction

Learning model is a learning activity that is designed or developed by using certain learning patterns. Learning patterns can describe the activities between teachers and learners in realizing learning conditions or environmental systems that cause the learning process. Learning patterns explain the characteristics of a series of activities undertaken by teachers with learners (Bruce Joyce, 1985). Device Network Application (DNA) Initiative is a curriculum developed for vocational school with difficulty level tiered. DNA Initiative is a learning model that equips students in the field of hardware-based Mobile, network and software applications.

The curriculum has a central position in the entire educational process. The curriculum directs all forms of educational activity for the achievement of educational goals. The curriculum "prescribes (or at least anticipates) the result of instruction" (John, 1977). The curriculum is also an educational plan, providing guidance and guidance on the type, scope, and sequence of educational content and processes.

The concept of curriculum develops in line with the development of educational theories and practices. The curriculum is not just a collection of subjects, but the curriculum emphasizes more on learning experiences. The commonly accepted definition of the curriculum has changes from content of course of study and list of subject and courses to all the experiences which are offered to learners under the auspices or direction of the school (Doll, 1974).

Competence of vocational students should be able to balance the development of the business world and industry. If not then it will only create unemployment that will increase every year. Unemployment at the VHS level is also the highest number at the time. According to the Central Bureau of Statistics (BPS), that unemployment in 2016 amounted to 7,024,172. While the number of can not be accommodated in the company, while for awareness of opening a business or self-entrepreneurship is also still low. In Indonesia entrepreneurial figures score 21.2 or are on the order of 90 out of 137 countries (The Global Entrepreneurship & Development index 2017). This shows the importance of building a high work ethic by implementing entrepreneurship so that unemployment at the vocational school level can be reduced.

Technology education is an integral component that is important in the world of education as a whole. This is because technology has penetrated into every space of human life. The so-called technological literacy for the (educated) community is an integral part of the overall educational orientation (Stevenson, 2003).

Research Methodology

This research was conducted in an effort to obtain a picture of the problem of the Effectiveness of Implementation of Learning Device Network Application Initiative (DNA Initiative) Model of Technology & Information Expertise. The research method chosen is qualitative research method. According to (Danim, 2002) on the qualitative approach, the data collected generally shaped words, images and not the numbers, even if there are numbers only as supporting characters. The data includes interview transcripts, field notes, photographs, personal documents, notes, and other records. It is for this reason that a qualitative-descriptive approach is chosen.

The qualitative approach also refers to explanations (Straus and Corbin, 1990) explain that qualitative research that explains the beliefs of researchers based on the research experience and the nature of the problem. Qualitative methods can also be used to discover and understand what lies beside many phenomena about what little is unknown. Qualitative methods are also used to gain new and fresh insights, can provide a detailed, complex, and very difficult phenomenon revealed by quantitative methods. The same thing is also expressed by (Moloeng, 2007) research is a procedure of data collection that produces descriptive data in the form of written or oral words of people and behavior that can be observed.

Result and Discussion

Effectiveness is the compatibility between the person performing the task and the intended target. Effectiveness is how an organization succeeds in obtaining and utilizing resources in an effort to realize operational goals (Mulyasa, 2002).

In the Great Indonesian Dictionary (KBBI), that effectiveness is something that has the effect or effect generated, efficacious, bring results and is the success of a business or action, in this case effectiveness can be seen from the achievement or absence of specific instructional goals that have been declared. Effectiveness also means successful, precise, efficacious (English-Indonesian dictionary, 2016).

Effectiveness as success in an action or effort implementation of learning model Device Network Application (DNA) Initiative as application of industrial curriculum at VHS level majoring in Technology and Information.

Vocational education under the Ordinance, is a secondary education that prepares learners primarily to work in a particular field. The vocational education is a higher education that prepares participants to learn to have a job with certain applied skills in the form of Diploma programs and applied undergraduate degree, applied magister and

applied doctorate. Vocational education includes VHS and MA Vocational. The Law on National Education System (Sisdiknas) Number 20 Year 2003 article 3 states that national education functions to develop the ability and form the character and civilization of dignified nation in order to educate the life of the nation, aimed at the development of the potential participants of learning, and taqa to God Almighty, morality, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible (Sisdiknas, 2003).

E-book vocational education and training reform matching (Inderm Sit. Gill, 2000), disebutkan bahwa “Implementing the Dual VET System. The problem of strengthening the links between education and employment preoccupies policymakers in all countries. In countries that are growing rapidly, this preoccupation stems from the concern that the economy's demand for skilled workers will outstrip its supply. In countries where economic growth is slow, the concern may arise as a result of growing unemployment among young people. In both cases this attention often turns into efforts to make curricula more vocational, to involve employers in schooling decisions, to increase pre-employment training, or to create incentives for employers to participate in apprenticeship training. These attributes are all associated with the current German approach to VET, commonly referred to as the dual system. The dual system is attractive for countries at all stages of development. In our sample countries, the Czech Republic, Egypt, Indonesia, Jordan, Korea, and Poland all have some form of this system, and other countries, such as Kazakhstan, Tanzania, and Zambia, are considering adopting this approach”.

Which means that the implementation of dual system education as a strengthening in the relationship between education and employment. In some developing countries with high unemployment rates can be reduced by training for young workers to work in the company. These trainings involve educational institutions and companies for internship training in companies. In some countries the Czech Republic, Egypt, Indonesia, Jordan, Korea and Poland all have some form of this system, and other countries, such as Kazakhstan, Tanzania, and Zambia, consider also adopting this dual system approach.

The FGD (Focus Group Discussion) attended by BLC Telkom Klaten, curriculum expert, DNA Initiative class manager, Langgam Celuler, and the teacher decided that the Device Network Application Initiative (DNA Initiative) learning model is highly effective and highly relevant to mobile device development.

Conclusion

The learning model of the Device Network Application (DNA) Initiative at VHS Muhammadiyah 1 Klaten is carried out with several stages, including:

1. Provision of certified DNA labs with size 8x8 m²
2. Training of teachers / instructors
3. Preparation of the DNA Initiative silibus
4. Synchronization of industrial curriculum
5. Implementation of learning with the curriculum of DNA
6. Implementation of street vendors / internship work
7. Exam and certification
8. Opening of ESP (Evercos Service Partner)
9. Evaluation and improvement of cooperation

References

- Ahim Surachim, M. M. (2016). *Efektivitas Pembelajaran Pola Pendidikan Sistem Ganda*. Bandung: CV. Alfabeta.
- Chairul Anwar, M. (2017). *Teori-Teori Pendidikan*. Jogjakarta: IRCiSoD.
- Creswell, J. (2015). *Riset Pendidikan*. Yogyakarta: Pustaka Pelajar.
- Curtis, R.Finch., John R. Crunkilton. 1999. *Curriculum Development in Vocational and Technical Education Planning, Content, and Implementation*. Five Edition, Needham Heigts : Allyn & Bacom A Viacom Company.
- Dwiyogo, D. W. (2016). *Pembelajaran Visioner*. Jakarta: Bumi Aksara.
- Depdiknas. (2016). *Mengembangkan Kerja Sama yang Efektif antara Lembaga Diklat Kejuruan dan Industri*. Jakarta: Deutsche Gesellschaft Fur.
- Djoyonegoro, P. D. (1997). *Ketrampilan Menjelang 2020*. Jakarta: Departemen Pendidikan dan Kebudayaan.
- Emil Salim, D. (1991). *Mencari Strategi Pengembangan Pendidikan Nasional Menjelang Abad XXI*. Jakarta: Gramedia.
- H. A. Rusdiana, D. M. (2014). *Kewirausahaan Teori dan Praktik*. Bandung: Pustaka Setia.
- Herscbach,D.R.1999. Looking Past 2000. Dalam Technology Education in Prospect: Perceptions, Changes, and the survival of the Profession. *The Journal of Technology Studies*. Digital Library and Archives.

- Householder, D.L.1999. View in Technology Education in Prospect: Perceptions, Changes, and the survival of the Profession.*The Journal of Technology Studies*. Digital Library and Archives.
- Hatta Saputra, M. (2016). *Pengembangan Mutu Pendidikan Menuju Era Global*. Bandung: CV. Smile's Indonesia.
- Kuswana, D. W. (2013). *Dasar-dasar Pendidikan Vokasi & Kejuruan*. Bandung: CV. Alfabeta.
- Milles Matthew B. dan A. Michael Huberman. 1992. *Qualitative Data Analysis: A Source Book of New Methods*. Beverlyhills, London, New Delhi: Sage Publication
- Moleong, Lexy J. 2007. *Metodologi Penelitian Kualitatif Edisi Revisi*. Bandung: PT Remaja Rosdakarya.
- Polancik, 2009 dalam *RomiSatriaWahono.net*
- Riduwan, M. (2013). *Cara Mudah Belajar SPSS 17.00*. Bandung: CV. Alfabeta .
- Robert D. Hisrich, d. (2008). *Enterepreneurship*. Jakarta: Salemba Empat.
- Sukardi, P. D. (2016). *Metodologi Penelitian Pendidikan*. Jakarta: Bumi Aksara.
- Soenaryo, M. ,. (2002). *Sejarah Pendidikan Teknik dan Kejuruan di Indonesia*. Jakarta: Departemen Pendidikan Nasional.
- Saroni, M. (2017). *Sertifikasi Keahlian Siswa*. Yogyakarta: Ar Ruz Media.
- Statistik, B. C. (2011). *Dwi Prayitno , SE*. Yogyakarta: Penerbit Andi Jogja.
- Sukmadinata, P. D. (2016). *Pengembangan Kurikulum Teori Dan Praktik*. Bandung: PT. Remaja Rosdakarya.
- Undang-Undang No 20 Tahun 2003. *Tentang Sistem Pendidikan Nasional*
- Waras Kamdi.2001.Pembelajaran Berbasis Proyek:Model Potensial untuk Peningkatan Mutu Pendidikan. *Jurnal Pendidikan Dasar dan Menengah,Gentengkali*.Tahun IV,Edisi Desember 2001.
- Wibawa, P. D. (2005). *Pendidikan Teknologi Dan Kejuruan*. Surabaya: Kertajaya Duta Media , Surabaya.
- Wibawa, P. D. (2017). *Manajemen Pendidikan Teknologi Kejuruan dan Vokasi*. Jakarta: Bumi Aksara.

CBT IN THE WORKPLACE IN INDONESIAN VOCATIONAL HIGH SCHOOL

Budi Santosa, *Universitas Ahmad Dahlan*
budi.santosa@mpv.uad.ac.id

ABSTRACT

This study aims to describe the competency-based training/CBT model in the workplace in vocational high school/VHS in Indonesia. Students of VHS conduct learning in school and at workplace/industry. A good CBT model will produce skilled vocational graduates, which will reduce unemployment. The method used in this study is research and development by Borg and Gall was modified by Nana Syaodih Sukmadinata (2012). Research steps include; preliminary study, development, and testing of students, teachers, and industry mentors totaling 79 people. The finding of this research is that the CBT model implemented in the workplace must meet the following steps; (a) the student must have basic skills as stated in the passport skill, (b) the students choose the location of the practice which already has the Memorandum of Understanding with the school, (c) VHS assigns students to perform industrial work practice according to their approval from industry, (d) competency based assessment can be done through real work, (e) supervisor industry as an external assessor to test students, and (f) competencies that have been mastered by students recorded in passport skills.

Keywords: *competency-based training, industrial work practice, and vocational high school.*

Introduction

The quality of workers in Indonesia is still not able to meet the needs and answer the challenges in the labor market. The business world complains about the low competence of workers in certain fields. As a result, employers must issue additional investments to equip workers with the skills and expertise required of a particular business sector. The vocational school curriculum refers to the principle of a competency-based training, which is intended to meet the needs of the workforce, but not yet fully met. One proof is that graduate vocational schools do not have adequate competence, many graduates of VHS are unemployed. BPS (2017) shows the unemployment rate of 128.06 million people and unemployed from SMK 803.641 people (11.41%).

VHS aims to prepare graduates to be able to enter the field work, both working in the business world and industry or create employment/entrepreneurship. The tight competition of job seekers and also the number of foreign workers due to a free market, the prospective workforce VHS graduates are required to have a reliable skill. Competency-based training/CBT in vocational schools is conducted in schools and in industry. Learning in schools has not been able to meet the skills required by the industry, due to the lack of teaching and practice tools and teaching skills that resulted from the rapid pace of technological development in the industry.

Dewey (1916) argues that: a vocation means nothing to a person, because of the consequences they accomplish, and also useful to his associate. This opinion states that vocational education is nothing but the direction of human life activity as a meaningful contribution to a person because of the consequences of their work and also useful for the workplace. According to Prosser (1925), vocational education is a process of teaching and learning that aims to prepare students for employment. Further Prosser states that; (a) vocational education will be efficient in proportion as an environment in which students are trained in an environmental replica in which it will later work, (b) vocational training will be effective if the training is given the job in the same way, with the same operation, with the same tools, and with the same machine, as in the real field of work. Effective vocational schools as training institutions should be able to provide the same facilities as those in the world of work. Thus, students can learn to do the same jobs as those in the industry. Students should be trained in the skills required by the world of work. Thus, vocational education is an educational institution that has the goal of preparing students with the skills and knowledge to enter the workforce.

Efficiency and effectiveness in the vocational education should provide training to students with situations as they occur in the workplace. Particularly one of the goals of VHS is to equip learners with competencies in accordance with the chosen skill program. Since VHS graduates are prepared to enter the work field, then the more economically, the higher the quality of one's education will be more productive. Thus in addition to increasing national productivity will also increase the competitiveness of labor in global markets.

Research Methodology

This study aims to develop a model of competency-based training in VHS. This research method is research and development/R & D developed by Gall Borg and Gall was modified by Nana Syaodih Sukmadinata (2012). R & D research is a process used to develop and validate educational products. Respondents consisted of students, teachers, and mentors of industry work practices from four schools and four auto/industry workshops.

The components of the developed model consist of; (a) development of competency standards, (b) curriculum development, (c) development of learning, and (d) development of industrial work practices. The research and development procedure is carried out in three stages: (1) preliminary study, (2) model development, and (3) model test. This research and development step can be described as follows. The first step is a preliminary study which contains: (1) literature study on the aspects studied, whether from theory study, research result, or field study related to competency test, and (2) preparation of product competency test draft conducted based on literature studies and expert judgment through focus group discussions with academics and practitioners of educational institutions and industry/associations. The second step is product development consisting of: (1) a limited product trial conducted on two VHS, and (2) an extended product trial conducted on four VHS. The third step is a test consisting of final product testing and outcome socialization.

Result and Discussion

The results of in-depth interviews with practitioners, academics, and industry were analyzed and guided in the discussion. CBT can improve productivity, increase access to employment opportunities and raise the standard of living (Solomon, 2016). The discussion includes the aspects of the development of competency standards, curriculum development, development of learning in the school and industry in Indonesia VHS.

Development of Competency Standards

Norton (2008) mentions that in the analysis of standard tasks begins from job needs analysis and ends with the development of a competency profile. Norton's opinion suggests that in the development of competency standards it is necessary to do job needs

analysis, which is stated in Indonesian national competence standards/INCS, and developed into a standard of competence.

Another opinion expressed by Kelly (2000) states that in formulating basic standards in vocational education, basic concepts and operations and humanitarian, ethical and social aspects should be developed. Norton and Kelly's statement reinforces the need for an alliance between competency standard of graduates and INCS in developing competency standards in VHS.

Standards of competence must be tailored to the needs of the world of work and are based on benchmark benchmarks. Arguments supporting the above statement delivered by Lester (2017) and Reeves (2004) which states that an educational approach based on standards including: (a) the standards are fixed, the intention is that in a system based on the standard, students should be able to conduct a competency determined, (b) standards measure proficiency, ability to do a job/task being the size of the standard system, (c) the standards are challenging, standard system to challenge all students to master the knowledge and skills that have been determined/standardized, and (d) standards are simple, the standard system of educational outcomes is competent or incompetent that is easy to understand. VHS aims to prepare students to enter the work field and develop a professional attitude, develop themselves, and become a middle-level workforce to fill the needs of business and industry. Guided by the goals of education in the VHS, the students are learning competency standard VHS must be adapted to the competence and jobs in the industry.

Curriculum Development

The results of in-depth interviews indicate that education experts in the field of curriculum developers should be involved in curriculum development, in addition to business and industry elements. The opinion that supports educational experts in the field of curriculum developers involved in curriculum development is Norton (2008). Norton stated that the personnel involved in curriculum development consists of; (a) administrators, are academics in the field of vocational education, (b) instructional staff, is the instructor fields of engineering, (c) support personnel, is the developer of curriculum/program, and (d) advisory personnel, is a committee of experts / professional associations. Opinion Norton suggests that members should be involved so that the curriculum can be developed effectively and efficiently is covering the elements of

engineering education experts, curriculum developers, and practitioners.

The expert team's suggestion that in developing the curriculum, students' needs and social conditions need to be considered in meeting employment needs in line with Rauner (2009) opinion which states that in the development of a vocational education curriculum; the occupational form of work becomes the point of reference for the development of curricula. Rauner's opinion suggests that in developing a vocational education curriculum, job forms related to positions/tasks become a reference in the development of the curriculum. Other opinions that support students' needs and social conditions need to be considered by Scott (2004) and Buker-Straub (2017) suggesting that vocational education as an educational institution should broaden opportunities for students to learn or work as needed, development in both academic and practical contexts.

Development of Competence-Based Training

The results of input from the expert team, which states that the module as a learning resource needs to be enriched with other learning resources to provide flexibility in enriching students in accordance with the opinion of Norton (2008) which states that learning should be able to provide programs for individual development and process learning can take place in the workplace. Another opinion that supports the above statement is proposed by Clark & Winch (2007) which states that the principles of vocational education emphasize the benefits of information technology as a source of learning. Technology changes will always be optimized in the vocational learning process. So the source of learning is always enriched with the development of technology. Learning in VHS was developed using modules as one of the learning media and enriched using information technology as another learning resource.

Thompson (1973) states that vocational education is built on the following principles: first, it must be in accordance with the purpose of development. This opinion indicates that vocational education should always follow the development of technology in realizing development goals. This can not be avoided because technology is always evolving as the times change. Second, the labor market maintains a balance between the needs of employment and unemployment, and between employment and a skilled workforce. This suggests that vocational education as a provider of trained workers can contribute to balancing the need for trained workers with available jobs. The

consequence of this argument is that a vocational school should be able to provide trained personnel according to the type of work required. This statement suggests that vocational education should cooperate with the world of work so that it can map the needs of the workforce and train vocational school students as a potential employee to become a skilled workforce. The Thomson opinion supports the expert judgment notes that the model needs to be developed towards learning and cooperative learning in accordance with the demands of the curriculum.

The results of expert judgment record stating that the valuation model should consider the assessment process in line with the opinion of Clark & Winch (2007) that the principle of in-depth curriculum reflected in an assessment system that aims to record what has been achieved across the learning system. In curriculum planning, it also contains what and how the learning process should be carried out, but also contains what and how the assessment system should be done. Another opinion which states that the assessment requires a process proposed by Miller (2008) and Finch (1999). Assessment is a broader term compared to general tests and processes that include collecting, synthesizing, and interpreting informal data and formal data. VHS student ratings undertaken during student study at VHS is a form of process assessment.

Important characteristics of the competency-based educational model according to Gonczi (1998) include: (a) a documented list of competencies accompanied by specific standards and conditions for each competency; (b) at any time the student may be assessed for the achievement of his competence when ready, (c) the learning takes place in the format of the module relating to each competency, (d) the assessment is based on certain standards according to the required competence, (e) the competency test is based on the demonstrated skill, (f) the student can proceed to the unit subsequent competencies if learned competencies have been achieved, (g) student learning outcomes recorded and reported in the competence book. Opinion Gonczi reinforce that competency-based assessment should be supported by a record of competence has been achieved, in this case, recorded in the skills passport. Gonzi's opinion is in line with Achtenhagen & Winther (2014) states that perspective of teaching/training and learning/working processes demands new approaches to research.

Development of Industrial Work Practices

Results of interviews with expert judgment on the monitoring and evaluation of the implementation industrial work practice/IWP must always be carried out so that the program can be run effectively supported by the opinion Streumer (2006) which states that the practice of industrial workplace (on the job training/OJT) requires arrangements: (a) their clear training objectives, (b) the need for OJT evaluation to determine the achievement of training objectives. Results of interviews with the expert judgment which states that the program working practices industry there should be standardization of competence along with their performance criteria imposed in the workshop where the students practice the industrial work was supported by the opinions Streumer (2006) which states that learning in the workplace based on the design of training as detailed in the theory of instructional design. Training objectives are established based on workplace task analysis and learning materials developed in accordance with conditions in the work environment. Standardization of competence along with their performance criteria program students VHS industry work practices outlined in the skills passport.

Halliday (2012) in his research on the competency test in the workplace found that the assessor and trainer involved in the study agreed that the competency test approach is the thorough and complete way through the clustering method in the competency test. This approach also helps students to consider what is important in learning as key principles and concepts, the relationship between ideas and the relationship of new concepts with prior knowledge. In this study, the assessor and trainer also believe that it is a very important method for students to clearly understand the context of that training and competency testing is all in one place. Halliday's opinion is reinforced that when students carry out IWP competence test can be done. The findings of the assessors who are less familiar with this competency test system in accordance with the opinion of Haines (2013), so that the requirements to become assessor is must have been certified as assessors.

The objectives of dual system education (*pendidikan system ganda/PSG*) by *Depdikbud* (1999) are: (1) to improve the quality and relevance of vocational education through the participation of partner/industry, (2) to produce graduates with knowledge, skills and work ethics in accordance with job demands, 3) to produce graduates who have the knowledge, skills, and attitudes on which to base their own sustainable development, (4) recognize and reward work experience as part of the education process,

and (5) improve the efficiency of vocational secondary education through the utilization of resources education in the world of work. Two last statement suggests that *PSG* in the form IWP program can be used to give recognition and appreciation of the work experience as part of the educational process and to improve the efficiency of vocational education.

Conclusion

1. Learning components that can support the implementation of the CBT in workplace model are: (a) teachers must have professional competence, (b) competency-based learning model implemented in school and at work / industry, (c) students are provided with soft skills, and (d) validated passport skill becomes a guide to achieve competence and at the same time become a proof of achievement of competence.
2. The steps to be taken by the students in carrying out industrial work practices are: (a) the student must have basic skills as stated in the passport skill, (b) the students choose the location of the practice which already has the Memorandum of Understanding/MoU with the school, (c) (d) SMK assigns students to perform IWP according to their approval from industry, (e) competency based assessment can be done through real work, (f) supervisor industry as an external assessor to test students, and (g) competencies that have been mastered by students recorded in passport skills.

References

- Achtenhagen, F., & Winther, E. (2014). Workplace-based competence measurement: developing innovative assessment systems for tomorrow's VET programmes. *Journal of Vocational Education & Training*, 66(3), 281–295. <https://doi.org/10.1080/13636820.2014.916740>.
- Büker, G. and Schell-Straub, S. (2017) 'Global how? – Linking practice to theory: A competency model for training global learning facilitators'. *International Journal of Development Education and Global Learning*, 9 (2): 3–15. DOI 10.18546/IJDEGL9.2.02.
- BPS (2017). Keadaan Ketenagakerjaan Indonesia Agustus 2017 No. 103/11/Th. XX, 06 November 2017.
- Camp, W. G., & Hillison, J. H. (1984). Prosser's Sixteen Theorems: Time for Reconsideration. *Journal of Vocational and Technical Education*, 1(1), 13–21.
- Clark, L., & Winch, C. (2007). *Vocational education, international approaches*,

developments and systems. Oxon: Routledge.

Depdikbud. (1999). *Keputusan Menteri Pendidikan dan Kebudayaan Republik Indonesia nomor 323/U/1997 tentang penyelenggaraan pendidikan sistem ganda pada sekolah menengah kejuruan*. Depdikbud.

Dewey, J. (1916). *Democracy and education*. New York : Dover Publications, Inc.

Finch, C.R., & Crunkilton, J.R. (1999). *Curriculum development in vocational and technical education, planning, content, and implementation* (5th ed.). Needham Heights, Mass: Allyn & Bacon.

Gonczi, A. (1998). *Developing a competent workforce: adult training strategies for vocational educators and trainers*. Leadbrook, SA: National centre for vocational education research Ltd.

Haines, C., Dennick, R., António, J., (2013). Developing a professional approach to workbased assessments in rheumatology. *Best Practice & Research Clinical Rheumatology* Volume 27, Issue 2, April 2013, Pages 123-136.
<https://doi.org/10.1016/j.berh.2013.02.006>

Halliday-Wynes, S., & Misko, J. (2012). Assessment issues in VET: minimizing the level of risk. National Centre for Vocational Education Research Issues Paper (NCVER).

Kelly, M. G. (2000). *National educational technology standards for students, connecting curriculum and technology*. International society for technology in education. The U.S. Department of Education.

Lester, S. (2017). Reconciling activity-based descriptions of competence with professional work. *Higher Education, Skills and Work-Based Learning*, 00–00.
<https://doi.org/10.1108/HESWBL-07-2017-0042>

Miller, P. W. (2008). *Measurement and teaching*. Munster, Indiana: Patrick W Miller and Associates.

Norton, E. R., & Moser, R. J. (2008). *DACUM (Developing a curriculum) handbook third edition*. Columbus: Center on education and training for employment college of education and human ecology, The Ohio State University.

Prosser, C. A., & Allen, C. R. (1925). *Vocational education in a democracy*. New York: Century.

Rauner, F. (2009). *TVET curriculum development and delivery*. Dalam Maclean,

R., Wilson, D (eds.). (2009). *International handbook of education for the changing world of work, bridging academic and vocational learning*. Springer Science+Business Media B.V.

Reeves, D. B. (2004). *Making standards work: how to implement standard-based*

assessments in the classroom, school, and district (3th ed.) Englewood: Advanced Learning Press.

Scott, L. J., Sarkees, M., & Wircenski. (2004). *Overview of career and technical education (3th ed.)* Homewood, Illinois: American Technical Publishers, Inc.

Streumer, J. N. (2006). *The effectiveness of OJT in the context of HRD*. Published by Springer.

Thompson, J. F. (1973). *Foundations of vocational education, social and philosophical concepts*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

**IMPLEMENTATION OF EDUPRENEURSHIP THROUGH THE TEACHING
FACTORY IN SMK PROGRAM SKILLS HOSPITALITY
(Case Study at SMK N 6 Yogyakarta)**

Tri Kuat *tri.kuat@mpv.uad.ac*

Pascasarjana, Universitas Ahmad Dahlan Yogyakarta

ABSTRACT

The purpose of this study is to know, to describe and analyze the Implementation of Edupreneurship Through Teaching Factory In SMK Hospitality Skill Program. The research method used in this research is the qualitative method. This method is intended to know deeply in the implementation of edupreneurship through teaching factory in SMK. This research started with the observation of edupreneurship activity through teaching factory at SMK N 6 Yogyakarta. What the problem is that this needs to be parsed by conducting in-depth interviews with informants who are directly involved in edupreneurship activities. The result of this research is the implementation of edupreneurship through teaching factory in terms of learning there is commitment and basic principle which run by the school but not yet optimal. There are still significant obstacles, especially related to the work culture that is applied not in accordance with the procedures of business and industry (DUDI), educators who have not understood the culture of DUDI, facilities, and infrastructure that do not meet DUDI standards, the cooperation between SMK and DUDI is still weak, and the regulation of the Supreme Audit Agency (BPK) which requires the use of state-owned goods as a form of state income.

Keywords: edupreneurship, entrepreneurship, teaching factory

Introduction

Edupreneurship is an activity that is emphasized on creative or innovative efforts undertaken by schools to gain school achievement and increase income. Implementation can be through teaching factory and business center. Through the teaching factory by means of students performing similar or almost the same learning activities conducted in business and industry, the teaching factory becomes a learning concept in the real state to bridge the competency gap between the knowledge provided by the school and the needs of the industry. Learning through the teaching factory aims to foster the character and work ethic (discipline, responsibility, honest, cooperation, leadership, etc.) that the

business world and industry needs and improve the quality of learning outcomes from simply providing competence (competency-based training) leading to learning that provides the ability to produce goods / services (production-based training).

The success of teaching factory where the school can provide a place of practice like the actual industry, and be in the school environment so that students in practice according to standards, procedures and work culture of the business and industry. SMK tourism skills program as a place of practice is edotel. Edotel is an educational hotel (teaching hotel), which in the day-to-day activities serve guests and as a place to stay. The management is done by a competent professional managing a hotel.

In accordance with the problems and facts in the field to realize the SMK that has the attitude and entrepreneurship spirit through edupreneurship, then this study intends to examine and analyze in depth how the description of the implementation of edupreneurship through teaching factory. The research was conducted in SMK N 6 Yogyakarta. This location was chosen because the SMK has implemented edupreneurship through a hospitality business that has been developed as a student practice. Based on these reasons can be formulated problems as follows; How to Implement Edupreneurship Through Teaching Factory At SMK Hospitality Skill Program in SMK N 6 Yogyakarta. The purpose of this research is; knowing, describing and analyzing the Implementation of Edupreneurship Through Teaching Factory At SMK Hospitality Skill Program in SMK N 6 Yogyakarta. The theoretical basis used as follows:

The concept of edupreneurship

Edupreneurship is a part of entrepreneurship that is implemented in the field of education. Entrepreneurship is a creative or innovative effort by seeing or creating opportunities and realizing them into something that has added value (economic, social, etc.). Entrepreneurship in the social field called sociopreneurship, in the field of education called edupreneurship, in the internal company called interpreneurship, in the field of technology business called technopreneurship (Alim, 2009).

The Oxford Project, (2012) describes edupreneurship as a school that always innovates systemically, transformational change, regardless of existing resources, current

capacity or national pressure in order to create new educational opportunities and excellence.

The concept of edupreneurship is focused on the efforts made by schools creatively and/or innovatively to gain school excellence in the form of achievement and also increase income. (Mulyatiningsih, 2014)

Teaching factory

Teaching factory is a concept of contextual learning that makes students' learning approach to actual work situations and conditions. Teaching Factory is an industrial replica, owns equipments with industry, applies operational standard procedure same with industry so production of goods and services equal to the industry. Teaching Factory is expected to bridge the required competency gap industry with the competencies learned in school.

In general, Teaching Factory teaching aims to train disciplined students, improve students' skill competence, instill mental work to be easily adapted to the situation and condition of the industry, mastering the managerial field and producing products of industry standard quality (I made Gali et al., 2009).

Research Methodology

The research method chosen is qualitative research method. According to Danim (2002) on a qualitative approach, the data collected generally shaped words, images and not the numbers, even if there are numbers only as supporting characters. The data includes interview transcripts, field notes, photographs, personal documents, notes, and other records. It is for this reason that a qualitative-descriptive approach is chosen.

The qualitative approach also refers to the explanation of Straus and Corbin (1990) explaining that qualitative research that explains the beliefs of researchers based on the research experience and the nature of the problem. The same thing is also expressed by Moloeng (2007) research is a procedure of data collection that produces descriptive data in the form of written or oral words of the people and behavior that can be observed.

Research on the implementation of edupreneurship through teaching factory is done in SMK N 6 Yogyakarta. The reason for choosing this location is because SMK N

6 Yogyakarta is a vocational school, which already has edotel as vehicle teaching factory in creating student competence.

The objectives of this study include school principals, vice principals curriculum, productive Teachers, students, SMK N 6 Yogyakarta. This target is considered the most understanding and know related to the implementation of edupreneurship through teaching factory in school.

Qualitative research requires a research focus, the determination of a research focus is needed so that a researcher will know exactly which data needs to be collected and which data may be interesting but irrelevant, not necessarily included in the data being collected (Moleong, 2007). The focus of this research includes the following; a. Education policies implemented by schools either from the central level or from the school. b. Map of problems and obstacles in the implementation of edupreneurship through teaching factory activities in schools. c. The effort did in improving the success of the implementation of edupreneurship through teaching factory activities in schools. d. Criteria for student success after doing teaching factory activity in edotel. To collect data and information as needed to support this research is used with various techniques, namely: Interview technique, observation, and document study.

The technique of examining the validity of the data using triangulation technique is a technique of checking the validity of data that utilizes something else outside the data for the purposes of checking or as a comparison against that data. In triangulation techniques in this study used based on the source (Moleong, 2007).

Data analysis method used in this research is descriptive qualitative analysis method, with interactive analysis model by Miles and Huberman (1992). He argues that the activity in qualitative data analysis is done interactively and continuously to complete, so the data is saturated. Data saturation sizes are indicated by no new data or information being retrieved. Activities in the analysis include data reduction, data presentation, and Conclusion drawing / verification.

Result

Implementation of edupreneurship through teaching factory at SMKN 6 Yogyakarta. only emphasize on aspects of learning. include; 1. The process of learning skills or skills as one of the subjects. Hospitality skills program at SMK N 6 Yogyakarta

skill learning is included in entrepreneurship practice subject. Learning process with edupreneurship through teaching factory is a learning model that is expected to help and support students in having the skills and skills as part of owned. With practical learning, it is expected that students will easily master the competence. Competence achieved is a repetitive work so that students can understand and become the character of work. 2. Entrepreneurship learning that is designed and implemented based on real job procedures and standards. Learning like in the real workplace by using edotel as a place of learning has provided a learning process that puts forward direct practice in the workplace, for which the ability of students to work directly has gone through the procedures applied. Students of hospitality skills program become skilled and skilled with teaching factory program. 3. Development of student soft skills, which includes intellectual, emotional, spiritual, and social intelligence. SMKN 6 Yogyakarta, in this case, has supported all the necessary school facilities in the growth of soft skills of students. Available facilities, such as edotel, computer labs, language laboratories, beauty salons, sports fields, and school mosques

The implementation of the hotel's hospitality skills program activities at SMK N 6 Yogyakarta is still hampered in the process of formulation, planning, development and edotel finance which is still problematic, not to mention the issue of supervision related to the audit of the State Audit Board (BPK) which requires every state facility used must be part of state revenue. This is what hampered the teaching factory teaching process, in addition to technical readiness on the role of teachers and cooperation with the business and industry (DUDI) especially get more representative practice place is still limited, so there are still students who work / industry practice not in accordance with its competence. In addition, the work culture is not as DUDI demands, facilities and infrastructure have been left behind with the demands of DUDI.

Discussion

This study emphasizes on edupreneurship especially the learning process, not paying attention to other dimensions. Results of research at SMKN 6 Yogyakarta. In general, it can be said the results of research related to the implementation of edupreneurship through teaching factory shows the commitment of institutions or vocational schools in learning kewirausahaan. This is evidenced by the entrepreneurial empowerment that is intended for all levels, this fact proves entrepreneurial subjects have strategic meaning and for learners and institutions. SMKN 6 Yogyakarta in

principle has a basic principle of entrepreneurship learning with industry base because it has edotel as a place of student practice. This is in accordance with the first Proser's argument that "Vocational education will be efficient if the environment in which the student is trained is an environmental replica of which he will work later" (Prosser & Quigley, 1949).

The development of character embodied in the form of spirit and hard work, high motivation, creativity, problem-solving. The value becomes the color in the development of soft skills needed in the development of the personality of the learners. Based on the implementation procedure there are important things to be considered in the implementation of edupreunership. The teaching factory program is a positive step to develop the entrepreneur spirit, in the hope that graduate school vocational school can be a regional asset and problem solving to the problem of human resources.

Conclusion

1. Implementation of edupreunership through teaching factory in terms of learning already existing commitment and basic principles that are run by schools but not optimal.
2. There are still obstacles, especially related to the work culture that is applied not in accordance with the procedures of business and industry (DUDI), educators who have not understood the culture of DUDI, facilities, and infrastructure that do not meet DUDI standards, the cooperation between SMK and DUDI is still weak, as well as BPK regulations requiring the use of state-owned goods as a form of state income.

References

- Curtis, R.Finch., John R. Crunkilton. 1999. *Curriculum Development in Vocational and Technical Education Planning, Content, and Implementation*. Five Edition, Needham Heights : Allyn & Bacom A Viacom Company.
- Ikhwan Alim. 2010. "Peranan ITB dalam Pengembangan Kewirausahaan". Menteri Koordinator Pengembangan Kemahasiswaan Kabinet KM ITB 2009-2010. (<http://ikhwanalim.wordpress.com>). Bandung: Indonesia
- Nyoman Gali Darmawan, Bambang Sumitro, Sulton Djasmi. " Evaluasi manajemen teaching factory pada unit produksi training hotel Sekolah Menengah Kejuruan Kridawisata Bandar Lampung." FKIP Unila: Jl. Soemantri Brojonegoro No.1, Gedung Meneng, Bandar Lampung

- Kementrian Pendidikan dan Kebudayaan (2015), Direktorat Pembinaan SMK Direktrat Jendral Pendidikan Menengah Jakarta
- Milles Matthew B. dan A. Michael Huberman. 1992. *Qualitative Data Analysis: A Source Book of New Methods*. Beverlyhills, London, New Delhi: Sage Publication
- Moleong, Lexy J. 2007. *Metodologi Penelitian Kualitatif Edisi Revisi*. Bandung: PT Remaja Rosdakarya.
- Mulyatiningsih, Sugiyono, Sutriyati Purwanti, 2014, Materi Pembekalan Pengembangan Edupreneurship Sekolah Kejuruan Fakultas Teknik Universitas Negeri Yogyakarta.
- Oxford Project. 2012. *Leading through Edupreneurship*. Copyrighted to Oxford Community Schools.
- Proser, C.A. & Quigly, T. H. 1949. “*Vocational Education in Democracy*” American Technical Society. Chicago, Illionis.
- Subijanto. 2012. “Analisis Pendidikan Kewirausahaan Di Sekolah Menengah Kejuruan, Analysis Of Enterpreneurship Education At Senior Vocational School”, *Jurnal Pendidikan Dan Kebudayaan*, Vol. 18, Nomor 2, Juni 2012
- Supriyatningsih. 2012. “Penanaman Nilai-Nilai Kewirausahaan Pada Siswa Melalui Praktik Kerja Industri”. *Journal Of Economic Education* 1 (2) (2012), 2012 Universitas Negeri Semarang, Issn 2252-6889
- Straus, A.L., & Corbin, J.M. 1990. *Basic of Qualitative Research Grounded Theory and Techniques*. Newbury Park Calif: Sage Publications.
- Yoto, 2015: pengembangan pendidikan kejuruan melalui pendidikan dan pelatihan bidang teknik mesin bagi guru smkjurnal teknik mesin, tahun 23, no. 1, april 2015:

INTEGRATED LEARNING BASED ON COMPETENCE IN SMK

Pangarso Ari Wibowo, *pangarsoariw@gmail.com*
Budi Santosa, *budi.santosa@mpv.uad.ac.id*
Muhammad Sayuti *muhammad.sayuti@mpv.uad.ac.id*

¹ *SMK Negeri 1 Seyegan*

² *Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRACT

Education in Vocational Schools (VHS) aims to equip learners with the attitude, knowledge, and skills to be ready for work, absorbed in the world of work, or entrepreneurship. To fulfill the objective, the competence that must be possessed by the students must be in accordance with the needs in the world of work and in the business world. To fulfill the competence, the learning in VHS must be competency-based. In line with the competency and competency-based learning needs, it also needs an integrated learning between adaptive subjects and productive subjects. Integrated learning is modeled by; (1) conducting curriculum study on basic competence of adaptive subjects, (2) inserting productive basic competency subjects on adaptive subjects. After the integrated learning model is prepared then the learning model applied to the class is a competency-based learning model.

Keywords: *adaptive, productive, integrated learning, competency-based learning.*

Introduction

Competence is the ability, knowing, authorized, and powerful to decide or decide upon something (KKBI, 2002). Another definition according to *Depdikbud* (1994) is the characteristics possessed by the individual and used appropriately in a consistent way to achieve the desired performance. Wardiman Djojonegoro (1996: 11) gives the understanding that competence is a basic characteristic possessed by an individual who is causally related to the standard of assessment that is referenced to superior performance or to a job.

Thus, the competencies that must be possessed by students to be proficient, consistent in achieving the desired performance, and superior in a job must include 3 domains, namely: knowledge, attitude, and skills that are always well trained during the education process so that students are said to be competent in the field of study or the

work he or she is engaged in. John Burke (1989: 23) reveals that if we are clear about what we mean by competence, we can derive associated standards which describe what competence means in specific occupations and work roles.

The phrase can be used as a benchmark that education in vocational school will bring its graduates to master a specific occupation, a field of work in which demand the mastery of competence, both from the general aspect as well as expertise. Therefore, the competency in SMK needs to be maximized.

The *Kurikulum* 2013 was first implemented in 2013 with implementation begun to schools that are considered ready. Prepared readiness from teachers, curriculum and learning tools, and the readiness of facilities and infrastructure. However, in its application, found in the Kurikulum 2013 some subjects on the adaptation group of basic competencies conveyed to learners is not a basic competency that reinforces basic competencies in subjects in productive groups.

One of the demands of Curriculum 2013 is on the application of contextual learning model. The recommended learning model is the problem-based learning model, the project-based learning model, and the learning model through discovery. Learning models basically lead to training and competence development of learners or often known as competency-based learning model.

Graham Debling on John W. Burke (1989: 78) reveals that An important characteristic of the competence based standards is that they are very explicit. Certification is in effect a form of guarantee that the individual has adequately demonstrated that he or she has fully met the specification contained within the unit - unless specified, there is no scope for sampling.

Learning or training based on is a process to measure the competence of a learner through a real, standardized, measurable, and individual performance. Learning or training requires a long and continuous process ranging from simple materials to complex material in one or more periods and delivered in a classical or individual manner.

Stephen B. King, Marsha King and William J. Rothwell (2000: 10-13) wrote that the International Standards for Training, Performance and Instruction (IBSTPI) Board have developed a set of standards that use the direct definition of the term competency as " without him, a person is not a qualified practitioner. "

The above quotation indicates that to be able to implement a learning model or training based on competence, a teacher or trainer must meet some qualifications to be able to deliver learners to achieve competence or show their quality to a field of work.

CBT applied inVHS often encounters obstacles with not yet synchronized curriculum, that is on the basic competence delivered on adaptive subject which not yet according to basic competence on productive subject. In order to be synchronized then some of the basic competencies of productive subjects need to be inserted or added to be delivered on adaptive learning. This effort is then called integrated learning on adaptive subjects and productive subjects.

Integrated learning is differentiated based on the pattern of material or theme integration. Based on the theme, there are ten integrated learning models, namely: (1) the fragmented model, (2) the connected model, (3) the nested model, (4) the squenced model, (5) the shered model, (6) the webbed model, (7) the threaded model, (8) the integrated model, (9) the immersed model, (10) the networked model. (Fogarty, 1991:15). The ten models there are three models that can be developed and implemented in formal education. All three models are connected, webbed, and integrated models.

Methodology

This type of research in the form of research and development of Borg & Gall with modifications by Nana Syaodih Sukmadinata with the flow diagram as in Figure 1

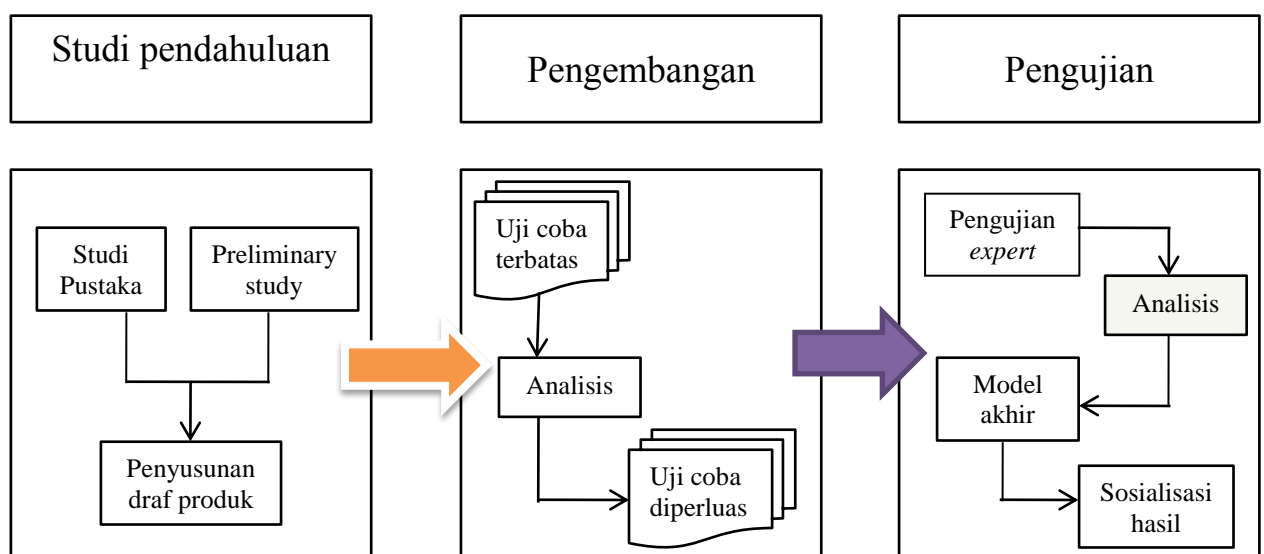


Figure 1. Diagram of the research flow

Subjects to be studied are basic competencies in adaptive subjects, such as: English, Physics, and Mathematics. While on productive subjects, such as: *Rancang Bangun Jaringan*, *Jaringan Nirkabel*, and *Sistem Komputer*. While the object of research are some aspects of mastery of competence learners.

Table 1. Composite models of adaptive subjects and productive subjects

| Adaptive Subjects | Productive Subjects |
|--------------------------|--------------------------------|
| English | <i>Rancang Bangun Jaringan</i> |
| Physics | <i>Jaringan Nirkabel</i> |
| Mathematics | <i>Sistem Komputer</i> |

The research will be conducted in several public vocational schools in Bantul Regency and limited to Competency of *Teknik Komputer dan Jaringan* Expertise.

Techniques and instruments used to collect data include: (1) interviews with several teachers related to the research subject, (2) curriculum document studies, especially on basic competencies and learning subject matter; (3) Focus Discussion Group (FDG) (4) learning documents, such as: *Rencana Pelaksanaan Pembelajaran* (RPP) and the subject matter of learning to get a picture of the product (model) being piloted, and (5) a questionnaire to measure the successful application of the product in the learning process .

Data analysis technique is a quantitative type obtained from the questionnaire instrument to measure the real condition of the implementation of integrated learning with competency-based learning model (CBT) in an effort to increase the achievement of the competence of learners.

Results

The research that will be carried out is expected to produce the product in the form of a combination of basic competence model on adaptive subjects and productive subjects. The first blend is a combination of basic competencies between the two subjects. By combining the basic competencies will be composed of the subject matter of the combined learning between the two subjects. While to carry out the learning process then proceed with compiling the learning documents such as *Rencana Pelaksanaan Pembelajaran* (RPP), which is delivered using a competency-based learning model

(CBT). In addition to *RPP*, other documents such as material handouts, jobsheets, and evaluation questions were also prepared.

The overall learning process will be measured using an observation sheet of instructional implementation and a questionnaire that will be filled by the learner. Observation sheets include observing the appropriateness of learning implementation to planning, participation of learners in learning and evaluation implementation. While the questionnaire is generally used to ask the level of interest of learners to the implementation of integrated learning with competency-based learning model (CBT).

Discussion

A discussion of integrated learning topics will be undertaken by several teachers involved with discussing some of the basic competencies in each subject to be integrated. As with the Physics subject of the wave, it will be focused and enriched on radio waves, wave modulation, wave properties, and wave transmission required in the *Rancang Bangun Jaringan (RBJ)* course. The discussion will be developed until the preparation of instructional materials and preparation of learning scenarios in the *RPP* document.

Next, will be discussed how and who will deliver the integrated learning materials. So in this case, Physics subjects can be delivered by *RBJ* subject teachers related to the application of waves in wireless network communications or vice versa on the subjects of *RBJ* will be delivered by Physics subject teachers related to the concepts of the wave or can with collaboration between the two teachers.

In the implementation of learning, observation should be done by teacher collaborators to measure the suitability of planning for its implementation. And that is very important is the level of participation of learners in learning. Ultimately, learning evaluation is expected to be the optimal result of the appointment to measure the level of mastery of the competence of good learners.

After the implementation of learning and evaluation, a review of the implementation of the lesson needs to be undertaken as an attempt to take the necessary corrective actions to form the most appropriate model of integration.

Conclusions

The research to be carried out is expected to produce several things, such as:

1. Measuring the level of competence of learners.
2. Measuring the extent to which the application of competency-based learning.
3. The realization of an integrated learning model between adaptive subjects and productive subjects.

References

- Burke, John W. 1989. *Competency Based Education and Training*. The Falmer Press. London.
- Fogarty, Robin. 1991. *How To Integrate The Curricula*. Skylight Publishing. USA.
- King, Stephen B. And Martha. Rothwell, William J. 2000. *The Complete Guide to Training Delivery: A Competency-based Approach*. Amacom. USA.
- Wardiman Djojonegoro. 1996. *Lima Puluh Tahun Perkembangan Pendidikan di Indonesia*. Depdikbud. Jakarta.

**KUALITAS PENGEMBANGAN PROFESI GURU
PRODI TEKNIK INSTALASI TENAGA LISTRIK
DI SMK YOGYAKARTA**

Siti Zulaikhah *sitizulaikhah1970@gmail.com*

Bambang Noor Achsan

Jumintono

Magister Pendidikan Vokasi Universitas Ahmad Dahlan

ABSTRAK

Penelitian ini bertujuan untuk mengetahui kualitas pengembangan profesi guru Prodi Teknik Instalasi Tenaga Listrik di SMK Yogyakarta. Penelitian ini merupakan penelitian deskriptif dengan menggunakan pendekatan kuantitatif. Subjek penelitian ini adalah seluruh guru prodi Teknik Instalasi Tenaga Listrik di 3 SMK di Yogyakarta yang berjumlah kurang lebih 60 guru. Metode pengumpulan data menggunakan angket, wawancara, dan dokumentasi. Uji validitas instrumen untuk menguji validitas isi angket dalam penelitian ini menggunakan pendapat ahli (*expert judgement*). Teknik analisis data dalam penelitian ini terdiri atas 4 tahap: *editing, tabulating, analiting* serta *interpreting*, dan yang terakhir *concluding*. Kualitas pengembangan profesi guru di SMK menunjuk pada kemampuan institusi (sekolah) mengelola penyelenggaraan berbagai aktivitas yang bertujuan meningkatkan keprofesian guru. Tiga pilar perlu dikelola oleh sekolah untuk menjaga kompetensi guru tetap terbarukan, yaitu : 1) Guru pembelajar; 2) Teaching Factor; 3) Guru dengan keahlian ganda. Hasil penelitian menunjukkan bahwa kualitas pengembangan profesi guru prodi teknik instalasi tenaga listrik di 3 SMK Yogyakarta yaitu di SMKN 1 Pleret, SMKN Sedayu, dan SMKN Pundong yang berjumlah 51 guru, 92, 2% atau 47 guru masuk kategori rendah.. Kualitas pengembangan profesi guru terdiri dari 3 indikator kegiatan yaitu: 1) Guru pembelajar; 2) Teaching Factor; 3) Guru dengan keahlian ganda. Dengan kemampuan guru sebagai guru pembelajar dan mempunyai keahlian ganda dalam mengaplikasikan ilmu maka akan tercipta kualitas pengembangan profesi guru Prodi Teknik Instalasi Tenaga Listrik yang baik. Kegiatan karya inovatif dilihat dari aspek keaktifan guru dalam menciptakan teknologi tepat guna, memodifikasi teknologi tepat guna, membuat alat pembelajaran, memodifikasi alat pembelajaran, mengembangkan model pembelajaran, serta dilihat dari aspek keikutsertaan guru dalam kegiatan penyusunan standar proses pembelajaran dan penilaian pendidikan, penyusunan

pedoman silabus, Rencana Pembelajaran dan Pengajaran, serta kisi-kisi soal, dan kegiatan penyusunan soal.

Kata Kunci : *Kualitas Pengembangan Profesi Guru Prodi Teknik Instalasi Tenaga Listrik di SMK Yogyakarta*

Pendahuluan

Guru pembelajar merupakan kunci pembangkit perilaku swakelola keprofesian berkelanjutan. Terlebih di era milenial saat ini dimana berbagai sumber belajar tersedia melimpah, mendorong perkembangan berlangsung lebih cepat sekaligus pengurangan kompensasi guru yang juga berlangsung cepat. Maka guru pembelajar menjadi suatu keniscayaan dari pengembangan profesi agar tidak usang. Keberhasilan sekolah dalam membangun atmosfer yang mendukung guru pembelajar merupakan salah satu penanda kualitas pengembangan profesi guru secara kolektif dalam institusi sekolah.

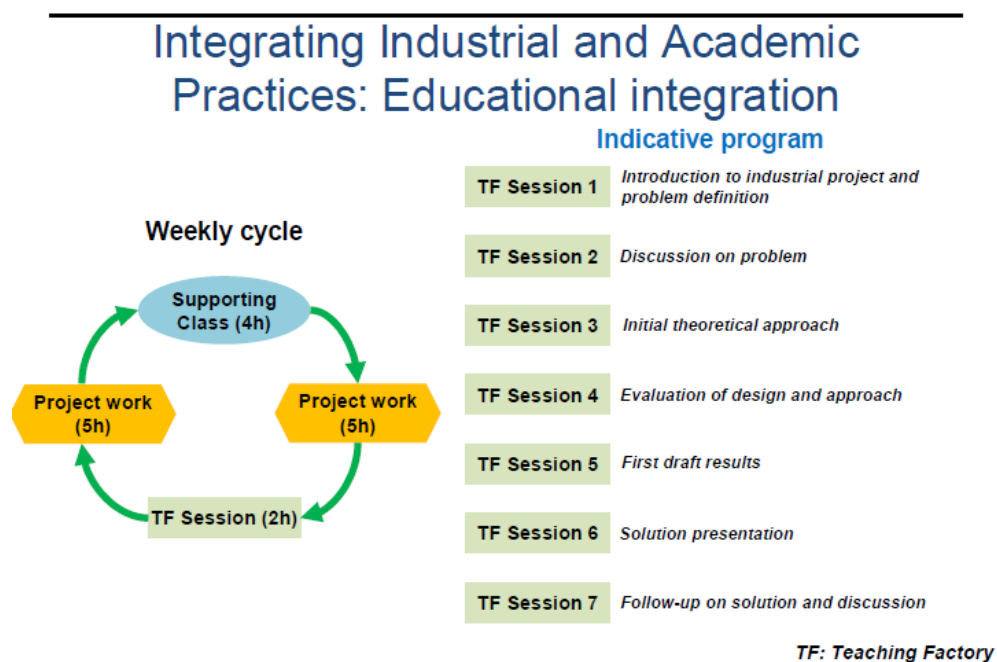
Sekolah perlu membangun budaya institusi yang mendorong proses guru pembelajar. Dan bagi sekolah kejuruan diperluas dengan melibatkan dunia usaha dan dunia industri agar kompetensi profesi guru berkemampuan menghasilkan lulusan yang siap bekerja. Kompetensi inti dan dasar siswa sekolah kejuruan diarahkan agar sesuai dengan kebutuhan dunia usaha dan dunia industri (Permendikbud Nomor 24 Tahun 2016). Upaya menghasilkan lulusan yang sesuai dengan kebutuhan dunia usaha dan dunia industri bahkan mendapat perhatian sejak penyiapan tenaga pendidiknya, program pendidikan profesi guru kejuruan menekankan relevansi dengan dunia usaha dan dunia industri (Permenristekdikti 55 tahun 2017).

Pembelajaran yang berdaya membekali lulusan sekolah kejuruan berkemampuan memenuhi tuntutan dunia usaha dan dunia industri tidak bisa dipandang sebagai aktivitas sesaat, melainkan berkelanjutan dalam keseimbangan dialektik antara waktu pendidikan yang relatif lebih lama dibanding waktu perubahan tuntutan dunia usaha dan dunia industri (DUDI) yang relatif lebih cepat (Ratnata, 2012). Pemerintah melalui Dikdasmen telah meluncurkan kembali konsep *link and match* untuk meningkatkan relevansi kompetensi lulusan SMK dengan kebutuhan dunia usaha dan dunia industri. Konsep ini telah berjalan dengan baik dan terus mengalami peningkatan hasil guna (Airlangga Hartarto, 2017).

Konsep *link and match* berimplikasi pada kebutuhan mendesak guru keahlian yang sesuai kebutuhan DUDI. Untuk memenuhi peningkatan kebutuhan ini maka pemerintah mendorong keahlian ganda guru SMK. Guru SMK dan SMK berkesempatan meningkatkan kompetensi untuk mengampu mata pelajaran adaptif untuk memperoleh kompetensi keahlian tambahan dan mampu menjadi guru mata pelajaran produktif di SMK (Kemendikbud.co.id).

Konsep *link and match* tidak sekedar bersifat teoritik, melainkan mencakup berbagai aktivitas yang mengkonstruksi kesinkronan sekolah dan DUDI ditinjau dari ketrampilan lulusan sekolah dengan kebutuhan ketrampilan dunia kerja. Upaya konstruksi ini melahirkan pendekatan pembelajaran Teaching Factory (TeFa), suatu model pembelajaran di SMK berbasis produksi/jasa yang mengacu pada standar dan prosedur yang berlaku di industri dan dilaksanakan dalam suasana seperti yang terjadi di industri. Konsep TeFa mengadopsi disiplin ilmu kedokteran yang menyatukan pendidikan dengan praktek di Rumah Sakit (Rentzos L, 2014).

Pelaksanaan Teaching Factory menuntut keterlibatan mutlak pihak industri sebagai pihak yang relevan menilai kualitas hasil pendidikan di SMK. Pelaksanaan Teaching Factory (TEFA) juga harus melibatkan pemerintah, pemerintah daerah dan stakeholders dalam pembuatan regulasi, perencanaan, implementasi maupun evaluasinya. Keterikatan ini terlihat dalam bagan integrasi DUDI dengan dunia pendidikan (ibid).



Gambar 1. Integrasi Inustri dengan Pendidikan / Sekolah

Pelaksanaan Teaching Factory sesuai Panduan TEFA Direktorat PMK terbagi atas 4 model, dan dapat digunakan sebagai alat pemetaan SMK yang telah melaksanakan TEFA. Adapun model tersebut adalah sebagai berikut: 1) *Dual System* dalam bentuk praktik kerja lapangan adalah pola pembelajaran kejuruan di tempat kerja yang dikenal sebagai *experience based training* atau *enterprise based training*; 2) *Competency Based Training* (CBT) atau pelatihan berbasis kompetensi merupakan sebuah pendekatan pembelajaran yang menekankan pada pengembangan dan peningkatan keterampilan dan pengetahuan peserta didik sesuai dengan kebutuhan pekerjaan. Pada model ini, penilaian peserta didik dirancang untuk memastikan bahwa setiap peserta didik telah mencapai keterampilan dan pengetahuan yang dibutuhkan pada setiap unit kompetensi yang ditempuh. 3) *Production Based Education and Training (PBET)* merupakan pendekatan pembelajaran berbasis produksi. Kompetensi yang telah dimiliki oleh peserta didik perlu diperkuat dan dipastikan keterampilannya dengan memberikan pengetahuan pembuatan produk nyata yang dibutuhkan dunia kerja (industri dan masyarakat). 4) *Teaching Factory* adalah konsep pembelajaran berbasis industri (produk dan jasa) melalui sinergi sekolah dan industri untuk menghasilkan lulusan yang kompeten dengan kebutuhan pasar.

Metode Penelitian

Penelitian ini merupakan penelitian deskriptif menggunakan pendekatan kuantitatif. Penelitian deskriptif merupakan penelitian yang digunakan untuk mendeskripsikan dan menjawab persoalan-persoalan dari suatu fenomena atau peristiwa yang terjadi saat ini, baik dalam variabel tunggal maupun korelasi atau perbandingan. Pendekatan kuantitatif menekankan analisisnya pada data-data numerikal (angka) yang diolah dengan metode statistik. Informasi yang diperoleh di lapangan kemudian diolah dan disajikan dalam bentuk angka-angka dan kemudian diinterpretasikan ke dalam bentuk kalimat sehingga hasil penelitian dapat dibaca dan diketahui lebih mendalam dan terperinci. Namun pada indikator identitas responden yang terletak pada angket, data yang akan dikumpulkan dan disajikan tetap dalam bentuk kualitatif. Penelitian ini bertujuan untuk mengetahui bagaimana kualitas pengembangan profesi guru Prodi Teknik Instalasi Tenaga Listrik di SMK Yogyakarta.

Definisi Operasional Variabel

Kualitas pengembangan profesi guru pada penelitian ini merupakan suatu penilaian terhadap usaha yang dilakukan oleh guru-guru Prodi Teknik Instalasi Tenaga Listrik dalam rangka meningkatkan pengetahuan, kemampuan, dan keterampilan guru pada saat melaksanakan tugas dan tanggung jawabnya yang disesuaikan dengan kebutuhan saat ini dan kebutuhan di masa yang akan datang. Kualitas pengembangan profesi guru pada penelitian ini akan dipaparkan ke dalam bentuk hasil presentase dan pengkategorian yang dibagi menjadi 3 kategori yaitu baik, sedang, dan rendah. Kualitas pengembangan profesi guru dilihat dari seberapa aktif guru dalam melakukan kegiatan pengembangan profesi.

Pengembangan profesi guru dapat dilakukan melalui kegiatan-kegiatan yang menunjang peningkatan profesi guru. Maka dari itu pada penelitian kualitas pengembangan profesi guru kali ini akan dilihat dari kegiatan-kegiatan yang dilakukan oleh guru-guru Prodi Teknik Instalasi Tenaga Listrik di SMK Yogyakarta, yaitu SMKN Pleret, SMKN Pundong, dan SMKN Sedayu. Dalam rangka mengembangkan profesi guru melalui kegiatan pengembangan diri, kegiatan publikasi ilmiah, dan kegiatan karya inovatif. Mengimplikasikan guru selain sebagai ujung tombak pelaksana pendidikan juga menjadi guru pembelajar untuk mempertahankan dan meningkatkan keprofesiannya.

Hasil Penelitian

Tabel 1. Hasil Kualitas Pengembangan Profesi guru program diklat teknik instalasi tenaga listrik di SMK Yogyakarta.

| No | Skor | Frekuensi | | Kategori |
|-------|--------------------|-----------|------------|----------|
| | | Frekuensi | Presentase | |
| 1 | $X \geq 159$ | 0 | 0,0% | Baik |
| 2 | $106 \leq X < 159$ | 4 | 7,8% | Sedang |
| 3 | $X < 106$ | 47 | 92,2% | Rendah |
| Total | | 51 | 100 % | |

Kesimpulan

Hasil penelitian menunjukkan bahwa kualitas pengembangan profesi guru prodi teknik instalasi tenaga listrik di 3 SMK Yogyakarta yaitu di SMKN 1 Pleret, SMKN Sedayu, dan SMKN Pundong yang berjumlah 51 guru, 92, 2% atau 47 guru masuk kategori rendah.. Kualitas pengembangan profesi guru terdiri dari 3 indikator kegiatan yaitu: 1) Guru pembelajar; 2) Teaching Factori 3) Guru dengan keahlian ganda.

Rujukan

Permenristekdikti 55 tahun 2017

Peraturan Menteri Pendidikan Nasional Nomor 16 Tahun 2007 Tentang Kualifikasi dan Kompetensi Guru.

Quint, J. C., Akey, T. M., Rappaport, S., & Willner, C. J. (2007). *Instructional leadership, teaching quality and student achievement: Suggestive evidence from three urban school districts*. New York: MDRC.

Rentzos L.a, Doukas M.a, Mavrikios D.a, Et al. (2014) Integrating Manufacturing Education with Industrial Practice using Teaching Factory Paradigm: A Construction Equipment Application. Elsevier. DOI: 10.1016

Kemendikbud.co.id

**PELAKSANAAN MODEL PEMBELAJARAN *TEACHING FACTORY* PADA
SMK PROGRAM KEAHLIAN TEKNIK KETENAGA LISTRIKAN
KOMPETENSI KEAHLIAN TEKNIK INSTALASI TENAGA LISTRIK
DI KABUPATEN BANTUL**

Mohamad Kusen¹, *kusen0smkn1pleret@gmail.com*

Tri Kuat², *sonytrikuat@gmail.com*

Budi Santosa², *budi.santosa@mpv.uad.ac.id*

¹*SMK Negeri 1 Pleret*

²*Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRAK

Penelitian ini dilatar belakangi dari semakin banyaknya lulusan SMK yang banyak menganggur, menurut pengamatan penulis salah satunya karena disebabkan lulusan kurang kompeten, untuk meningkatkan kompetensi salah satunya dengan menggunakan model pembelajaran *teaching factory*. Dari hasil penelitian pada SMKN Kompetensi Keahlian TITL dapat disimpulkan bahwa: (1) hampir semua SMKN kompetensi keahlian TITL mendukung pelaksanaan model pembelajaran *teaching factory* dengan menyiapkan sarana prasarana preaktek. (2) guru telah menyiapkan dari perencanaan, pelaksanaan, evaluasi model pembelajaran *teaching factory* (3) siswa menyambut pelaksanaan model pembelajaran ini dengan senang hati. (4) faktor pendukung model ini perlu diupayakan dan ditingkatkan sedangkan faktor penghambat harus segera dicari jalan keluarnya. Model pembelajaran *teaching factory* terdiri dari enam langkah yang dikembangkan di SMKN Kabupaten Bantul yaitu: (a). menerima order (b) menganalisa order (c) menyatakan siap melaksanakan order (d) mengerjakan order (e) melakukan quality control (f) menyerahkan order.

Kata kunci: *Model pembelajaran, teaching factory, dan kompetensi keahlian.*

Latar belakang

Penelitian ini dilatar belakangi dari semakin banyaknya lulusan SMK yang banyak menganggur, menurut pengamatan penulis salah satunya karena disebabkan lulusan kurang kompeten, untuk meningkatkan kompetensi salah satunya dengan

menggunakan model pembelajaran *teaching factory*. Pembelajaran *Teaching Factory* ialah menurut (Marsal, 2012) mengatakan bahwa proses pendekatan pembelajaran *Teaching Factory* merupakan perpaduan pendekatan pembelajaran yang sudah ada yaitu CBT (*Competensi Based Training*) dengan PBT (*Production Based Training*). CBT adalah pelatihan yang didasarkan atas hal-hal yang diharapkan oleh peserta didik di tempat kerja. PBT (*Production Based Training*) adalah proses pembelajaran keahlian yang dirancang dan dilaksanakan berdasarkan prosedur dan standar kerja untuk menghasilkan barang sesuai dengan tuntutan pasar atau konsumen.

Dari berbagai lembaga Pendidikan yang ada, terdapat salah satu lembaga Pendidikan yang lebih berperan dan berhubungan erat dengan masalah tenaga kerja atau SDM yaitu sekolah kejuruan atau Vocational School yang dinamakan Sekolah Menengah Kejuruan (SMK). SMK adalah lembaga pendidikan yang berorientasi pada pembentukan kecakapan hidup (*life skill*), memberikan wawasan pendidikan tentang kewirausahaan, dan melatih peserta didik untuk menguasai ketrampilan yang dibutuhkan oleh dunia kerja dan dunia industri. Tidak hanya ilmu normatif dan adaptif saja yang didapat, peserta didik juga mendapatkan ilmu produktif, dimana peserta didik lebih ditekankan pada praktik keahliannya, sehingga lulusan SMK lebih berpengalaman dan mantap untuk memasuki dunia kerja kelak. SMK harus dapat menyiapkan lulusannya untuk dapat memiliki kemampuan, Ketrampilan, dan sikap sebagai teknisi dan juru dalam bidang industry, usaha dan jasa (Dikmenjur, 2004:7). Pendidikan kejuruan memiliki peran strategis bagi terwujudnya angkatan kerja nasional yang terampil.

Dewasa ini banyak perusahaan yang cenderung lebih senang merekrut lulusan SMA. Hal ini dikarenakan lulusan SMA dianggap lebih memiliki kreatifitas. Pada tahun 1-3 lulusan SMK memang dapat bekerja dengan baik, tetapi kualitas lulusan SMK menurun pada tahun ke-4. Sedangkan kinerja lulusan SMA akan lemah pada tahun pertama, tetapi akan membaik setelah tahun ke-3 bekerja. Hal ini kemudian membuat lulusan SMK menjadi kalah bersaing dengan lulusan SMA

Tabel 1. Tingkat Pengangguran Terbuka (TPT) menurut Pendidikan (Persen)

| Pendidikan Tertinggi yang Ditamatkan | 2013 | | 2014 | |
|---|------|------|------|-----|
| | Feb. | Ags. | Feb | Ags |
| | | | | |

| (1) | (2) | (3) | (4) | (5) |
|------------------|------|-------|------|-------|
| SD Ke bawah | 3,55 | 3,44 | 3,69 | 3,04 |
| SMP | 8,21 | 7,59 | 7,44 | 7,15 |
| SMA | 9,45 | 9,72 | 9,10 | 9,55 |
| SMK | 7,72 | 11,21 | 7,21 | 11,24 |
| Diploma I/II/III | 5,72 | 5,95 | 5,87 | 6,14 |
| Universitas | 5,02 | 5,39 | 4,31 | 5,65 |
| Total | 5,88 | 6,17 | 5,70 | 5,94 |

Sumber : BPS, Diolah dari Sakernas 2013, 2014

Meningkatnya jumlah angka pengangguran terbuka di Indonesia berdasarkan pendidikan telah dijelaskan pada tabel yang bersumber dari BPS pada tahun 2014. Jumlah pengangguran lulusan SMA pada tahun 2014 mencapai 7,15%. Sedangkan jumlah pengangguran lulusan SMK pada tahun 2014 mencapai 11,24. Hal ini membuktikan bahwa lulusan SMK yang difungsikan untuk menjadi tenaga terampil justru malah mempunyai nilai jumlah pengangguran yang lebih tinggi dari pada lulusan SMA. Dapat disimpulkan bahwa meningkatnya jumlah pengangguran di Indonesia, disebabkan kualitas lulusan SMK yang semakin menurun.

Kurikulum yang terus berubah menjadi salah satu factor penyebabnya. Fakta menunjukkan bahwa kurikulum SMK telah diperbaiki beberapa kali agar sesuai dengan dunia industri, tetapi dalam kenyataannya selalu mengalami ketertinggalan dari dunia kerja (Arief., 2012). Kondisi tersebut secara tidak langsung berakibat lembaga pendidikan kejuruan tidak siap dalam menghasilkan lulusan yang berkualitas. Untuk meningkatkan kualitas dan kuantitas lulusan SMK, pendidikan yang paling sesuai adalah dengan menerapkan pendidikan yang berorientasi pada dunia industri dengan penekanan pada pendekatan pembelajaran dan didukung oleh kurikulum yang sesuai. Lembaga kependidikan kejuruan dalam proses pembelajaran harus bisa membuat pendekatan pembelajaran yang sesuai dengan keinginan dunia industri.

Salah satu upaya yang dilakukan Direktorat Jendral PSMK untuk mencapai visi mewujudkan SMK yang dapat menghasilkan tamatan berjiwa wirausaha yang siap kerja,

cerdas, kompetitif, dan memiliki jati diri bangsa, serta mampu mengembangkan keunggulan local dan dapat bersaing dipasar global ialah dengan membuat program *Teaching Factory* (Sudiyanto, 2011).

Marsal (2012) mengatakan bahwa proses pendekatan pembelajaran *Teaching Factory* merupakan perpaduan pendekatan pembelajaran yang sudah ada yaitu CBT (*Competency Based Training*) dengan PBT (*Production Based Training*). CBT adalah pelatihan yang didasarkan atas hal-hal yang diharapkan oleh peserta didik di tempat kerja. PBT (*Production Based Training*) adalah proses pembelajaran keahlian yang dirancang dan dilaksanakan berdasarkan prosedur dan standar kerja untuk menghasilkan barang sesuai dengan tuntutan pasar atau konsumen.

Model pembelajaran *Teaching Factory* mempunyai unsur-unsur atau berbagai komponen yang mendukung kelancaran proses berjalannya kegiatan. *Teaching Factory* tidak akan dapat berjalan seimbang dan berkembang karena komponen tersebut dalam satu kesatuan. Telah dijelaskan oleh Direktorat PSMK (2008), *Teaching Factory* memuat 11 komponen dalam pelaksanaannya, diantaranya; *operational management, human resource, financial, investment, entrepreneur, partnership, curriculum, learning process of product realization, infrastructure, facilities, product/service*.

Teaching Factory adalah suatu konsep kontekstual yang mendekatkan siswa kedalam situasi kerja yang sesungguhnya. Atau *teaching factory* ialah sebuah replica industry, memiliki peralatan industry setara dengan industry, menerapkan standar operasional prosedur yang sama dengan industri, *teaching factory* diharapkan dapat menjembatani kesenjangan kompetensi yang dibutuhkan industry dengan kompetensi yang dipelajari disekolah (Rohman,2012).

Teaching factory merupakan konsep pembelajaran dalam keadaan sesungguhnya sehingga dapat menjembatani kesenjangan kompetensi antara kebutuhan industri dan pengetahuan sekolah. Penerapan *teaching factory* merupakan wujud dari salah satu misi Dirjen-Pembinaan SMK yaitu memberdayakan SMK tersebut untuk mengembangkan kerjasama dengan Industri,dan berbagai lembaga terkait. Sehingga dapat dikatakan *teaching factory* diterapkan untuk mengembangkan pembelajaran yang ada di SMK. SMK harus siap dalam berbagai hal sebelum menerapkan *teaching factory*, karena SMK yang baru menerapkan *teaching factory* cenderung memiliki berbagai kendala dalam pelaksanaannya dan belum berjalan secara maksimal. Di Kabupaten Bantul, SMK yang

belum lama menerapkan *teaching factory* khususnya kompetensi keahlian Teknik Instalansi Tenaga Listrik. Sebagai SMK yang belum lama menerapkan *teaching factory* tentu saja SMK ini memiliki beberapa permasalahan dalam pelaksanaannya.

Berdasarkan pengamatan muncul permasalahan yang berkaitan dengan pelaksanaan model pembelajaran *teaching factory* di SMK Negeri di kabupaten Bantul, diantaranya Rendahnya kompetensi yang dimiliki oleh siswa SMK Negeri di Kabupaten Bantul kompetensi keahlian TITL. Sehingga ada ketidakpercayaan dunia industry kepada lulusan SMK Negeri yang kurang kompeten, Kualitas lulusan SMK yang semakin menurun, sehingga meningkatnya jumlah angka pengangguran di Indonesia, Dalam perencanaan, pengorganisasian, pelaksanaan dan pengawasan *Teaching factory* di SMK Negeri kabupaten bantul siswa belum dilibatkan secara langsung, Kurangnya pemahaman peserta didik dan guru di SMK Negeri terhadap arti dan konsep *teaching factory*, Proses pembelajaran pendekatan *Teaching Factory* di SMK Negeri kabupaten Bantul yang terpisah Antara *CBT (Competensi Based Training)* dan *PBT (Production Based Training)*,.

Permasalahan yang muncul dalam penerapan *teaching factory* di Kompetensi Keahlian Teknik Instalasi Tenaga Listrik SMK Negeri di Kabupaten Bantul telah menginspirasi peneliti untuk mengetahui secara sistematis bagaimana Pelaksanaan model pembelajaran *teaching factory* di SMK tersebut. Peneliti juga ingin mengetahui faktor-faktor apa saja yang dapat menghambat dan mendukung pelaksanaannya. Dari data yang didapatkan diharapkan mampu memaparkan dengan jelas pelaksanaan *teaching factory*. Sehingga *teaching factory* di Kompetensi Keahlian TITL di SMKN di Kabupaten Bantul dapat dikembangkan lebih baik.

Metodologi Penelitian

Sesuai dengan proses penelitiannya, penelitian ini merupakan jenis penelitian deskriptif. Penelitian deskriptif adalah penelitian yang bertujuan menggambarkan secara sistematis, faktual, dan akurat tentang suatu situasi, keadaan atau bidang kajian yang menjadi obyek penelitian. Hasil deskripsi dapat bersifat kuantitatif (menggunakan angka-angka) maupun kualitatif (menggunakan kalimat verbal atau keduanya (Pedoman Lemlit, 2010:13). Sedangkan menurut Sugiyono (2006:11), penelitian deskriptif adalah penelitian yang dilakukan untuk mengetahui nilai variabel mandiri, baik satu variabel

atau lebih (independen) tanpa membuat perbandingan atau menghubungkan dengan variabel lain.

Berdasarkan kedua pengertian tersebut, dapat disimpulkan bahwa penelitian deskriptif adalah penelitian yang dilakukan pada variabel mandiri, tanpa membuat perbandingan dengan variabel lain dengan menggambarkan keadaan yang sedang berlangsung secara sistematis, akurat sesuai fakta yang terjadi tanpa melakukan pengujian hipotesis. Penelitian ini dilakukan untuk menggambarkan keadaan obyek dan fakta-fakta yang bersangkutan serta tidak bermaksud untuk menguji hipotesis tetapi hanya menggambarkan apa adanya tentang pelaksanaan model pembelajaran *Teaching Factory* di Kompetensi Keahlian Teknik Instalasi Tenaga Listrik SMK Negeri di Kabupaten Bantul.

Hasil Penelitian dan Pembahasan

Dari beberapa hasil wawancara pada kepala sekolah, guru, siswa, pelaksanaan model pembelajaran *teaching factory* pada SMK Program Ketenagalistrikan Kompetensi keahlian Teknik Instalasi Tenaga Listrik/TITL di Kabupaten Bantul dengan hasil wawancara sebagai berikut: hampir semua SMKN yang membuka kompetensi keahlian TITL di kabupaten Bantul sangat mendukung pelaksanaan model pembelajaran *teaching factory*, walaupun istilah model *teaching factory* dikenalkan kepada guru belum lama tetapi sesungguhnya model ini sudah lama dilaksanakan di SMK N di Kabupaten Bantul.

Model ini membutuhkan sarana dan prasarana diantaranya; (1) peralatan dan bahan praktik sekolah menganggarkan dana dari BOSNAS (bantuan operasional siswa nasional), BOSDA (bantuan operasional siswa daerah propinsi) yang jumlahnya cukup besar tiap tahunnya hampir 500 juta rupiah, (2) peningkatan bangunan laboratorium/bengkel dari standart minimal ke standar industry yang tadinya satu bengkel digunakan untuk praktik unit dasar listrik, unit perbaikan alat rumah tangga, unit pengendali motor listrik, unit instalasi listrik, diupayakan masing masing unit praktik mempunyai bangunan laboratorium sehingga siswa bisa praktik sesuai dengan standar industry.

Hasil wawancara dengan guru kompetensi keahlian TIPTL pada SMK di Kabupaten Bantul;

1. Rencana pelaksanaan pembelajaran (RPP) sudah dituangkan model pembelajaran *teaching factory* dengan urutan. Urutan RPP; kompetensi inti, kompetensi dasar, indikator pencapaian kompetensi, tujuan pembelajaran, materi pembelajaran, model pembelajaran (di catumkan model pembelajaran *teaching factory*), kegiatan pelaksanaan pembelajaran, alat, media, sumber belajar, penilaian hasil belajar.
2. Pelaksanaan pembelajaran mengacu pada RPP yang telah dibuat sebagai pedoman pelaksanaan. Urutan pelaksanaan pembelajaran *teaching factory* yaitu; (a) pendahuluan, guru mengkosdisikan siswa untuk belajar, guru menyampaikan tujuan pembelajaran dan indikator yg akan dicapai, (b) inti, melaksanakan langkah –langkah pembelajaran sesuai standar kerja di pabrik, (c) penutup, guru menyimpulkan pembelajaran.
3. Evaluasi pembelajaran mengacu pada RPP yang telah dibuat, (untuk pedoman evaluasi pelaksanaan) agar anak bisa kompeten. Unsur-unsur yang dinilai yaitu; sikap, pengetahuan, dan ketrampilan. Tindak lanjut terhadap siswa yang belum tuntas/belum kompeten dalam metode *teaching factory* ini dilakukan remidi.
4. Faktor pendukung model pembelajaran ini; semangat guru untuk mendukung program ini, semangat siswa untuk praktik, DUDI sebagai mitra kerja.
5. Faktor penghambat untuk model ini ialah: (a) sarana prasarana yang ketinggalan dengan perkembangan industry. Cara mengatasinya yaitu melakukan kerja sama dengan biro tenaga listrik dan bengkel peralatan alat rumah tangga, (b) untuk mitra kerja dengan biro tenaga listrik yang mengerjakan proyek pemerintah, kegiatan hanya pada akhir tahun (bulan juli sampai bulan desember) cara mengatasinya dengan menjadwalkan praktik siswa di idustri pada bulan tersebut, (c) kendala teknis pembelanjaan yang seharusnya dana bosnas maupun bosda yang seharusnya sudah bisa dibelanjakan pada bulan maret akan tetapi karena aturan untuk dana yang besar diatas 200 juta rupiah harus system lelang sehingga baru pada bulang September bisa dibelanjakan.

Semua guru dan siswa puas dengan model pembelajaran *teaching factory* karena dengan model ini siswa maupun guru mudah untuk mencapai kompetensi sesuai dengan standar pabrik diharapkan ketika siswa lulus nanti ketika bekerja di industry sudah tidak canggung lagi karena sudah terbiasa dengan suasana industry. Semua SMK kompetensi keahlian TITL mengembangkan model *teaching factory* enam langkah yaitu: (1) menerima order, (2) menganalisa order, (3) menyatakan sisap melaksanakan order, (4) mengerjakan order, (5) melakukan *quality control*, dan (6) menyerahkan order. Sebelum siklus itu dilakukan oleh guru terhadap siswa melakukan kesepakatan menciptakan

iklim industry di sekolah, melakukan latihan berkomunikasi, berlatih menganalisa order. Model pembelajaran Teaching factory ini dilaksanakan di kelas XI semester dua dan kelas XII semester pertama.

Kesimpulan

Dari hasil penelitian pelaksanaan model pembelajaran teaching factory pada SMKN Kabupaten Bantul kompetensi keahlian teknik instalasi tenaga listrik dapat disimpulkan bahwa :

1. Hampir semua SMKN kompetensi keahlian TITL mendukung pelaksanaan model pembelajaran teaching factory dengan menyiapkan sarana prasarana praktek.
2. Guru telah menyiapkan dari perencanaan, pelaksanaan, Evaluasi model pembelajaran teaching factory
3. Siswa menyambut pelaksanaan model pembelajaran ini dengan senang hati.
4. Faktor pendukung model ini perlu diupayakan dan ditingkatkan sedangkan faktor penghambat harus segera dicari jalan keluarnya.
5. Model pembelajaran teaching factory enam langkah yang dikembangkan di SMKN kabupaten bantul yaitu; (1) menerima order, (2) menganalisa order, (3) menyatakan siap melaksanakan order, (4) mengerjakan order, (5) melakukan *quality control*, dan (6) menyerahkan order.

Daftar Pustaka

- Arief., P. T. (2012). Hubungan antara Bidang keahlian teknik dengan prestasi praktik industri siswa SMK perindustrian Yogyakarta. Lumbung Pustaka UNY di akses pada 12 Maret 2014.
- Dedi Supriadi. (1996). Ketrampilan Menjelang 2020 untuk Era Global. Pengembangan diklat Kejuruan di Indonesia, Jakarta, Depdikbud
- Doni Muhandiyansyah; Alda R. Zulaiha; Wahyu D. (2010). Inovasi dalam Sistem Pendidikan: KPK Direktorat Penelitian dan Pengembangan.
- Hadlock, H., Wells, Hall, J., et al. (2008). *From Practice to Entrepreneurship: Rethinking the Learning Factory Approach*. Proceedings of the 2008 IAJC-LJME International Conference ISBN 978-1-60643-379-9.
- Kuswanto, A. (2014). *Teaching Factory Rencana dan Nilai Entrepreneurship*. Yogyakarta: Graha Ilmu.

- Martawijaya, D. H. (2012). Developing A Teaching Factory Learning Model To Improve Production Competencies Among Mechanical Engineering Students In A Vocational Senior High School. *Departement of Mechanical Engineering Indonesia University of Education*.
- Nasional, D. P. (2008). Kamus Besar Bahasa Indonesia: Pusat Bahasa,
- Nugraha, L. A. (2011). *Pengaruh Modl Usaha, Tingkat Pendidikan, dan Sikap Kewirausahaan terhadap Pendapatan Usaha Pengusaha Industri Kerajinan Perak di Desa Sodo Kecamatan Paliyan Kabupaten Gunung Kidul*. Yogyakarta: Universitas Negeri Yogyakarta.
- Sudiyanto, d. (2011). *Teaching Factory di SMK ST. Mikael Surakarta*. Universitas Negeri Yogyakarta, Yogyakarta.

**PENDIDIKAN *LIFE SKILLS* KERAJINAN PERAK KOTAGEDE
DI SEKOLAH DASAR MUHAMMADIYAH BODON KOTAGEDE
YOGYAKARTA**

Andi Budi Rahmawanto¹ *andibodon86@gmail.com*
Budi Santosa² *budi.santosa@mpv.uad.ac.id*
Muhammad Sayuti² *muhammad.sayuti@mpv.uad.ac.id*

¹ *SD Muhammadiyah Bodon, Bantul*
² *Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRAK

Penelitian ini bertujuan untuk mengetahui minat siswa terhadap pembelajaran kerajinan perak kotagede, untuk mengetahui dukungan terhadap program pembelajaran, serta untuk mengetahui proses pembelajaran kerajinan perak di SD Muhammadiyah Bodon Kotagede Yogyakarta. Metode yang dilakukan dalam pengumpulan data penelitian ini adalah observasi, wawancara secara mendalam dan dokumentasi. Analisis data menggunakan deskriptif kualitatif, dengan subyek penelitian kepala sekolah, guru, pengrajin, orangtua siswa dan siswa. Hasil penelitian menunjukkan : (1) pada tahun pertama pembelajaran di sekolah berlangsung dengan baik, (2) pada tahun kedua pembelajaran kerajinan perak dihentikan karena masalah biaya praktik yang cukup tinggi, (3) pada tahun ketiga pembelajaran kerajinan perak dilaksanakan kembali dengan adanya perubahan-perubahan, (4) adanya dukungan pembelajaran kerajinan perak dari pihak pengrajin, produsen kerajinan dan wali siswa, (5) minat siswa dalam mengikuti pembelajaran cukup bagus.

Kata kunci: *proses pembelajaran kerajinan perak, dukungan pembelajaran, minat siswa*

Pendahuluan

Pemerintah Indonesia menyadari betapa pentingnya pendidikan yang berkualitas bagi bangsa Indonesia. Pemerintah telah menetapkan Undang-undang Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional. Selanjutnya untuk mewujudkan pendidikan yang bermutu maka dikeluarkanlah Peraturan Pemerintah Nomor 19 Tahun 2005 tentang Standar Nasional Pendidikan. Selain itu pemerintah selalu berupaya dalam hal peningkatan kualitas pendidikan nasional melalui berbagai program pendidikan. Termasuk di dalamnya adalah pola pembelajaran yang tidak hanya berorientasi pada teori saja, melainkan juga pembelajaran praktik keahlian yang seharusnya diterapkan

untuk melengkapi pola pembelajaran teori, khususnya untuk Sekolah Dasar. Salah satu contohnya dengan melaksanakan pembelajaran kearifan lokal. Potensi yang ada pada daerah tertentu sebaiknya dimasukkan ke dalam kegiatan belajar mengajar di sekolah. Sekolah dan guru hendaknya memahami karakteristik dan ciri khas masyarakat di lingkungan sekolah, terutama dalam hal mata pencaharian masyarakat. Ciri khas dalam kegiatan ekonomi masyarakat hendaknya dimasukkan sebagai salah satu bagian dari mata pelajaran di sekolah. Contohnya adalah di Sekolah Dasar Muhammadiyah Bodon Kotagede Yogyakarta yang memasukkan pembelajaran kerajinan perak kotagede sebagai salah satu mata pelajaran *life skills*.

Kotagede adalah salah satu wilayah di Daerah Istimewa Yogyakarta yang memiliki ciri khas dalam kegiatan perekonomiannya yang berbeda dengan daerah yang lain di Yogyakarta. Perbedaannya yaitu pada mata pencaharian masyarakatnya, diketahui bahwa masyarakat Kotagede sebagian besar adalah sebagai pengrajin perak. Kerajinan perak merupakan mata pencaharian yang sampai saat ini masih dilakukan oleh sebagian masyarakat. Kerajinan perak ini dilakukan masyarakat sejak abad ke-16 Masehi.

Sekolah Dasar Muhammadiyah Bodon yang terletak di kawasan Kotagede memberikan pendidikan *life skills* kerajinan perak pada siswa-siswanya. Sejak tahun pelajaran 2014-2015 pembelajaran *life skills* kerajinan perak ditetapkan sebagai salah satu kegiatan pembelajaran siswa. Pada awalnya pembelajaran ini diperuntukkan hanya untuk siswa-siswa tertentu saja, yaitu bagi siswa yang orangtuanya adalah pengrajin perak dan jumlah siswanya hanya 5 anak. Kemudian pada tahun pelajaran 2016-2017 jumlah peserta didik yang diikutkan ditingkatkan menjadi 36 siswa yaitu untuk kelas dua. Harapannya dari kelas dua ini kemudian berlanjut pada kelas selanjutnya hingga kelas enam.

Dari uraian di atas peneliti dalam melaksanakan penelitian terhadap siswa Sekolah Dasar Muhammadiyah Bodon dengan judul “Pendidikan *Life Skills* Kerajinan Perak Kotagede di Sekolah Dasar Muhammadiyah Bodon Kotagede Yogyakarta”.

Metode Penelitian

Penelitian ini adalah penelitian yang bersifat eksplorasi (pencarian, penjelajahan, menemukan, memahami), dengan rancangan penelitian deskriptif kualitatif. Studi kasus sudah banyak digunakan dalam berbagai penelitian. Penelitian studi kasus memiliki nilai tambah tentang fenomena individual, organisasi, sosial dan politik (Yin, 2008).

Penelitian ini dilaksanakan dengan menggunakan metode penelitian deskriptif kualitatif. Keterlibatan peneliti secara langsung sangat dibutuhkan sebagai instrument kunci, yaitu peneliti melakukan perencanaan, observasi, menganalisa data dan membuat laporan penelitian. Sehingga keberadaan peneliti di lokasi penelitian sangat diperlukan. Sesuai dengan prinsip-prinsip penelitian kualitatif bahwa peneliti harus mampu menciptakan hubungan yang baik diantara subyek penelitian.

Pengumpulan data dan dokumen dilakukan untuk menentukan dan memilih data yang sesuai dengan tujuan penelitian, sehingga dapat membantu untuk memahami fenomena, membuat interpretasi dan memvalidasi data. Analisa data dilakukan dengan cara mengorganisasikan data, menjabarkannya ke dalam bagian-bagian, menyusun ke dalam pola, kemudian dilakukan pemilihan bagian yang penting dan yang akan dipelajari, setelah itu membuat kesimpulan yang dapat dipahami oleh orang lain.

Hasil dan Pembahasan

Sekolah Dasar Muhammadiyah Bodon Kotagede Yogyakarta dalam melaksanakan program pembelajaran *life skills* kerajinan perak kotagede, diawali dengan adanya komunikasi kepala sekolah dengan seorang pengrajin perak. Kepala Sekolah menyampaikan keinginannya untuk memasukkan pembelajaran ketrampilan pembuatan kerajinan perak kepada seorang pengrajin. Rencana itu disambut baik oleh pengrajin. Bahkan pengrajin mengucapkan terimakasih kepada kepala sekolah, karena belum pernah ada sekolah dasar yang memasukkan ketrampilan perak sebagai salah satu pelajaran sekolah.

Setelah adanya pembicaraan anatar kepala sekolah dan pengrajin, kemudian ditunjuklah seorang guru sebagai penanggung jawab program keterampilan perak. Guru yang ditunjuk oleh kepala sekolah diberikan amanah untuk mengelola program pembelajaran yang meliputi perencanaan, menyusun kebutuhan yang diperlukan termasuk mencari seorang pengrajin sebagai guru pendamping praktik produksi, serta melaksanakan program pembelajaran.

Sebagai langkah awal dalam pembelajaran sekolah membeli beberapa alat kerajinan dan beberapa bahan yang dibutuhkan untuk praktik produksi. Kemudian dipilih lima siswa untuk mengikuti pembelajaran kerajinan perak. Lima siswa yang dipilih adalah mereka yang pekerjaan orangtuanya adalah pengrajin. Alasan ditentukannya lima siswa dan harus orangtuanya sebagai pengrajin karena arahan dari pengrajin. Menurut

pengrajin yang akan menjadi pembimbing agar pada praktik pembuatan nantinya dapat terlaksana dengan efektif.

Pada awalnya, yaitu pada tahun pelajaran 2014-2015, pembelajaran dilaksanakan dua kali dalam satu minggu. Pembelajaran lebih banyak praktik daripada teori. Siswa yang mengikuti program tersebut semuanya adalah laki-laki. Pada bulan Mei tahun 2015 mereka pernah mengikuti pameran pendidikan yang diselenggarakan oleh Dinas Pendidikan Dasar Kabupaten Bantul. Mereka menunjukkan kepada audiens bagaimana caranya membuat cincin perak bakar dengan berbagai ukuran.

Pada tahun ajaran 2015-2016, program pembelajaran kerajinan perak dihentikan oleh sekolah. Alasannya karena biaya praktik produksi yang banyak. Pada waktu itu sekali praktik produksi membutuhkan dana sekitar Rp 200.000, sehingga sekolah merasa keberatan dengan dana yang harus dikeluarkan. Selain itu pengrajin yang menjadi pendamping praktik produksi juga mengundurkan diri dikarenakan semangat siswa yang menurun.

Pada tahun pelajaran 2016-2017, guru yang menjadi penanggung jawab program kerajinan perak mengusulkan kepada kepala sekolah untuk melaksanakan kembali pembelajaran kerajinan perak di sekolah. Usulan tersebut diterima oleh kepala sekolah asalkan ada perubahan-perubahan dalam proses kegiatan belajar mengajarnya. Maka dimulailah kembali pembelajaran kerajinan perak tersebut pada tahun pelajaran 2016-2017. Guru yang sebagai penanggung jawab program kemudian melakukan perubahan-perubahan. Diantaranya, (1) dibuatlah rencana pembelajaran yang meliputi teori dan praktik secara seimbang, (2) menggandeng bengkel produksi perak sebagai tempat praktik, (3) praktik produksi tidak hanya cincin perak bakar saja, (4) siswa yang mengikuti program adalah siswa kelas dua, dengan harapan dapat dilanjutkan pada jenjang kelas berikutnya.

Dalam pelaksanaan program pembelajaran kerajinan perak ternyata mendapatkan dukungan dari wali siswa dan dari bengkel produksi kerajinan perak itu sendiri. Harapan dari mereka program pembelajaran ini terus dilaksanakan dan dikembangkan. Hasil ahir dari program ini diharapkan akan mampu mencetak para pengrajin perak yang lebih modern pada masa yang akan datang. Wali siswa dan pemilik bengkel produksi kerajinan perak sangat mendukung program ini disebabkan oleh semakin menurunnya jumlah pengrajin perak kotagede.

Kesimpulan

Kesimpulan dari penelitian ini adalah pertama, sekolah dasar muhammadiyah bodon dalam melaksanakan program pendidikan *life skills* kerajinan perak diawali dari adanya komunikasi kepala sekolah dengan pengrajin. Ide dari kepala sekolah mendapatkan apresiasi yang baik dari pengrajin, sehingga pengrajin dengan semangat membantu sekolah untuk melaksanakan program pembelajaran kerajinan perak kepada para siswa dengan didampingi dan dibantu oleh seorang guru. Kedua, dalam kurun waktu tiga tahun, pembelajaran kerajinan perak sempat terhenti pada tahun kedua. Diberhentikannya program ini disebabkan oleh pola pembelajaran yang lebih banyak praktiknya daripada teorinya yang berakibat biaya yang sangat banyak untuk membeli bahan-bahan praktik, dan belum adanya kerjasama dengan produsen kerajinan, juga menurunnya minat siswa. Ketiga, adanya dukungan yang sangat bagus dari para wali siswa dan produsen kerajinan perak terhadap program pembelajaran kerajinan perak. Dukungan dari para wali siswa dan produsen ini disebabkan oleh rasa kekhawatiran dengan adanya fakta semakin berkurangnya pengrajin perak di kotagede Yogyakarta. Keempat, minat siswa pada tahun pelajaran 2016-2017 terhadap pembelajaran *life skills* ini cukup baik, karena pola pembelajaran yang seimbang antara teori dan praktik serta pembelajaran yang tidak hanya di sekolah saja tetapi juga di tempat produsen kerajinan perak.

Saran

Disarankan kepada sekolah dasar muhammadiyah bodon agar senantiasa melakukan inovasi pembelajaran *life skills* kerajinan perak. Inovasi pada pola pembelajaran yang menyenangkan sehingga tidak menimbulkan kebosanan pada siswa. Kemudian inovasi pada pelaksanaan praktik produksi, agar menjalin kerjasama dengan beberapa produsen kerajinan perak, tidak hanya kepada satu produsen saja, sehingga siswa akan bertambah pengalaman dalam pembuatan berbagai jenis kerajinan.

Kepada wali siswa disarankan agar membantu para siswa untuk menambah wawasan tentang kerajinan perak, dengan cara memberikan berbagai gambar produksi kerajinan perak, karena banyaknya jenis kerajinan yang dibuat oleh para pengrajin perak kotagede.

Kepada produsen kerajinan perak disarankan agar menambah jam praktik produksi kepada para siswa, sehingga semua siswa dapat melaksanakan praktik produksi pembuatan kerajinan.

Daftar PUSTAKA

- Ahmadi. (2013). *Manajemen Kurikulum: Pendidikan Kecakapan Hidup*. Yogyakarta: Pustaka Ifada.
- Anwar. (2015). *Pendidikan Kecakapan Hidup (Life Skills Education)*. Bandung: ALFABETA.
- Brown, Alan (2007). *Tehcnical And Educational Education And Training Series 5: Identities At Work*. UNEVOC.
- Center for Educational Research and Innovation, (2009). *Working Out Changer Systemic Innovation In Vocational Education And Training*. OECD.
- Hanavi, Ivan. (2014). Pendidikan Teknik dan Vokasional. Bandung: PT Refika Aditama.
- Moeloeng, Lexy J. (2017). *Metodologi Penelitian Kualitatif*. Bandung: PT Remaja Rosda Karya
- Miles, Mattew B ,A. Michael Huberman. (1992). *Analisis Data Kualitatif*. Jakarta: Universitas Indonesia UI-Press
- Soekiman, Djoko Dkk. (1986). *Sejarah Kota Yogyakarta*. Jakarta: Departemen Pendidikan dan Kebudayaan Direktorat Sejarah dan Nilai Tradisional
- Yin, R.K. (2008). *Studi Kasus: Desain dan Metode*. Jakarta: PT Raja Grafindo Persada.

**THE EFFECTIVENESS OF LIFE SKILLS EDUCATION IN FOSTERING
ENTREPRENEURSHIP VALUES AND INTEREST
OF PRIMARY SCHOOL STUDENTS**

Bachtiar Kurniawan¹ *bachtiar.kurniawan@gmail.com*
Muhammad Sayuti² *muhammad.sayuti@mpv.uad.ac.id*
Tri Kuat² *sonytrikuat@gmail.com*

¹*SD Muhammadiyah Bodon, Bantul*

²*Magister Pendidikan Vokasi Universitas Ahmad Dahlan*

ABSTRACT

Entrepreneurship is believed as one of the pivotal attributes in a more competitive world. Therefore, early education to foster entrepreneurial values is fundamental in primary education. The purpose of this research is to find out and analyze the effect of life skills education in fostering entrepreneurship values and interest of elementary school students. Life skills education in this study cover in school entrepreneurial activities which include batik learning, cooking, and stringing. The entrepreneurship values are measured by eight indicators of self directing, creativity, risk taking, leadership, honesty, responsibility, team work and communication. In the current study, students' interest in entrepreneurship are indicated by four indicators of contented, affection, involvement and attention. The methods used in this research is quantitative survey research. The results of the analysis reveal that life skills education contributed to entrepreneurship values at the level of $\beta = 0.316$, $t (3.377)$, $p < 0.001$ and entrepreneurship interest $\beta = 0.202$ $t (2.308)$, $p < 0.05$. It can be concluded that there was contribution of life skills educational in fostering entrepreneurship values of the primary school students. The R square produced in the Model Summary is 0.115 which means that life skills education contribute 11.5% in fostering entrepreneurship values while life skills education contribute 6% of students interest in entrepreneurship.

Keywords: life skills education, entrepreneurship values and interest, primary school, Indonesia

Introduction

The humans require education in education, lived his life with humans can develop himself through the learning process, in line with the function of national education are contained in the legislation of the Republic of Indonesia No. 20 years of 2003 about the system of national education (Undang-Undang Sisdiknas, 2003) i.e. the development the ability to form character and the civilization of the peoples dignity in the framework of the intellectual life of the nation, aimed at the development of potential participants students in order to become a man of faith and piety to God Almighty, precious, healthy, have learned, accomplished, creative, independent, and become citizens of a democratic and accountable.

Blazely (1997) mentioned that the tendency of learning at school is very theoretic and not related to the environment in which are not able to apply what is learned in school to solve the problems that exist in everyday life. The educational process nowadays tend to be on achieving mastery of the material in each subject and haven't come to the what and how of learning the connectedness in daily life and can be used to solve problems there, resulting in students becoming less eager in his studies because it felt no benefit from what he had learned.

The Government through the Ministry of national education (Depdiknas, 2001) provides life skills education programs at all levels of education to accommodate the problems above. The introduction of life skills education on all types and level of education is basically driven by the assumption that the relevance of education with a real lifeless closely. Education life skills (life skills) is an education that gives personal skills, social skills, intellectual prowess, and Polytechnic skills for work or independent business (Undang-Undang, 2003). The World Health Organization (1993) mention, life skills are abilities for adaptive and positive behavior that makes a person can complete everyday needs and challenges effectively.

The research at Harvard University United States shows that a person's success is not determined from the knowledge and technical ability (hard skills) only about 20%, but more than the ability to manage self and others (soft skills) that is of 80% (Akbar, 2000). The Agency's research and development center of the Balai Pengembangan Kurikulum (2011) mentioned that the cultivation of the values of entrepreneurship can be integrated into the process of learning a conditioned that the values can be the attitude and behavior in everyday life. Cunha and Heckman estimate investment on non-cognitive skills are most effective is in its infancy (9 to 11 years) where productivity

themselves became stronger when the kids grow up (Huber, Sloof, & Van Praag, 2014). The role of families is important in fostering interest in entrepreneurship for learners. The entrepreneurship education can take place from an early age in the family environment.

The result of the researchers initiative do more research to find out the values and interest in entrepreneurship elementary school.

Research Methodology

The methods are used in this research is quantitative research. This research was conducted at the primary school Muhammadiyah in Banguntapan which carry out educational learning life skills with the total sample as many as 100 respondents. Data collection through a questionnaire with Likert scale using the scoring measurement. The data analysis technique used is test validity and reliability of research statement then continued with normality test and linearity data obtained. After that hypothesis testing is done with a simple regression test.

Results and Discussion

The test of the validity was done by correlating the respective score items with a score total. The total score is the sum of all items. Statement items correlated significantly with total scores indicate items that are capable of providing support in exposing what it wants to be disclosed if the value is $\text{sig} < 0.05$ then instrument or questions items correlated significantly towards the score total (declared valid).

The reliability test is used to find out the level of consistently now being used so that the results are reliable. In this study, a test of reliability is measured by using a value from the Cronbach's Alpha.

Table 1 – The Validity Test of the Variables Values Entrepreneurship Students

| Correlations | | | | | |
|--------------|---------------------|--------|--------|---------------------|-------|
| vtotal | | | vtotal | | |
| y1 | Pearson Correlation | ,101 | y16 | Pearson Correlation | ,307 |
| | Sig. (2-tailed) | ,342 | | Sig. (2-tailed) | ,003 |
| | N | 90 | | N | 90 |
| y2 | Pearson Correlation | ,395** | y17 | Pearson Correlation | ,326 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,002 |
| | N | 90 | | N | 90 |
| y3 | Pearson Correlation | ,071 | y18 | Pearson Correlation | ,275 |
| | Sig. (2-tailed) | ,505 | | Sig. (2-tailed) | ,009 |
| | N | 90 | | N | 90 |
| y4 | Pearson Correlation | ,277** | y19 | Pearson Correlation | ,035 |
| | Sig. (2-tailed) | ,008 | | Sig. (2-tailed) | ,740 |
| | N | 90 | | N | 90 |
| y5 | Pearson Correlation | ,362** | y20 | Pearson Correlation | ,216 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,041 |
| | N | 90 | | N | 90 |
| y6 | Pearson Correlation | ,183 | y21 | Pearson Correlation | ,282 |
| | Sig. (2-tailed) | ,085 | | Sig. (2-tailed) | ,007 |
| | N | 90 | | N | 90 |
| y7 | Pearson Correlation | ,220 | y22 | Pearson Correlation | ,252 |
| | Sig. (2-tailed) | ,037 | | Sig. (2-tailed) | ,016 |
| | N | 90 | | N | 90 |
| y8 | Pearson Correlation | ,375** | y23 | Pearson Correlation | -,076 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,475 |
| | N | 90 | | N | 90 |
| y9 | Pearson Correlation | ,116 | y24 | Pearson Correlation | ,301 |
| | Sig. (2-tailed) | ,276 | | Sig. (2-tailed) | ,004 |
| | N | 90 | | N | 90 |
| y10 | Pearson Correlation | ,373** | y25 | Pearson Correlation | ,221 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,036 |
| | N | 90 | | N | 90 |
| y11 | Pearson Correlation | ,229 | y26 | Pearson Correlation | ,439 |
| | Sig. (2-tailed) | ,030 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y12 | Pearson Correlation | ,237 | y27 | Pearson Correlation | ,317 |
| | Sig. (2-tailed) | ,024 | | Sig. (2-tailed) | ,002 |
| | N | 90 | | N | 90 |
| y13 | Pearson Correlation | ,045 | y28 | Pearson Correlation | ,429 |
| | Sig. (2-tailed) | ,672 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y14 | Pearson Correlation | ,189 | y29 | Pearson Correlation | ,404 |
| | Sig. (2-tailed) | ,074 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y15 | Pearson Correlation | ,504** | y30 | Pearson Correlation | ,129 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,226 |
| | N | 90 | | N | 90 |

Table 2 – The Reabilitas Test of the Variable Values Entrepreneurship Students

| Reliability Statistics | |
|------------------------|------------|
| Cronbach's Alpha | N of Items |
| ,638 | 21 |

The validity of the test results are shown in table 1 above it can be concluded that based on the current significance of obtained from a 30th statement, there are 21st statement that the value of significance < 0.05 so the statement is declared valid as instruments of variable values entrepreneurship students. Table 2 shows the value of the Cronbach's Alpha test of reliability is 0638 this indicates that the reliability question form (reliable).

The validity of the test results is against dependent variables to interest students entrepreneurship shows that the 13th statement to be tested has the value significance < 0.05 . The statement is declared valid as instruments of the now of variable interest student entrepreneurship (see table 3). The value of the Cronbach's variable from the Alpha test of reliability is 0.702 it indicates in the reliable question form (see table 4).

Table 3 – The Validity Test of the Variable Interest in Entrepreneurship Students

| Correlations | | | | | |
|--------------|---------------------|-------------|--------|---------------------|-------------|
| ytotal | | | ytotal | | |
| y1 | Pearson Correlation | ,596 | y8 | Pearson Correlation | ,358 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,001 |
| | N | 90 | | N | 90 |
| y2 | Pearson Correlation | ,550 | y9 | Pearson Correlation | ,473 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y3 | Pearson Correlation | ,485 | y10 | Pearson Correlation | ,480 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y4 | Pearson Correlation | ,409 | y11 | Pearson Correlation | ,262 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,013 |
| | N | 90 | | N | 90 |
| y5 | Pearson Correlation | ,515 | y12 | Pearson Correlation | ,395 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y6 | Pearson Correlation | ,623 | y13 | Pearson Correlation | ,514 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y7 | Pearson Correlation | ,416 | ytotal | Pearson Correlation | 1 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | |
| | N | 90 | | N | 90 |

Table 4 – The Reabilitas Test of the Variable Interest in Entrepreneurship Students

| Reliability Statistics | | |
|------------------------|------------|--|
| Cronbach's Alpha | N of Items | |
| ,702 | 13 | |

Studying of the table 5 can be inferred that the 15 statements tested all of them generate value significance < 0.05 so all the valid statements as an instrument of free variables are now the effectiveness of learning life skills. The results of the analysis of the value of the Cronbach's Alpha is 0.821 this shows that now are also reliability (reliable) to be used to measure the effectiveness of the independent variables of learning life skills (see table 6).

Table 5 – The Validity Test of the Variable Effectiveness of Learning Life Skills

| Correlations | | | | | |
|--------------|---------------------|-------------|--------|---------------------|-------------|
| ytotal | | | ytotal | | |
| y1 | Pearson Correlation | ,474 | y8 | Pearson Correlation | ,376 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y2 | Pearson Correlation | ,616 | y9 | Pearson Correlation | ,650 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y3 | Pearson Correlation | ,577 | y10 | Pearson Correlation | ,608 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y4 | Pearson Correlation | ,521 | y11 | Pearson Correlation | ,549 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y5 | Pearson Correlation | ,655 | y12 | Pearson Correlation | ,533 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y6 | Pearson Correlation | ,617 | y13 | Pearson Correlation | ,624 |
| | Sig. (2-tailed) | ,000 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| y7 | Pearson Correlation | ,358 | y14 | Pearson Correlation | ,480 |
| | Sig. (2-tailed) | ,001 | | Sig. (2-tailed) | ,000 |
| | N | 90 | | N | 90 |
| | | | y15 | Pearson Correlation | ,543 |
| | | | | Sig. (2-tailed) | ,000 |
| | | | | N | 90 |

Table 6 – The Reabilitas Test of the Variable Effectiveness of Learning Life Skills

| Reliability Statistics | |
|------------------------|------------|
| Cronbach's Alpha | N of Items |
| ,821 | 15 |

The analysis is shown before doing the regression test. The first normality test is done to determine whether the data has been collected Gaussian. The analysis is shown tables 7 and 8 the significance value obtained is greater than 0.05 that it can be concluded that data Gaussian.

Table 7 – The Normality Test the Effectiveness of Life Skills with values

| One-Sample Kolmogorov-Smirnov Test | | |
|------------------------------------|----------------|-------------------------|
| | | Unstandardized Residual |
| N | | 90 |
| Normal Parameters ^{a,b} | Mean | 0E-7 |
| | Std. Deviation | 4,63301516 |
| | Absolute | ,067 |
| Most Extreme Differences | Positive | ,067 |
| | Negative | -,053 |
| Kolmogorov-Smirnov Z | | ,633 |
| Asymp. Sig. (2-tailed) | | ,818 |

a. Test distribution is Normal.

b. Calculated from data.

Table 8 – The Normality Test the Effectiveness of Life Skills with an Interest in Entrepreneurship

| One-Sample Kolmogorov-Smirnov Test | | |
|------------------------------------|----------------|-------------------------|
| | | Unstandardized Residual |
| N | | 90 |
| Normal Parameters ^{a,b} | Mean | 0E-7 |
| | Std. Deviation | 4,34066926 |
| | Absolute | ,068 |
| Most Extreme Differences | Positive | ,058 |
| | Negative | -,068 |
| Kolmogorov-Smirnov Z | | ,645 |
| Asymp. Sig. (2-tailed) | | ,799 |

a. Test distribution is Normal.

b. Calculated from data.

The Linearity test is used to find out whether independent variables (X 1) and a dependent variable (Y1 and Y2) have a linear relationship significantly or not. The results of testing linearity variables X 1 and Y1 Deviation from the results obtained with the significance of the Linear $0096 > 0.05$ (see table 9). The Effectiveness life skills education and values Entrepreneurship have a linear relationship. The results of linearity

test variables X 1 and Y2 deviation from the results obtained with the significance of the Linear $0492 > 0.05$ (see table 10). The effectiveness and interest in Entrepreneurship have also a linear relationship.

Table 9 – The Linearity Test Variable X₁ dan Y₁

| | | Sum of Squares | df | Mean Square | F | Sig. | |
|---|----------------|--------------------------|----------|-------------|---------|--------|------|
| | | (Combined) | 867,264 | 22 | 39,421 | 2,046 | ,013 |
| Nilai-Nilai Berwirausaha * Efektivitas Life Skills | Between Groups | Linearity | 247,586 | 1 | 247,586 | 12,852 | ,001 |
| | | Deviation from Linearity | 619,678 | 21 | 29,508 | 1,532 | ,096 |
| | Within Groups | | 1290,692 | 67 | 19,264 | | |
| Total | | | 2157,956 | 89 | | | |

Table 10 - The Linearity Test Variable X₁ dan Y₂

| | | Sum of Squares | df | Mean Square | F | Sig. | |
|---|----------------|--------------------------|----------|-------------|---------|-------|------|
| | | (Combined) | 497,280 | 22 | 22,604 | 1,182 | ,293 |
| Minat Berwirausaha * Efektivitas Life Skills | Between Groups | Linearity | 101,515 | 1 | 101,515 | 5,309 | ,024 |
| | | Deviation from Linearity | 395,765 | 21 | 18,846 | ,986 | ,492 |
| | Within Groups | | 1281,120 | 67 | 19,121 | | |
| Total | | | 1778,400 | 89 | | | |

The formulate hypothesis test that the effectiveness of life skills education in fostering values and entrepreneurial is interest in elementary school of Muhammadiyah.

Table 11 - The Results of The Regression Variable X₁ dan Y₁

| Model Summary ^b | | | | | |
|----------------------------|-------------------|----------|-------------------|----------------------------|--|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | |
| 1 | ,339 ^a | ,115 | ,105 | 4,659 | |

a. Predictors: (Constant), Efektivitas Life Skills
b. Dependent Variable: Nilai-Nilai Berwirausaha

| ANOVA ^a | | | | | | |
|--------------------|------------|----------------|----|-------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 247,586 | 1 | 247,586 | 11,405 | ,001 ^b |
| | Residual | 1910,370 | 88 | 21,709 | | |
| | Total | 2157,956 | 89 | | | |

a. Dependent Variable: Nilai-Nilai Berwirausaha
b. Predictors: (Constant), Efektivitas Life Skills

| Coefficients ^a | | | | | | |
|---------------------------|-------------------------|-----------------------------|------------|---------------------------|-------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | | Sig. |
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 43,579 | 4,586 | | 9,502 | ,000 |
| | Efektivitas Life Skills | ,316 | ,093 | ,339 | 3,377 | ,001 |

a. Dependent Variable: Nilai-Nilai Berwirausaha

The hypothesis was tested:

H_0 = there is no influence of learning life skills in fostering entrepreneurship students elementary school of Muhammadiyah.

H_1 = there is the influence of learning life skills in fostering entrepreneurship students elementary school of Muhammadiyah.

Table 11 shows the result of the value of the Coefficients is known the value of Sig $0.001 < 0.05$. It can be inferred that there is an influence of learning life skills in fostering entrepreneurship students grades primary school Muhammadiyah. The R-value of Square produced in the Model Summary is 0.115 which means that influence the learning of life skills in fostering values entrepreneurship students primary school Muhammadiyah is 11.5%.

Table 12 - The Results of The Regression Variable X_1 dan Y_2

| Model Summary^b | | | | | |
|--|-------------------------|-------------|-------------------|----------------------------|--|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | |
| 1 | .239^a | .057 | .046 | 4,365 | |
| a. Predictors: (Constant), Efektivitas Life Skills | | | | | |
| b. Dependent Variable: Minat Berwirausaha | | | | | |

| ANOVA^a | | | | | | |
|--------------------------|------------|-----------------|-----------|----------------|--------------|-------------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 101,515 | 1 | 101,515 | 5,327 | .023^b |
| | Residual | 1676,885 | 88 | 19,056 | | |
| | Total | 1778,400 | 89 | | | |

a. Dependent Variable: Minat Berwirausaha
b. Predictors: (Constant), Efektivitas Life Skills

| Coefficients^a | | | | | | |
|---------------------------------|-------------------------|-----------------------------|--------------|---------------------------|--------------|-------------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 27,273 | 4,297 | | 6,347 | .000 |
| | Efektivitas Life Skills | .202 | .088 | .239 | 2,308 | .023 |

a. Dependent Variable: Minat Berwirausaha

The hypothesis was tested:

H_0 = there is no influence of learning life skills in growing interest in entrepreneurship student elementary school of Muhammadiyah.

H_1 = there is the influence of learning life skills in growing interest in entrepreneurship student elementary school of Muhammadiyah.

Table 12 shows the result of the value of the Coefficients is known the value of Sig $0.023 < 0.05$. It can be inferred that there is an influence of learning life skills in growing interest in the entrepreneurship student elementary school of Muhammadiyah. The R-value of Square produced in the Model Summary is 0.057 which means that influence the learning of life skills in growing interest in entrepreneurship students elementary school of Muhammadiyah was 6%

Conclusion

Life skills education activities make the learning conditions of students to be varied. Early entrepreneurship education can be given since primary school. The analysis can be concluded that learning life skills education in primary school is effective in fostering entrepreneurship value and students interest in entrepreneurship of 17.5%.

Reference

- Akbar, A. I. (2000). Pendidikan Karakter. *USA: Harvard University*.
- Blazely, L. D. (1997). Science Study. *Jakarta: The Japan Grant Fondation*.
- Depdiknas, T. B. (2001). Konsep Pendidikan Kecakapan Hidup (Life Skills Education). *Buku I, Jakarta: Direktorat Jenderal Pendidikan Dasar dan Menengah*.
- Huber, L. R., Sloof, R., & Van Praag, M. (2014). The effect of early entrepreneurship education: Evidence from a field experiment. *European Economic Review, 72*, 76-97.
- Nasional, K. P. (2011). Badan penelitian dan pengembangan, Pusat kurikulum. 2011. *Pengembangan Pendidikan Budaya Dan Karakter Bangsa Pedoman Sekolah*.
- Organization, W. H. (1993). *Life skills education in schools: WHO*.
- Undang-Undang, R. (2003). no. 20 tahun 2003 tentang Sistem Pendidikan Nasional. *Bandung: Citra Umbara*.

THE TEACHER'S ROLE IN INCREASING EMPLOYABILITY SKILLS STUDENTS OF SMK BUILDING DRAWING TECHNIQUE

Alrosyid Ridlo¹ *rosyid_ridlo@yahoo.com*

Jumintono² *masmentosragen@gmail.com*

Bambang Noor Achsan² *bambangnoor@mpv.uad.ac.id*

¹*SMK Negeri 1 Sedayu*

²*Magister of Vocational Education, Universitas Ahmad Dahlan Yogyakarta*

ABSTRACT

The process of preparing students on vocational education that includes the development of skills, competency, understanding, attitudes, work habits and the appreciation needed by workers to enable them to work successfully in their fields should be of interest to educators in vocational education institutions. Early observations of science and the emphasis on authentic assessment suggested that the 2013 curriculum for SMK is a renewal or innovation of the previous curriculum. The research is done through descriptive-qualitative research method. The population in this study is all teachers of vocational subject vocational competence of building drawing techniques in Bantul Regency. The Technique of collecting data through an interview, observation, and documentation, data is analyzed to get a description about research object. The results showed that the selection of strategies and learning approaches should be studied closely, especially in relation to their relevance to learning missions, learning objectives, students' potential and characteristics, and environmental resources. Vocational teachers have at least four important roles in developing students' employability skills, namely the role of teachers as demonstrators, as mediators, as evaluators and as competent individuals. Implementation of the 2013 curriculum learning on the competence of building drawing techniques from several previous studies can be concluded to be implemented adequately.

Keyword: *Teacher's role, Employability skills, Building Drawing Technique*

Introduction

The current role of vocational education, including Vocational High School (SMK), is not just limited to provide workers, it must also be able to prepare students to become self-reliant and responsible societies. Preparation is the adoption of a holistic approach from the aspects of knowledge, skills, and attitudes towards the development

of employability skills. Forming alumni into independent and responsible community members with educational programs that emphasize value development, ethics, and behavior. SMK should be able to increase the competence of students at a higher level."The training helps the trainee to capitalize his interests and abilities to the highest possible degree"(Prosser & Quigley, 1950).

In line with the statute of Law No. 20 of 2003 on the national education system which states "vocational education is secondary education that prepares students primarily to work in a particular field". According to (Thompson, 1973, p. 111)"The American Vocational Association has defined vocational education as education designed to develop skills, abilities, understandings, attitudes, work habits, and appreciations needed by workers to enter and make progress in employment on a useful and productive basis". The process of preparing students for the vocational education that includes the development of skills, competency, understanding, attitudes, work habits and the appreciation needed by workers to enable them to work successfully in their field must be the role of educators in vocational education institutions.

According to Law Number 14, the Year 2005 regarding Teachers and Lecturers Article 4 asserts that teachers as learning agents serve to improve the quality of national education. The function and role that is very strategic in the development of education are in the teacher's capacity, therefore need to be developed as a dignified profession. Pedagogical competence is one of the requirements for teachers to teach well. The government and by various parties who care about learning in school has done of Improved quality of learning programs, include: (1) teacher upgrading; (2) teacher education qualification; (3) curriculum renewal; (4) implementation of new learning model or method; and (5) research on students' difficulties and mistakes in learning frequently done by teachers such as classroom action research.

The curriculum 2013 is also dedicated to link and balance soft-skills and hard-skills and accommodating the principles of contemporary learning (Hadiprayitno, 2016). Some of the principles of innovative learning in the Curriculum 2013 which is a paradigm shift from the previous curriculum are: (1) teachers are not the only source of learning so learners learn from various learning sources; (2) students are facilitated to find out rather than be informed; (3) the learning process uses a scientific approach; (4) learning that emphasizes divergent answers that have multi-dimensional truths; (5) utilization of information and communication technology to improve the efficiency and effectiveness of learning (Chapter I, Permendikbud No. 65 the Year 2013).

Efforts to build and revitalize vocational education are also contained in Presidential Instruction No. 9 of 2016 and on September 6, 2017, President Joko Widodo has signed Presidential Decree No. 87 of 2017 on Strengthening Character Education. The Presidential Decree for Strengthening Character Education is an education movement under the responsibility of educational unit to strengthen the character of learners through harmonization of the heart, taste, thought, and sport with involvement and cooperation between education unit, family, and society as part of the National Movement of the Mental Revolution.

This Presidential Decree has the objectives : 1) To equip students as the gold generation of Indonesia in 2045 with Pancasila spirit and good character education in order to face the dynamics of future changes; 2) To develop a national education platform that lays character education as the main spirit in education for the learner with the support of public engagement through formal, informal, and informal education with respect to Indonesian cultural diversity; and 3) The Presidential Regulation also aims to revitalize and strengthen the potential and competence of educators, education personnel, students, community, family environment in implementing Strengthening Character Education.

The results of research from Abbas R (2013) study Integrating Soft Skills Assessment Through Soft Skills Workshop Program For Engineering Students At University Of Pahang shows, 75% of job success is determined by soft skills and only 25% is determined by hard skills. According to (Lankard, 1990) "Educators at vocational schools should adapt to change and information, in developing and educating students especially in vocational schools". Knowledge of employability skills becomes important owned by SMK teacher so that SMK graduate students also have this ability. "Employability skills as a skill that allows one to get a job or to keep working, including personal skills, interpersonal skills, attitudes, habits and behaviors" (Overtoom, 2000).

Responding to the demands of employability skills for SMK graduates, regulation of the Minister of Education and Culture No. 23 of 2016 asserts that the Curriculum 2013 requires the use of authentic assessment (authentic assessment). Paradigmatically authentic assessment requires the realization of authentic instruction (authentic instruction) and authentic learning (authentic learning). Gulikers, Bastiaens, & Kirschner, (2004, p 67) "Defines authentic judgments as judgments requiring learners to use the competencies of knowledge, skills and behaviors they master and apply in solving their professional life problems later, where the level of authenticity of a

judgment will depend on the level of resemblance to the situation it will face in the real world. " Thus, authentic assessment is very relevant to the characteristics of learning in SMK that must prepare graduates to be able to work in the real world of community life in a professional manner in the field of expertise.

The characteristics of education to be undertaken in SMK is to equip the learners with a variety of cognitive skills and vocational-technical skills and equip it with various soft skills (attitude, soft skills, employability skills, or generic skills) required in work (Sudjimat, 2009). The results of the research (Hadiprayitno, 2016) show the response of teachers of Building Engineering Program of SMKN in Yogyakarta to the principles of learning Curriculum 2013 is "Agreed" with approval level of 76, 25%. This means that teachers believe that the principles of learning according to the Curriculum 2013 will be implemented to produce more competent graduates in Building Engineering skills.

Research Methodology

Research method on employability skills development analysis on the competence of building engineering skill of SMK in Bantul district. This research is conducted through descriptive-qualitative research method, which is a method that observes, analyzes and describes the phenomenon that occurs in learning on building drawing competence in Bantul then explores the data of each element, activities include: planning, organizing, actuating, controlling and factors which have contributed to the coaching of teachers' professional abilities. Researcher collect data in the form of interviews, documentation, and observations, the data and information obtained are then organized and analyzed in order to get a description (description) of the object of research. The data will be analyzed more deeply to form a natural scientific conclusion can be accepted by various circles, especially in this case is Vocational High School with the competence of Building Materials Engineering skills.

Result

The Result of research are 1) Profile of the working period of the teachers of Building Drawing Technique at SMK.

Table 1. Teachers Working Period profile

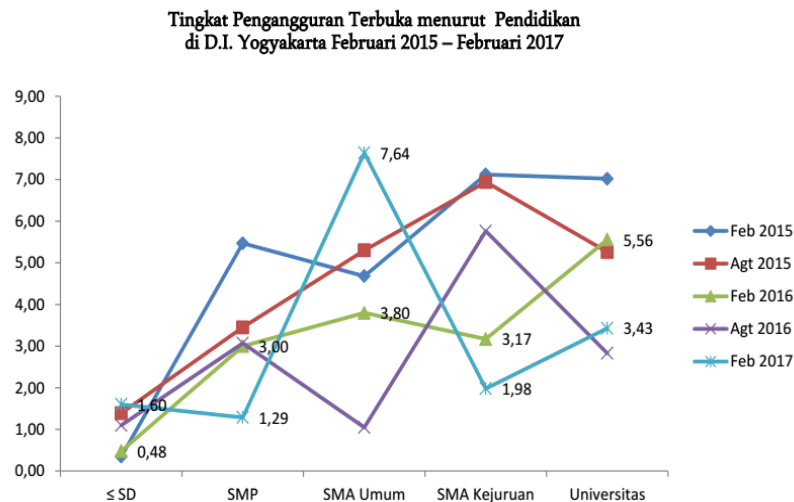
| School | | | Teachers working period (years) | | | |
|----------|---|---|---------------------------------|------|-------|-------|
| | | | 0-5 | 6-10 | 11-15 | 16-20 |
| SMK | N | 1 | 0 | 2 | 4 | 0 |
| Sedayu | | | | | | |
| SMK | N | 1 | 0 | 2 | 3 | 1 |
| Pajangan | | | | | | |

The teachers education level Bachelor as many as 7 people, Master as many as 5 people. 2) the number of students SMK N 1 Sedayu, class X = 59, class XI = 54, class XII = 31 for students SMK 1 Display class X = 57 classes XI = 68 Class XII = 67 average graduates last three years more than 50 % work according to Building Drawing Technique competency 3) **Teachers as a demonstrator.** The interview result showed that as a teacher, he or she needed self-development as an effort to improve ability and competence herself. The learning process approaches according to the demands of the curriculum. 4) **Teachers as mediators and facilitators.** He or she needed to learn and practice of development of science and information to understand and master them. Mastery of instructional media is needed as a complementary tool and learning resources for students. Teacher self-development is done to improve the communication skills, there are activities undertaken by teachers to encourage good social behavior, develop personal interaction style, and foster positive relationships with students. Including the development of employability skills students. 5) **The teachers as an evaluator.** Various evaluation or evaluation activities are intended to know whether the objectives that have been formulated are achieved or not, and whether the material taught is sufficient. The form of objective assessment that is mandated by the curriculum encourages the teacher to be able to photograph the students' overall competence in both technical skills and employability skills (basic skills / Thinking skills / personal skills) of the students. 6) **Teachers as Competent Persons,** teachers always become good role models for students, a measure of norms of behavior in the eyes of students. Teachers fully master the competence that is taught both knowledge and attitude skill.

Discussion

Labor users often complain that workers from graduates of educational institutions who do not possess good employability skills generally cannot stand the world of work are dishonest, get bored, unable to work together, and cannot communicate orally and write well (Irma, 2007).

Table 2. Open Unemployment Rate Data D.I. Yogyakarta



Source : Adapted from BPS RI(Statistik, 2017)

School as one of the instruments and tools of the state as an organization used to achieve educational goals. The role of vocational school prepares students to work in a particular field. The above data shows the role of SMK in encouraging economic growth by continuing to push the unemployment rate.

The purpose of vocational education cannot be separated from the role of teachers in running the curriculum set by the government. Teachers have a role to facilitate the active learning process that can generate interest and ability of students in optimizing their potential. It is important for teachers to have competencies and act effectively as one of the keys to the success of a learning process. Teachers and instructors in the 21st century are teachers and instructors who have learning skills and innovative skills in the field of study and pedagogy/andragogy field ". (Sudira, 2015). "Teacher quality refers to all teacher-related characteristics that produce favorable educational outcomes" (Cochran-Smith, 2005).

"The preparation of students to have the technical skills and skills that are generic (employability skills) stem from the quality of the implementation of the learning

program" (Shyi-Huey, 2005). The Results from several studies indicate interacting factors in the learning process including learning system. Educators must have the capacity and capability in understanding the learning model, thus providing opportunities for students to develop their maximum learning creativity and train their independence. "Education with learning how to learn every student should be encouraged to have the ability and understanding of how to learn and be able to continually explore information for strengthening self-capacity" (Hardika, 2014, p.158). The selection of strategies and learning approaches should be carefully examined, especially in relation to their relevance to learning missions, learning objectives, students' potential and characteristics, and environmental resources.

The opinion of Rasul, Rauf, & Nor (2014) concludes that the major skills required by the industry and firm are strong interpersonal skills, such as communication skills; problem-solving skills; teamwork and entrepreneur skills; and project and work process oriented. Principles of learning in the implementation of Curriculum 2013 for SMK Building Drawing Technique Competency has accommodated the demands of innovation skills and employability. The scientific approach to learning and the emphasis on authentic assessment recommended in the Curriculum 2013 for Vocational Education is a renewal or innovation of the previous curriculum. Furthermore, the 2013 curriculum is intended to balance soft-skills and hard-skills and accommodate the principles of present learning, so that teachers have an important role in developing basic skills, thinking skills and guarding the development of personal skills of students.

The authentic self-assessment model can be developed to assess the cognitive, affective, and psychomotor aspects. Problem solving and self-management are part of the cognitive and affective structure of the learning process. Meanwhile, a psychomotor structure is shown by the ability to make database application conceptually and logically. This model has met the basic principles of appraisal, namely the principle of validity, the principle of reliability, focused on competence, comprehensive, objectivity principles, and educational principles. Based on the results of the trial can be concluded that the ability of problem solving and self-managing ability of students in both categories, as well as competence achievement to design database applications conceptually and logical including high category.

Conclusion

The results showed that the selection of strategies and learning approaches should be studied closely, especially in relation to their relevance to learning missions, learning objectives, students' potential and characteristics, and environmental resources. Vocational teachers have at least four important roles in developing students' employability skills, namely the role of teachers as demonstrators, as mediators, as evaluators and as competent individuals. The implementation of the 2013 curriculum learning on the competence of building drawing techniques from several previous studies can be concluded to be implemented adequately.

References

- Abbas, R., Abdul Kadir, F. A., & Ghani Azmie, I. A. (2013). Integrating Soft Skills Assessment Through Soft Skills Workshop Program For Engineering Students At University Of Pahang: An Analysis. *International Journal of Research In Social Science*, 2(1), 33-46.
- Cochran-Smith, M., & Fries, K. (2005). *Studying teacher education: The report of the AERAPanel on Research and Teacher Education*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Gulikers, J. T. M., Bastiaens, T. J., & Kirschner, P. A. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development*, 52(3), 67. <https://doi.org/10.1007/BF02504676>
- Hadiprayitno, S. (2016). Kemampuan Guru SMKN Program Keahlian Teknik Bangunan Dalam Mengimplementasikan Kurikulum 2013. *Jurnal Pendidikan Vokasi*, 6, 305-317.
- Hardika. (2014). Model Pembelajaran Transformatif Berbasis Learning How To Learn untuk Peningkatan Kreativitas Belajar Mahasiswa. *Jurnal Madrasah*,v6, No.2, 151-164.
- Irma, Dewi. (2007). *Soft Skill?*. Pikiran Rakyat, Kamis 17 Juni 2007. Tersedia: http://aargantenk.multiply.com/journal/item /70/Soft_Skill..
- Lankard, B. A. (1990). Employability--the fifth basic skill. ERIC Digest No. 104. Columbus: Center on Education and Training for Employment. The Ohio State University. (ED 325 659)
- Overtoom, C. (2000). Employability Skills: An Update. ERIC Digest No. 220. ERIC Digest, 220 (ERIC Clearinghouse on Adult Career and Vocational Education Columbus OH).

- Prosser, C. A. and Quigley, T. H. (1957). *Vocational Education in a Democracy*. Chicago: American Technical Society
- Rasul, M. S., Rauf, R. A. A., & Nor, A. R. M. (2014). future employability skills sets for manufacturing industries. *International Education Studies*, 7(10)
- Republik Indonesia (2016). Instruksi Presiden RI No. 9 tahun 2016 Tentang Revitalisasi Sekolah Menengah Kejuruan dalam Rangka Peningkatan Kualitas dan Daya Saing Sumber Daya Manusia Indonesia. Sekretariat Kabinet RI. Jakarta.
- Republik Indonesia (2017). Peraturan Presiden RI No. 87 tahun 2017 Tentang Penguatan Pendidikan Karakter. Lembaran Negara RI tahun 2017 No 195. Sekretariat Negara. Jakarta.
- Shyi-Huey, W. (2005). *Employability and Effective Learning Systems in Higher Education*. Retrieved 15 January 2017
- Sudjimat, D.A. 2009. *Perencanaan Pembelajaran untuk Pendidikan kejuruan: Memadukan hard skill dan soft skill*. Malang: Jurusan Teknik Mesin Fakultas Teknik Universitas Negeri Malang.
- Sudira, P. (2015). *Asean Economic Community Dan Pendidikan Vokasional Abad 21*. Statistik, B. P. (2017). *Laporan Data Sosial Ekonomi Bulan Februari 2017 (Vol. 81, pp. 40-45)*. Jakarta: Badan Pusat Statistik.
- Thompson, J. F. (1973). *Foundation of Vocational Education Social and Philosophical Concepts*. New Jersey: Prentice-Hall Inc.
- Depdikbud (2016). *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 22 tahun 2013 tentang Standar Proses Pendidikan Dasar dan Menengah*.
- Depdikbud (2016). *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 23 tahun 2016 tentang Standar Penilaian Pendidikan Dasar dan Menengah*.
- Statistik, B. P. (2017). *Laporan Data Sosial Ekonomi Bulan Februari 2017 (Vol. 81, pp. 40-45)*. Jakarta: Badan Pusat Statistik.

A CONCEPTUAL PARADIGM FOR INCORPORATING SUSTAINABLE THINKING IN ENGINEERING EDUCATION IN NIGERIA

Nasiru Mukhtar^{1,2} Muhammad Sukri Bin Saud²

¹ *Department of Science and Technical Education, Bayero University, Kano, 3011, Kano, Nigeria*

² *Department of Technical and Engineering Education, Universiti Teknologi Malaysia, 81310, Johor Bahru, Malaysia*

ABSTRACT

Despite the notable achievements made in sustainability and sustainable thinking by increasing number of higher education institutes (HEIs) in both developed and developing nations, HEIs in Nigeria continue to be classical and rely upon orthodox perceptions. Consequently, this has led the HEIs to be incapacitated in helping the manufacturing industries and societies to become sustainable. The author reviewed extensive literature which led him to conceiving a particular perception of how a model can be developed to incorporate sustainable thinking in to the HND electrical/electronic engineering curriculum in Nigeria.

Keywords: Sustainable Thinking, Engineering Education, Higher National Diploma,

INTRODUCTION

Humankind according to contemporary history had never experienced a situation where so many things had gone wrong simultaneously than now. Humanity has presently slied in to an intertwined crisis of environmental, social and economic systems. For instance, global warming is not, at its crux, an energy, technology, or policy problem. It is the enormous deficiency of thought in human history (Doppelt, 2012). Ever since the dawn of the industrial transformation people have based their economic and social systems on badly awry conviction and reasoning, and have thought that they could constantly take and use resources from the Earth's surface and make them into goods and services for human need with scant interest for the environmental or social consequences of those activities. People have also thought that the huge volume of usually exceedingly harmful waste formed by this system, including greenhouse gases, could be increasingly discharged back into the same environment that humans, and all other species on Earth, count on for life without strict aftermath. What Doppelt described as Our "Take-Make-Waste" thinking has heightened atmospheric greenhouse gasses to fatal levels and led the

world to the cliff of calamity. Humans have not been able to foresee the danger associated with the ecological and social systems we are part of. Global warming and today's other environmental, social, and economic challenges therefore cannot be dealt with simply via more efficient technologies or cap-and-trade policies. Paramount changes in thinking and mindset will be required. Only after people begin to think sustainably will the clean energy technologies, and the policies needed to stabilize the climate become evident.

In response to this, series of conferences, charters and declarations were organized and outcomes were announced and published in form of action plans and policies in respect to environmental, social and economic challenges. These include: World Conference on Environment and Development (WCED, 1987), often known as Bruntland Report, Talloires Declaration (1990), Agenda 21 (1992), Thessaloniki Declaration (1997), World Declaration (1998), Earth Charter (2000), Lunenburg Declaration (2001) and Ubuntu Declaration (2002). The term sustainable development was popularized and was defined by Bruntland Report as 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (p.43). A key feature of each of the conference, charter and declaration is the emphasis on education as a critical tool for promoting sustainability and improving the capacity of people to address sustainability issues (Lozano, et al., 2011; Cheah, Yang and Saleh, 2012). This consequently led the UN to declare 2005-2014 as the 'UN decade for education for sustainable development' (DESD). The goal for this decade is to integrate the principles, values and practices of sustainable development into all aspects of education and learning (UNESCO, 2005 p.5). The UN further define the ESD as education that encourages 'changes in behavior that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations' (UN, 2002). As a result, higher education institutions were urged to develop networks for environmental and development education, make cross-disciplinary courses available to all students, promote excellence in interdisciplinary research and education, and contribute more to awareness building for all audiences, not just to students and faculty within the academy (UNCED, 1992, p. 322-5).

These developments have also formed the broader calls for Engineering Education for Sustainable Development (EESD) more widely in reports such as 'the 1997 Joint Conference on Engineering Education and Training for Sustainable Development (JCEETSD, 1997) in Paris and '2004 Declaration of Barcelona' which outlined how

universities and engineering educators need to change their curricula and pedagogies for a sustainable engineering education (EESD, 2004). Sustainable engineering education is a practice that promote environmental, social, economic and technical sustainability through greater resource efficiency, reduced pollution and consideration of the wider social impacts of new technologies, processes and practices (Dowling et al, 2010, p.333). This requires the engineers of the 21st century to have a sound sustainable thinking, creative problem-solving skills and evaluate the implications of their solutions beyond their immediate technical context.

In Nigeria presently, polytechnic education is a part and parcel of technical and vocational education (TVE) programme, that train students in engineering and technology leading to the awards of ordinary national diploma (OND) and higher national diploma (HND) certificates. The polytechnics are suppose to achieve their goals and objectives as stipulated in the National Policy of Education through vigorous teaching and training in sustainability issues in order to produce much needed manpower to accelerate the environmental and socio-economic growth and development of the nation, making it an instrument of social change and economic development (NPE, 2004).

However, with reference to current sustainability literature, research on polytechnic institutions in both developed and developing countries has been limited. While to date few empirical researches have been found (Phiri, 2010) relating sustainability integration in to education in Sub-Sahara Africa, no research has been found attempting to integrate sustainability in to the engineering education curriculum, especially at HND level of polytechnic in Nigeria. Although, there is dearth of literature on polytechnic institutions as noted earlier, but it has been observed that studies related to sustainability and its integration in to higher education curricula generally, have reached an advanced level in developed countries (such as US, UK, Canada, Australia etc,) with no Nigerian studies published as yet. This study to the best of author's knowledge is the first empirical research with special reference to developing a model on sustainability integration in engineering curricula in polytechnics in Nigeria.

Justification for the Study

Researchers in engineering education for sustainable development (such as Huntzinger et al., 2007; Nagel, Pappas and Pierrakos, 2011; Amiolemen, Oleghe and Ogidan, 2012), emphasized the importance for engineers to have a high-level sustainable thinking dispositions and problem solving skills. There is also an enormous literature devoted to sustainable development in Sub-Sahara Africa, but there are few empirical studies in terms of incorporating sustainability in higher education, and none from Nigeria, so far as the researcher is aware.

The general belief is that adequate inclusion of sustainability contexts in to our HND electrical/electronic engineering curriculum will stimulate sustainable thinking and will, to a large extent, equip the graduates comprehend the very significant sustainability challenges ahead, to work with other disciplines and stakeholders in addressing these challenges and indeed take the lead in our most important endeavors (Byrne and Fitzpatrick, 2009). As such, this study will collect data from electrical engineering lecturers, electrical engineers, electrical technicians, operational managers and chief executives of manufacturing industries to develop a model for incorporating sustainability thinking into Higher National Diploma (HND) electrical/electronic engineering curriculum in Nigeria.

The Concept of Sustainability Thinking

Sustainability thinking is one of the most widely intense discussed construct in almost all spheres of life such as business, health, sports, industries, public policy, education and many other fields of human endeavors. This is as a result of the causes and effects of humanity's increasing impact on the earth. The impacts of human pressure risk caused wide-spread, abrupt and possibly irreversible changes to basic earth's system processes. Water shortage, extreme weather, deteriorating conditions for food production, ecosystem loss, ocean acidification, sea level rises are real dangers that could threaten development and trigger humanitarian crises across the globe (Griggs, Stafford-Smith, Gaffney, Rockstrom, Ohman, Shyamsundar and Noble 2013).

The application of education towards the realization of Sustainable thinking has been practical as can be seen in many literatures (Betrabet Gulwadi, 2009; Chua and Chea, 2013; Vargas and Maclean 2015; and Banson, Nguyen, Bosch, Nguyen 2015). Education is an essential tool for achieving a sustainable future. According to Hopkins and Mckeown (1999), education is essential for improving the capacity of people to

address environmental, social and economic issues which are inextricably tied to sustainable development. Ultimately, incorporating sustainable thinking in our education system is paramount and will enable people to use sustainable reasonable behavior in everyday life.

References

- Amiolemen, S. O., Ologeh, I. O., & Ogidan, J. A. (2012). Climate change and sustainable development: the appropriate technology concept. *Journal of sustainable development*, 5(5), 50.
- Banson, K. E., Nguyen, N. C., Bosch, O. J., & Nguyen, T. V. (2015). A systems thinking approach to address the complexity of agribusiness for sustainable development in Africa: a case study in Ghana. *Systems Research and Behavioral Science*, 32(6), 672-688.
- Betrabet Gulwadi, G. (2009). Using reflective journals in a sustainable design studio. *International Journal of Sustainability in Higher Education*, 10(1), 43-53.
- Byrne, E.P. & Fitzpatrick, J.J. (2009). Chemical Engineering in an Unsustainable World: Obligations and Opportunities. *Journal of Education for Chemical engineers*. 4 (2009), 51 – 67.
- Cheah, S.-M., Yang, K., & Sale, D. (2012). *Pedagogical Approach to Integrate Sustainable Development into Engineering Curriculum*. Paper presented at the Proceedings of the 8th International CDIO Conference.
- Chua, P.-H., & Cheah, S.-M. (2013). *Education for Sustainable Development using Design Thinking and Appropriate Technology*. Paper presented at the Proceedings of the 9th International CDIO Conference.
- Doppelt, B. (2012). *The Power of Sustainable Thinking: "How to Create a Positive Future for the Climate, the Planet, Your Organization and Your Life"*: Routledge.
- Dowling, D., Carew, A., & Hadgraft, R. (2010). *Engineering your Future: An Australasian Guide*, Milton Queensland: Wiley
- Federal Republic of Nigeria. (2004). *National Policy of Education*. Lagos: Federal Government Press, 61
- Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., . . . Noble, I. (2013). Policy: Sustainable development goals for people and planet. *Nature*, 495(7441), 305-307.
- Huntzinger, D. N., Hutchins, M. J., Gierke, J. S., & Sutherland, J. W. (2007). Enabling sustainable thinking in undergraduate engineering education. *International Journal of Engineering Education*, 23(2), 218.

- Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D., & Lambrechts, W. (2013). Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, 48, 10-19.
- Nagel, R. L., Pappas, E. C., & Pierrakos, O. (2011). On a vision to educating students in sustainability and design—The James Madison University School of Engineering approach. *Sustainability*, 4(1), 72-91.
- Phiri, M.L (2010). A survey of experiences and practices in current use for integrating education for sustainable development in TVET in Botswana. In L.E Mujangana (eds) *Integrating sustainable development in Technical and Vocational Education and Training: Sx case studies from southern and eastern Africa*.
- Rio Declarations on Environment and Development (1992), in *Report of the United Nations Conference on Environment and Development* UN Doc. A/CONF.151/26 (Vol. I), 12 August, 1992 Annex I.
- UNESCO, (2002). Education for Sustainability . From Rio to Johannesburg: Lessons learnt from a Decade of Commitment. World Summit on Sustainable Development, (UNESCO). Johannesburg. Available at <http://unesdoc.unesco.org/images/0012/001271/127100e.pdf>
- UNESCO, (2005). Report by the Director-General on the United Nations Decade for Education for Sustainable Development. International implementation Scheme and UNESCO's Contribution to the Implementation of the Decade (172 EX/11). Paris: UNESCO. Available at <http://unesdoc.unesco.org/images/0014/001403/140372e.pdf>
- Vargas, L. S., & Mac Lean, C. (2015). A Minor Programme on Sustainability for the Engineering Curriculum at the University of Chile *Integrating Sustainability Thinking in Science and Engineering Curricula* (pp. 21-29): Springer.
- WCED, (1987). Our Common Future. World Commission on Environmental and Development, Oxford University Press, Oxford

GAYA KOMUNIKASI DAN PENDEKATAN PEMENTORAN MENTOR DI INSTITUT LATIHAN PERINDUSTRIAN NEGERI JOHOR

Dayangku Suraya Binti Awang Jafar, Mohd Zolkifli Bin Abd Hamid
Universiti Teknologi Malaysia

ABSTRAK

Seiring dengan kepesatan arus globalisasi masa kini sama ada dari segi teknologi, sosial dan ekonomi, kerajaan berusaha mengarusperdanakan Pendidikan Teknikal dan Vokasional (PTV) melalui Transformasi Pendidikan Teknik dan Vokasional dan juga Penjenamaan semula TVET kepada “TVET Malaysia”. Negara memerlukan pensyarah PTV yang sentiasa cuba meningkatkan prestasi, keterampilan diri serta kualiti pendidikan negara. Pensyarah PTV di Institut Latihan Perindustrian (ILP) melihat program pementoran sebagai satu usaha bagi meningkatkan kompetensi mereka. Walau bagaimanapun, wujud pelbagai isu dalam komunikasi mentor dan mentee dalam program pementoran di ILP. Gaya komunikasi segelintir mentor dikatakan kurang efektif dalam mewujudkan hubungan pementoran yang positif di ILP. Malah pendekatan pementoran mentor yang pelbagai sehingga ada yang terlalu direktif dan kurang fleksibel. Tujuan kajian ini adalah untuk mengenalpasti gaya komunikasi dan pendekatan pementoran mentor dalam program pementoran pensyarah PTV di ILP Negeri Johor. Selain itu, kajian ini turut ingin mengkaji hubungan antara gaya komunikasi dan pendekatan pementoran. Kajian deskriptif ini dijalankan secara tinjauan melalui soal selidik ke atas 76 responden di ILP Negeri Johor. Data dikumpul secara kuantitatif dan dianalisis menggunakan perisian *Statistical Package For Sosial Sciences* (SPSS). Analisis diskriptif dan ujian korelasi digunakan dalam menganalisis data yang diperolehi. Hasil dapatan kajian menunjukkan mentor di ILP mempunyai gaya komunikasi asertif dan pendekatan pendekatan kolaboratif yang tinggi. Kajian juga mendapati wujud hubungan yang signifikan di antara gaya komunikasi dan juga pendekatan pementoran mentor.

Keywords: Pendidikan Teknik dan Vokasional, Pementoran, Gaya Komunikasi,
Pendekatan pementoran

Pengenalan

Penjenamaan semula Sistem Pendidikan dan Latihan Teknikal dan Vokasional (TVET) sebagai “TVET Malaysia” oleh Perdana Menteri merupakan antara usaha memperkasakan rakyat dan Negara ke tahap yang lebih tinggi (Mohd Asron, 2017). Arus globalisasi masa kini yang pesat berkembang dari segi teknologi, sosial dan ekonomi mendesak transformasi dalam bidang pendidikan. Usaha mengarusperdanakan Pendidikan Teknikal dan Vokasional (PTV) memerlukan pensyarah Pendidikan Teknik dan Vokasioanal (PTV) meningkatkan prestasi, keterampilan diri serta kualiti pendidikan negara. Ini kerana, kejayaan sesebuah negara adalah ditentukan oleh keupayaan modal insan yang berkemampuan untuk sama-sama bersaing di peringkat global (Nurul Huda, 2013). Maka, bidang PTV sebagai tunjang dalam pembentukan modal insan berdaya saing untuk melahirkan tenaga mahir negara perlu diberi perhatian sewajarnya.

Oleh itu, pensyarah PTV perlu meningkatkan kompetensi mereka dalam pengajaran. Ini termasuk memiliki ilmu pengetahuan dan kemahiran yang mendalam dalam subjek yang diajar, menguasai ilmu pedagogi, kreatif dalam memilih sumber pengajaran, bijak mempelbagaikan strategi pengajaran, mampu menggunakan teknologi dalam pengajaran dan pembelajaran, mempunyai kemahiran berkomunikasi dengan pelajar yang baik serta mempunyai sikap dan personaliti diri yang positif (Anuar, 2015). Menurut Raija dan Sirpa (2014) pula sebagai pakar dalam suatu bidang, pensyarah PTV perlu bersedia untuk melakukan penyelidikan, berinovasi dan bersemangat mencari penyelesaian baru, mempunyai jalinan rangkaian antarabangsa dan kepakaran professional. Ini selaras dengan harapan kerajaan dengan penjenamaan TVET Malaysia iaitu untuk meningkatkan lagi kolaborasi di antara semua pihak berkepentingan dalam TVET (Mohd Asron, 2017).

Selain itu, pelbagai langkah boleh dijalankan dalam usaha untuk meningkatkan kompetensi pensyarah PTV di ILP, antaranya adalah melalui program pementoran. Proram pementoran adalah antara kaedah penting dan efektif untuk pembangunan pensyarah (Hobson et al. 2009). Malah, pementoran telah menjadi salah satu aktiviti utama dalam pembangunan kerjaya di Britain England (Jackson, 1993). Sejak tahun 1980an pelaksanaan program pementoran berasaskan kerja semakin meningkat di seluruh UK dan juga negara-negara lain (Tomlinson et al., 2010).

Oleh yang demikian, sebagai salah sebuah institusi penyedia TVET Malaysia, Institut Latihan Perindustrian (ILP) di bawah Jabatan Tenaga Manusia menjadikan misi utama jabatan sebagai pengeluar tenaga kerja mahir yang berdaya saing bagi memenuhi

keperluan sektor perindustrian. Bagi merealisasikan misi ini, pensyarah PTV di ILP berperanan penting dalam melahirkan pelajar yang mahir, berketerampilan dan kompeten dalam bidang yang dipelajari. Goodwin dan Stevens (1993) mengatakan bahawa proses pengajaran dan pembelajaran yang berkesan akan melahirkan pelajar yang berkualiti.

Latar Belakang Masalah

Komunikasi dua hala antara mentor-menti memainkan peranan penting dalam pementoran. Ketika berlakunya pertukaran maklumat yang berterusan, komunikasi dan interaksi yang berkesan adalah penting (Debolt, 2012). Komunikasi di antara mentor dan menti merupakan antara elemen penting dalam memastikan kejayaan proses pementoran dalam latihan vokasional, dan tidak boleh berlaku secara berselang-selang atau terputus-putus tetapi merupakan satu komunikasi yang berterusan antara mentor dan menti (Deitmer & Ruth, 2007). Mentor dan menti perlu mempunyai kemahiran berkomunikasi yang tinggi. Namun malangnya, di ILP turut timbul isu komunikasi antara mentor dan menti yang mungkin menghalang proses pementoran berjalan dengan lancar. Dapatan kajian awal oleh penyelidik mendapati sesetengah mentor gagal berkomunikasi dengan baik dan berkesan dengan menti. Lebih-lebih lagi dalam mengenalpasti kekuatan dan kelemahan menti bagi mengelakkan keperluan dan kehendak menti tidak tercapai. Selain itu, didapati terdapat segelintir pensyarah yang bersikap ego dan mementingkan diri sendiri kerana mempunyai tahap pendidikan kemahiran yang lebih daripada orang lain dan ini mungkin menjadi faktor bertambahnya jurang komunikasi diantara mentor dan menti.

Di samping itu, terdapat segelintir pensyarah muda yang tidak yakin untuk menjadi mentor. Ini kerana mereka merasakan diri masih muda dan tidak layak untuk menjadi mentor kepada rakan sejawat yang lain. Sedangkan mentor perlu mempunyai keyakinan diri yang tinggi. Ketidakyakinan ini sedikit sebanyak mungkin akan mempengaruhi gaya komunikasi mereka dalam pementoran. Ini sejajar dengan pendapat Richardson (2017) iaitu keyakinan diri mentor penting kerana menti akan menjadikan mentor sebagai contoh tauladan. Selain itu, pementoran boleh diadakan secara kreatif dengan aplikasi pendekatan pementoran yang pelbagai dan perlu disesuaikan dengan tahap pembelajaran menti (Vennapoosa, 2010). Pada awal program pementoran, mentor perlu mengenalpasti keperluan dan kehendak menti dan menentukan pendekatan pementoran yang sesuai bagi memenuhi keperluan menti (Sweeny, 2008). Pendekatan pementoran yang tidak fleksibel

dan terlampau tegar akan berakhir dengan program pementoran yang tidak produktif (Vennapoosa, 2010).

Di ILP setiap mentor masing-masing berpegang dengan pendekatan pementoran yang tersendiri dalam melaksanakan suatu program pementoran. Berdasarkan pernyataan responden kajian awal juga, didapati kepelbagaian pendekatan pementoran ini kadang kala tidak sesuai dan tidak disukai oleh mentee yang ingin berdikari dan berusaha meningkatkan diri dengan cara tersendiri. Selain itu, terdapat juga segelintir mentor di ILP yang mengamalkan pendekatan pementoran yang direktif dan tidak fleksibel. Program pementoran yang melibatkan hubungan mentor dan mentee diantara pensyarah-pensyarah yang berlainan bidang juga sukar dielakkan. Hobson et al (2015) juga mendapati cuma 2/3 mentee mempunyai mentor dari bidang yang sama dengannya. Ini sedikit sebanyak menjadi antara faktor yang menyebabkan penggunaan pendekatan pementoran yang berbeza oleh mentor. Ini disokong oleh Wang (2001) dalam kajiannya yang mendapati terdapat perbezaan yang ketara dalam pendekatan pementoran dalam program yang berlainan.

Selain itu, terdapat komposisi pensyarah yang berbeza tempoh pengalaman mengajar di ILP ada pensyarah yang baru berkhidmat kurang 5 tahun malah ada yang telah berkhidmat melebihi 20 tahun. Biarpun kebanyakan pensyarah pakar tidak keberatan untuk menjadi mentor kepada pensyarah yang kurang pengalaman, namun masih wujud segelintir kecil yang kurang sanggup menjadi mentor dan sedikit sebanyak ini mungkin akan mempengaruhi pendekatan pementoran mereka. Kajian awal juga mendapati terdapat segelintir pensyarah pakar terutamanya yang menghampiri usia persaraan merasakan mereka sudah tidak perlu menjadi mentor kerana terdapat banyak pensyarah pakar muda yang lebih sesuai. Rowley (1999) juga mendapati Pensyarah “Veteren” tidak berminat untuk terlibat dalam program pementoran kerana mereka terpaksa mengikuti kursus tambahan untuk menjadi mentor. Kesanggupan menjadi mentor merupakan kunci kepada hubungan yang positif dalam pementoran kerana semakin aktif peranan mentor dalam “fasa pemulaan” program pementoran, semakin banyak faedah daripada pementoran yang diperolehi (Gatti & Santoro, 2011).

Disamping itu, sebagai sebuah Institut Latihan Kemahiran Awam sektor awam, ILP turut terikat dengan arahan pelaksanaan program pementoran dalam sektor awam melalui Pekeliling Perkhidmatan Awam Bil 18 tahun 2005. Namun malangnya, pekeliling ini adalah bersifat terlalu umum dan tidak sepenuhnya sesuai untuk digunakan dalam konteks pelaksanaan program pementoran ke atas pensyarah PTV di ILP. Oleh

yang demikian, pementoran di ILP didapati dijalankan secara tidak formal tanpa panduan dokumentasi rasmi sebagai rekod pelaksanaan program pementoran. Ketiadaan panduan ini mungkin merupakan faktor kurangnya kefahaman terhadap pelaksanaan program pementoran dan mentor berkecenderungan menggunakan pendekatan pementoran yang berbeza-beza. Ini turut dipersetujui oleh Rowley (1999) yang menyatakan agak sukar bagi pensyarah untuk memberikan komitmen dalam pementoran sekiranya tiada panduan formal yang mengariskan peranan, tugas dan tanggungjawab yang perlu dilaksanakan sepanjang program. Antara faktor lain adalah kurangnya kejelasan mengenai makna sebenar pementoran (Tedder dan Lawy, 2009) dan kefahaman pelaksanaan pementoran yang berbeza-beza (Maxwell, 2014).

Penyataan Masalah

Berdasarkan latar belakang masalah didapati wujudnya isu gaya komunikasi antara mentor dan mentee serta kepelbagaian pendekatan pementoran mentor dalam pelaksanaan program pementoran di ILP. Gaya komunikasi segelintir mentor dikatakan kurang efektif dalam mewujudkan hubungan pementoran yang positif di ILP. Malah pendekatan pementoran mentor yang pelbagai sehingga ada yang terlalu direktif dan kurang fleksibel. Oleh yang demikian, kajian ini dilaksanakan bagi mengenalpasti gaya komunikasi dan pendekatan pementoran yang diamalkan di ILP Negeri Johor berdasarkan persepsi mentee. Selain itu, kajian ini juga ingin mengenalpasti hubungan di antara gaya komunikasi dan pendekatan pementoran dalam pelaksanaan program pementoran dikalangan pensyarah PTV di ILP Negeri Johor.

Objektif Kajian

Kajian ini merupakan kajian deskriptif yang bertujuan untuk mengenalpasti gaya komunikasi dan pendekatan pementoran yang diamalkan di ILP Negeri Johor dan hubungan antara keduanya. Secara khususnya, objektif kajian ini adalah seperti berikut:

- i. Menenalpasti gaya komunikasi mentor dalam program pementoran kalangan pensyarah PTV di ILP Negeri Johor berdasarkan persepsi mentee.
- ii. Menenalpasti pendekatan pementoran mentor dalam program pementoran pensyarah PTV di ILP Negeri Johor berdasarkan persepsi mentee.
- iii. Menenalpasti hubungan di antara gaya komunikasi dan pendekatan pementoran mentor dalam program pementoran pensyarah PTV di ILP Negeri Johor.

Kaedah Kajian

Penyelidikan yang dijalankan dalam kajian ini menggunakan pendekatan kajian kuantitatif. Kajian ini dijalankan di 3 buah Institut Latihan Perindustian (ILP) yang terletak di Negeri Johor iaitu ILP Tangkak, ILP Mersing dan juga ILP Pasir Gudang. Populasi sasaran untuk kajian ini adalah Pensyarah PTV yang mengajar kluster bidang Mekanikal dan Pembuatan sahaja. Jumlah keseluruhan populasi adalah seramai 96 orang. Oleh kerana jumlah populasi yang tidak ramai, penyelidik menggunakan keseluruhan populasi ini sebagai sampel kajian. Instrumen yang digunakan dalam kajian tinjauan ini adalah borang soal selidik. Penyelidik menggunakan kaedah soal selidik kerana kaedah ini memudahkan untuk mendapatkan data-data daripada responden untuk dianalisis.

Instrumen Kajian

Item soal selidik dalam ketiga-tiga bahagian ini dibentuk sendiri oleh penyelidik berpandukan pembacaan kajian kepustakaan dan input daripada pengalaman sendiri dan pakar. Ia terbahagi kepada 3 bahagian iaitu bahagian A terdiri daripada 6 item berkaitan latar belakang responden iaitu jantina, umur, taraf pendidikan tertinggi, bidang yang diajar, tempoh pengalaman mengajar bidang diajar dan juga lokasi berkhidmat.

Bahagian B pula terdiri daripada 30 item yang dibangunkan berdasarkan gaya komunikasi Heffner (1997) yang terbahagi kepada 3 dimensi iaitu gaya komunikasi asertif, gaya komunikasi pasif dan juga gaya komunikasi agresif. Bahagian C pula terdiri daripada 30 item mengenai pendekatan pementoran mentor berdasarkan Glickman (1985) iaitu pendekatan kolaboratif, pendekatan direktif, dan pendekatan non-direktif. Ini menjadikan jumlah keseluruhan item dalam kajian ini adalah sebanyak 63 item. Dalam kajian ini, soal selidik dalam bahagian B dan juga Bahagian C akan menggunakan skala Likert Lima mata. Jadual 2.1 di atas menunjukkan taburan item soal selidik yang dibangunkan untuk kajian ini.

Jadual 2.1: Taburan Soal Selidik

| Bhgn. | Item | Nombor Soalan | Jumlah Item |
|--------------|---------------------------------|----------------------|--------------------|
| A | Latar Belakang Responden | 1,2,3,4,5,6 | 6 |
| B | Gaya Komunikasi | | |

| Mentor | | | |
|------------------------------|--------------|--|-----------|
| | Asertif | 1, 4, 7, 10, 13, 16, 19, 22, 25, 28 | 10 |
| | Pasif | 2, 5, 8, 11, 14, 17, 20, 23, 26, 29 | 10 |
| | Agresif | 3, 6, 9, 12, 15, 18, 21, 24, 27, 30 | 10 |
| Pendekatan Pementoran | | | |
| C | Kolaboratif | 1, 4, 7, 10, 13, 16, 19, 22, 25 | 9 |
| | Direktif | 2, 5, 8, 11, 14, 17, 20, 23, 26 | 9 |
| | Non-Direktif | 3, 6, 9, 12, 15, 18, 21, 24, 27 | 9 |
| JUMLAH | | | 63 |

Kesahan dan kebolehpercayaan Instrumen

Kesahan kandungan item soal selidik kajian ini dilakukan dari aspek ketepatan, kesesuaian istilah dan struktur ayat supaya tidak menimbulkan kekeliruan dan salah tafsiran. Set soal selidik dalam kajian telah disemak dan disahkan oleh dua orang pensyarah UTM yang pakar dalam bidang komunikasi dan juga pementoran.

Di samping itu, kajian rintis dijalankan bagi memastikan kebolehpercayaan instrumen soal selidik yang digunakan dalam kajian ini. Setelah analisis item dijalankan ke atas dapatan kajian rintis, didapati nilai *Cronbach's Alpha* bagi soal selidik bahagian B iaitu gaya komunikasi mentor adalah 0.766 manakala bagi soal selidik bahagian C iaitu pendekatan pementoran pula ialah 0.854. Menurut kajian Mohd Majid (1998), julat nilai *Cronbach's Alpha*, α di antara 0.71 hingga 0.99 merupakan julat nilai terbaik iaitu dengan peratus kebolehpercayaan 71 % - 99%. Oleh yang demikian, set soal selidik dalam kajian ini boleh diterima kerana nilai Alpha keseluruhan item bagi soal selidik gaya komunikasi mentor dan pendekatan pementoran mentor adalah 0.81. Ini bermakna instrumen yang digunakan mempunyai kebolehpercayaan yang tinggi.

Kaedah Analisis Data

Data yang diperolehi dikumpulkan dan dianalisis dengan menggunakan perisian *Statistical Package For Social Science (SPSS)* versi 20.0. Analisis secara deskriptif dalam kajian ini akan bertumpu kepada maklumat latar belakang responden iaitu jantina, umur, tahap pendidikan tertinggi, bidang diajar, tempoh pengalaman mengajar bidang diajar pengalaman mengajar dan lokasi mengajar. Gaya komunikasi mentor dan juga pendekatan pementoran mentor juga akan dianalisis secara deskriptif. Analisis diskriptif akan dipersembahkan dalam bentuk nilai kekerapan, peratusan dan sisihan piawai dan min. Analisis secara inferensi menggunakan ujian kolerasi pearson-r pula dijalankan untuk mengetahui hubungan di antara pemboleh ubah yang dikaji.

Dapatan Kajian

1) Analisis Latar Belakang Responden

Jumlah keseluruhan responden kajian ini ialah 76 orang orang yang terdiri daripada pensyarah Institut Latihan Perindustrian di Negeri Johor. Jadual 3.1 Menunjukkan analisis taburan latar belakang responden. Untuk taburan responden berdasarkan jantina, didapati seramai 56 orang (73.68 %) adalah responden adalah lelaki, dan bilangan responden perempuan pula adalah 20 orang (26.32%). Taburan responden berdasarkan umur pula menunjukkan bilangan responden paling tinggi untuk responden berumur 36 – 40 tahun dengan bilangan 36 orang (47.37%) , diikuti dengan responden berumur antara 41 – 45 tahun dengan bilangan 13 orang (17.11%) , responden berumur antara 31 – 35 tahun dengan jumlah kekerapan 8 orang (10.53%) , seterusnya responden berumur 46 – 50 tahun pula berjumlah 5 orang (6.58%) , diikuti oleh responden berumur 51 tahun ke atas seramai 4 orang (5.26%) dan kumpulan umur responden paling sedikit adalah dengan umur 25 – 30 tahun dengan bilangan 3 orang sahaja (3.95%).

Jadual 3.1: Analisis Taburan Latar Belakang Responden

| Perkara | Kekerapan (f) | Peratus (%) |
|----------------|----------------------|--------------------|
| Jantina | | |
| Lelaki | 56 | 73.68 |
| Perempuan | 20 | 26.32 |
| Umur | | |
| 25 – 30 tahun | 3 | 3.95 |

| | | |
|-----------------------------------|----|-------|
| 31 – 35 tahun | 8 | 10.53 |
| 36 – 40 tahun | 36 | 47.37 |
| 41 – 45 tahun | 13 | 17.11 |
| 46 – 50 tahun | 5 | 6.58 |
| 51 tahun ke atas | 4 | 5.3 |
| Tahap Pendidikan | | |
| Master @ Ijazah Sarjana | 2 | 2.6 |
| Ijazah Sarjana Muda | 7 | 9.2 |
| Diploma Lanjutan / HND | 21 | 27.6 |
| DKM / Diploma | 39 | 51.3 |
| SKM tahap 1 / 2 / 3 | 7 | 9.2 |
| Bidang Di Ajar | | |
| Mekanikal | 37 | 48.7 |
| Pembuatan | 39 | 51.3 |
| Tempoh Pengalaman Mengajar | | |
| 5 tahun atau kurang | 29 | 38.2 |
| 6 hingga 10 tahun | 12 | 15.8 |
| 11 hingga 15 tahun | 19 | 25.0 |
| 16 hingga 20 tahun | 10 | 13.2 |
| 20 tahun ke atas | 6 | 7.9 |

Seterusnya bagi taburan responden berdasarkan tahap pendidikan tertinggi pula didapati jumlah responden terbanyak adalah pensyarah yang mempunyai Diploma Kemahiran Malaysia / Diploma dengan kekerapan sebanyak 39 orang (51.3%) diikuti dengan pensyarah dengan Diploma Lanjutan Kemahiran Malaysia / *Higher National Diploma* (HND) iaitu 21 orang (27.6%) . Bagi kumpulan responden dengan tahap pendidikan Ijazah Sarjana Muda dan juga kumpulan responden dengan tahap pendidikan Sijil Kemahiran Malaysia Tahap 1/2/3 pula mempunyai bilangan kekerapan yang sama iaitu 7 orang (9.2 %). Manakala bilangan kekerapan paling sedikit adalah pensyarah dengan tahap pendidikan Master / Ijazah Sarjana iaitu 2 orang (2.6%).

Bagi taburan responden berdasarkan bidang yang diajar iaitu bilangan yang mengajar bidang Mekanikal adalah seramai 37 orang (48.7%) manakala bagi bidang Pembuatan adalah seramai 39 orang (51.3%). Dan akhir sekali adalah analisis taburan

responden berdasarkan tempoh pengalaman mengajar. Didapati bilangan kekerapan tempoh mengajar 5 tahun atau kurang adalah yang paling tinggi iaitu 29 orang (38.2%), diikuti oleh kumpulan dengan tempoh pengalaman mengajar selama 11 – 15 tahun sebanyak 19 orang (25%), seterusnya pula adalah kumpulan tempoh mengajar sebanyak 16 – 20 tahun dengan kekerapan 10 orang (13.2%) dan seterusnya responden bagi kumpulan dengan tempoh mengajar 6 – 10 tahun iaitu 12 orang (15.8%). Bilangan kekerapan paling sedikit adalah kumpulan pensyarah dengan tempoh pengalaman mengajar 20 tahun ke atas iaitu 6 orang sahaja (7.9%).

2) Analisis Gaya Komunikasi dan Pendekatan Pementoran Mentor

Jadual 3.2: Analisis Min Gaya Komunikasi dan Pendekatan Pementoran

| Pembolehubah | Purata Min Keseluruhan | Sisihan Piawai | Tahap |
|-----------------------|------------------------|----------------|-----------|
| Gaya Komunikasi | | | |
| Asertif | 4.11 | 0.306 | Tinggi |
| Agresif | 2.32 | 0.572 | Rendah |
| Pasif | 2.93 | 0.374 | Sederhana |
| Pendekatan Pementoran | | | |
| Direktif | 3.28 | 0.568 | Sederhana |
| Non Direktif | 3.61 | 0.602 | Sederhana |
| Kolaboratif | 3.85 | 0.505 | Tinggi |

Jadual 3.2 menunjukkan rumusan analisis deskriptif yang telah dijalankan ke atas gaya komunikasi dan pendekatan pementoran mentor dalam program pementoran dalam kalangan pensyarah ILP Negeri Johor. Berdasarkan jadual ini, gaya komunikasi asertif mempunyai purata nilai min yang paling tinggi dengan nilai 4.11 (tahap tinggi), diikuti oleh gaya komunikasi pasif dengan nilai min 2.93 (tahap sederhana) dan akhir sekali adalah gaya komunikasi agresif dengan nilai min 2.32 (tahap rendah). Manakala bagi analisis pendekatan pementoran pula, pendekatan pementoran kolaboratif mempunyai purata nilai min yang paling tinggi dengan nilai 3.85 (tahap tinggi), diikuti oleh pendekatan pementoran non-direktif dengan nilai min 3.61 (tahap sederhana) dan akhir sekali adalah pendekatan pementoran direktif dengan nilai min 3.28 (tahap sederhana).

Oleh yang demikian, didapati gaya komunikasi mentor dalam program pementoran dalam kalangan pensyarah ILP Negeri Johor yang paling tinggi diamalkan adalah gaya komunikasi asertif. Manakala bagi pendekatan pementoran pula pendekatan pementoran kolaboratif adalah yang paling tinggi diamalkan oleh mentor.

3) Analisis Ujian Hubungan di antara Gaya Komunikasi dengan Pendekatan Pementoran

Berdasarkan jadual 3.3, Bagi gaya komunikasi asertif dengan pendekatan pementoran kolaboratif terdapat hubungan yang signifikan, serta hubungan yang kuat diantara keduanya. Bagi gaya komunikasi asertif dengan pendekatan pementoran direktif pula, didapati tiada hubungan yang signifikan antara gaya dan pendekatan ini dan hubungan keduanya juga amat lemah. Seterusnya didapati wujud hubungan yang signifikan namun mempunyai hubungan yang lemah antara komunikasi asertif dengan pendekatan pementoran non-direktif.

Jadual 3.3: Keputusan Ujian kolerasi koefisien Pearson-r Untuk Hubungan Antara Gaya Komunikasi dengan Pendekatan Pementoran

| Dapatan | Hubungan | Asertif | Pasif | Agresif |
|--|--------------|---------|--------|---------|
| Kolerasi Pearson (r) Hubungan | Kolaboratif | 0.546 | -0.105 | -0.294 |
| | Direktif | -0.086 | 0.158 | 0.365 |
| | Non-direktif | 0.294 | 0.294 | 0.028 |
| Sig. (2-tailed) Keputusan | Kolaboratif | 0.000 | 0.365 | 0.010 |
| | Direktif | 0.462 | 0.173 | 0.001 |
| | Non-direktif | 0.010 | 0.010 | 0.813 |

* Signifikan pada aras keertian .05

Bagi gaya komunikasi pasif dengan pendekatan pementoran kolaboratif pula, didapati tidak wujud hubungan yang signifikan serta wujud hubungan yang lemah antara kedua pemboleh ubah ini. Bagi gaya komunikasi pasif dengan pendekatan pementoran non-direktif pula, wujud hubungan yang signifikan namun mempunyai hubungan yang

lemah antara keduanya. Manakala bagi gaya komunikasi pasif dengan pendekatan pementoran direktif pula menunjukkan, tidak wujud hubungan yang signifikan antara komunikasi pasif dengan pendekatan pementoran direktif serta mempunyai hubungan yang wujud juga lemah.

Seterusnya, bagi gaya komunikasi agresif dengan pendekatan pementoran direktif pula, dapatan kajian menunjukkan terdapat hubungan yang signifikan diantara gaya dan pendekatan ini dan hubungan keduanya adalah sederhana kuat. Bagi gaya komunikasi agresif dengan pendekatan pementoran kolaboratif pula, didapati terdapat hubungan yang signifikan serta wujud hubungan yang lemah di antara keduanya. Dan yang terakhir sekali, bagi gaya komunikasi agresif dengan pendekatan pementoran non-direktif pula, didapati tidak wujud hubungan yang signifikan diantara kedua-duanya dan hubungan yang wujud juga amat lemah. Secara kesimpulannya, daripada dapatan kajian yang telah diperolehi melalui ujian kolerasi koefisien Pearson-r yang telah dijalankan, didapati terdapat hubungan yang signifikan diantara gaya komunikasi mentor dengan pendekatan pementoran dalam program pementoran pensyarah PTV ILP Negeri Johor.

Perbincangan

Dapatan kajian menunjukkan bahawa mentor di ILP Negeri Johor dalam bidang Mekanikal dan Pembuatan mempunyai gaya komunikasi asertif yang lebih tinggi berbanding gaya komunikasi pasif dan juga gaya komunikasi agresif. Ini sejajar dengan dapatan kajian Filipeanu dan Cananău (2015) di institusi teknikal awam yang menyatakan gaya komunikasi asertif adalah gaya yang paling digemari di tempat kerja, diikuti gaya pasif, dan agresif. Komunikasi asertif boleh mengukuhkan hubungan, mengurangkan tekanan, konflik dan memberi sokongan sosial dalam organisasi kerja (Pipas & Jaradat, 2010). Hubungan yang kukuh ini penting dalam pembangunan mental dalam pementoran (Hudson, 2016).

Namun tidak dapat dinafikan terdapat mentor yang mempunyai gaya komunikasi yang pasif dan agresif. Kajian menunjukkan, kebanyakan individu mempunyai kecenderungan semula jadi untuk berkomunikasi secara pasif atau agresif sama ada secara langsung atau tidak langsung (Jakubowski & Lange, 1978). Dapatan kajian mendapati daripada 10 item gaya komunikasi agresif, 4 daripada item berada pada tahap sederhana iaitu item “mudah marah”, “mempunyai mimik muka tegang apabila bercakap”, “suka mengarahkan orang lain” dan “suka mengawal keadaan”. Sebaiknya sebelum mentor memarahi atau menyalahkan mental atas kesalahan yang dilakukan,

mentor harus menilai semula tindakan mentor yang mungkin menyumbang kepada kesalahan tersebut (Johnson, 2015). Mentor yang memberikan kritikan yang membina dan tidak menyalahkan apabila seorang mentee membuat kesilapan akan membuat mentee lebih yakin dalam hubungan pementoran (Rivers et al., 2016)

Bagi pendekatan pementoran pula, pendekatan paling banyak diamalkan dalam kalangan mentor pensyarah PTV di ILP Negeri Johor adalah pendekatan pementoran kolaboratif. Manakala untuk pendekatan direktif dan juga non-direktif kedua-duanya mempunyai amalan tahap sederhana. Mentor mentee yang mengamalkan pementoran kolaboratif dengan menggalakkan perkongsian maklumat boleh menjadikan organisasi bertambah kuat (Tingum, 2013). Selain itu, nilai min pendekatan kolaboratif juga didapati lebih tinggi untuk mentee dengan pengalaman mengajar 11 tahun ke atas yang terdiri daripada hampir separuh responden. Pengalaman mentee yang lama ini menyebabkan mentor lebih mempercayai kebolehan mentee dan menggunakan pendekatan pementoran kolaboratif kerana masing-masing boleh berkongsi pengalaman dan maklumat yang ada dalam membuat keputusan. Dengan adanya hubungan pementoran tersusun serta usaha yang lebih, kedua-dua mentor dan mentee dapat memperoleh lebih banyak manfaat daripada pengalaman masing-masing (Neal, 2013)

Hudson (2016) dalam kajiannya mengatakan hubungan positif antara mentor dan mentee memerlukan kepercayaan dan penghormatan untuk sama-sama berkongsi maklumat, sumber dan jangkauan, juga bersikap profesional, bersemangat, dan saling menyokong untuk menyelesaikan masalah secara kolaboratif. Berkongsi pengetahuan adalah langkah yang sangat ideal bagi menghasilkan idea-idea baru yang untuk menyelesaikan masalah atau isu yang dihadapi (Emelo, 2013). Namun begitu, di dapati bilangan responden yang mempunyai pengalaman kerja 10 tahun ke bawah juga tinggi iaitu lebih kurang 54%. Adakah pendekatan kolaboratif juga sesuai untuk mentee yang kurang pengalaman? Eliss & Osborne (2015) menyatakan pementoran secara kolaboratif, sangat membantu golongan pensyarah yang kurang berpengalaman serta memerlukan sokongan dan bimbingan untuk bertahan dalam kerjaya mereka. Ini turut disokong oleh Dunne dan Villani (2007) yang menyatakan gabungan pendekatan kolaboratif dengan dengan fokus pada pembelajaran pelajar adalah satu model yang efektif dan memanfaatkan pensyarah baru dan juga yang berpengalaman.

Hasil analisis ujian korelasi pula menunjukkan terdapat hubungan yang signifikan diantara gaya asertif dengan pendekatan kolaboratif dan non direktif, namun tiada hubungan yang signifikan diantara gaya komunikasi asertif dengan pendekatan direktif.

Di dapati, hubungan yang kuat hanya wujud diantara gaya asertif dengan kolaboratif. Untuk gaya komunikasi pasif pula, terdapat hubungan yang signifikan diantara gaya pasif dengan pendekatan non direktif manakala untuk hubungan antara gaya komunikasi pasif dengan gaya kolaboratif dan direktif, tidak terdapat sebarang hubungan yang signifikan. Hubungan ketiga-tiga pendekatan dengan gaya komunikasi pasif juga lemah. Bagi gaya komunikasi agresif pula, hubungan yang signifikan wujud dengan pendekatan pementoran kolaboratif dan direktif sahaja manakala tiada hubungan yang signifikan di antara gaya komunikasi agresif dengan pendekatan non-direktif. Hubungan yang sedikit kuat hanya wujud diantara gaya komunikasi agresif dengan pendekatan pementoran direktif, manakala untuk pendekatan kolaboratif ada hubungan yang lemah dan untuk pendekatan non direktif hubungan dengan gaya agresif adalah sangat lemah.

Daripada dapatan kajian, dapat disimpulkan wujud hubungan yang signifikan di antara gaya komunikasi dengan pendekatan pementoran. Dalam kajian ini, hubungan antara gaya asertif dengan pendekatan kolaboratif adalah kuat. Ciri-ciri komunikasi asertif seperti pendengar yang aktif, menghormati pendapat orang lain, bercakap dengan sopan dan tenang, memberi peluang orang bercakap serta bercakap dengan jelas, selaras dengan pendekatan pementoran kolaboratif. Ini adalah kerana gaya komunikasi mentor yang asertif adalah bersesuaian dengan yang mengamalkan pendekatan direktif. Ini dipersetujui oleh Hudson (2016), yang menyatakan bahawa dalam menyelesaikan masalah secara kolaboratif, hubungan positif antara mentor dan mentee seperti kepercayaan dan menghormati pendapat masing-masing dalam perkongsian pengalaman dan pengetahuan adalah amat penting. Ini kerana ketika bekerjasama, keduanya boleh belajar dan bantu membantu menambah nilai diri antara satu sama lain.

Selain itu, didapati wujud hubungan yang negatif di antara gaya asertif dengan direktif kerana ciri-ciri asertif berlawanan dengan ciri-ciri mentor yang mengamalkan pendekatan direktif. Villaros (2012) pula mengatakan dalam pendekatan pementoran secara direktif, mentor akan memberi komen mengenai pengajaran mentee dan memberi arahan konkrit untuk perubahan. Selain itu menurut beliau lagi mentor menetapkan semua tujuan, isu-isu atau perkara yang perlu dilakukan oleh mentee dan membuat pernyataan ringkas untuk setiap isu tanpa memikirkan samada perlukan mentee memerlukan maklumbalas tersebut atau tidak. Kadangkala, perbincangan antara mentor dan mentee terjadi, tetapi adalah jelas dalam perbincangan itu peranan mentor 'mengarahkan' dan mentee 'melaksanakan' (Freeman, 1990).

Ini juga dapat dilihat apabila hubungan di antara gaya agresif, ada mempunyai hubungan yang sedikit dengan pendekatan direktif, manakala dengan pendekatan kolaboratif pula ada mempunyai hubungan sedikit yang negatif. Dapatan kajian turut disokong oleh Brounstein (2011), yang menyatakan dalam pendekatan pementoran kolaboratif mentor memerlukan komunikasi asertif seperti bercakap dengan jelas, membenarkan pertukaran pendapat, serta berani mengalas tugas bukannya agresif seperti hanya memberi arahan dan kurang mahu mendengar, lantang bercakap tanpa menghirau perasaan mentu dan menyalahkan apabila berlaku masalah.

Cadangan

Hasil dapatan kajian ini adalah dicadangkan agar mentor menambahkan lagi ilmu dan kemahiran pementoran mereka dalam memahami dan menggunakan gaya berkomunikasi dan pendekatan yang mereka gunakan dalam menjalankan program pementoran. Ini bagi memastikan pementoran tersebut boleh dijalankan dengan lebih berkesan. Mentor yang memahami gaya komunikasi yang berbeza dan apabila menggunakannya akan membuat hubungan pementoran yang lebih berkesan dan positif (Management Mentors, 2013). Ini memberi ruang dan peluang untuk mentor menambahbaik kualiti kepimpinan dalam diri mereka. Hart (2010) menyatakan mentor yang efektif sentiasa menambah baik nilai kepimpinan dalam diri.

Di samping itu, kajian ini juga diharap boleh membantu menyedarkan mentor mengenai kepentingan penggunaan pendekatan pementoran yang sesuai dengan pengalaman dan tahap perkembangan dan pertumbuhan mentu. Ini kerana tiada satu pendekatan yang dikatakan paling efektif digunakan untuk semua mentu. Glickman (1985) tidak pernah menyarankan agar mentor perlu ber sama ada bersifat direktif, kolaboratif atau tidak direktif. Semua pendekatan diperlukan kerana mentor yang efektif menggunakan penilaian profesional mereka tentang tahap motivasi, kepakaran, dan pengalaman mentu dalam menentukan pendekatan yang mana paling sesuai untuk digunakan dalam keadaan tertentu. (Glickman, 1985 & Rowley, 2000).

Selain itu, mentu juga dicadangkan agar sentiasa bersedia menerima pementoran sebagai salah satu proses yang penting untuk meningkatkan pengetahuan dan kemahiran mereka untuk kemajuan kerjaya disamping menjadi pensyarah yang berkualiti. Mereka perlu bersikap terbuka, bersedia untuk menerima idea dan pendapat mentor dalam meningkatkan kualiti pengajaran dan kemahiran dan keterampilan mereka dalam bidang yang diajar. Ini adalah kerana hubungan pementoran yang berjaya tidak semestinya

berlaku secara automatik, sebaliknya adalah hasil penglibatan dan komitmen yang tinggi dan usaha yang berterusan oleh mentor dan juga mentee (Casnocha, 2007). Program pementoran memerlukan tahap keterbukaan mentee untuk mencuba perkara baru, komitmen terhadap pementoran dan ketekunan untuk mencapai matlamat (Mentor Resource, 2008).

Bagi pihak pentadbir institut pula, pelbagai usaha perlu giat dijalankan bagi mempersiapkan diri pensyarah ILP dengan segala ilmu dan panduan program pementoran. Ini bukan sahaja bertujuan untuk menjadikan mentor dan mentee menjadi lebih bersedia dan mahir dalam mengadakan program pementoran malah pihak institut juga akan turut bersedia dalam memberikan sokongan untuk menjadikan program pementoran pensyarah PTV program yang benar-benar efektif. Antara bentuk sokongan adalah dengan menyediakan sumber maklumat, serta panduan dan latihan yang mencukupi kepada mentor dalam kemahiran pementoran. Koki (1997) yang menyatakan mentor perlu didaftarkan dalam program latihan bimbingan secara berterusan dari aspek latihan komunikasi dan teknik pendengaran secara aktif, kemahiran hubungan, pengajaran yang berkesan, model penyeliaan dan bimbingan, resolusi konflik, dan teknik penyelesaian masalah. Latihan yang mencukupi adalah penting dalam pementoran kerana ia merupakan satu hubungan unik yang melibatkan banyak tanggungjawab penting (Kupersmidt, 2014). Latihan yang berterusan dapat menyumbang kepada kejayaan program pementoran kerana walaupun mereka komited, namun kebanyakan mentor tidak bersedia mengalas tugas sebagai seorang mentor. Oleh yang demikian, pihak institut wajar memikirkan untuk membangunkan satu modul atau garis panduan program pementoran yang sesuai digunapakai oleh pensyarah PTV di ILP.

Rujukan

- Anuar, A., dan Nelson, J. (2015). Pengaruh Kompetensi Kemahiran Guru Dalam Pengajaran Terhadap Pencapaian Akademik Pelajar Dalam Mata Pelajaran Sejarah. *Jurnal Kurikulum dan Pengajaran Asia Pasifik*. 3 (2), 1 – 11
- Brounstein M. (2011). *Coaching and Mentoring For Dummies*. New Jersey: John Wiley dan Sons
- Casnocha B. (2007) *Six Habits of Highly Effective Mentees*, My Start-Up Life. Di akses pada 8 Nov 2017. <http://casnocha.com>
- Debolt, S. (2012) *Communicating With Your Mentee*, Center of Workforce Development Forming the Mentor-Mentee Relationship. Di akses pada 4 Mac 2017. <https://sharepoint.washington.edu>

- Deitmer, L. dan Ruth K. (2007). The new role of mentoring approaches in vocational training in companies, *European Conference on Educational Research (ECER)*. Ghent, Belgium, 19 - 21 September 2007, 1-11
- Dunne K. dan Villani S. (2007). *Mentoring New Teachers Through Collaborative Coaching: Linking Teacher and Student Learning*. California: WestEd Publisher.
- Ellis, N. dan Osborne, S. (2015) Mentoring – Collaborative Approach, *Independent Education*, 45 (2), 14
- Emelo, R., (2013) *Connect to Collaborate*, Diversity Executive, diakses pada 12 November 2017. <https://www.cpp.com/>
- Filipeanu, D. dan Cananău, M. (2015). Assertive Communication And Efficient Management In The Office. *International Journal of Communication Research*. 5 (3), 237-243
- Freeman, D. (1990). *Intervening in practice teaching*. Dalam J.C Richards dan D, Nunan (eds), *Second Language Teacher Education*. Cambridge: Cambridge University Press.
- Gatti, P dan Santoro, S. (2011). *A Study of Willingness to Mentor*. Dalam Cortini M., Tanucci G., Morin E. (eds) *Boundaryless Careers And Occupational Well-Being*. London: Palgrave Macmillan .
- Glickman, C. D. (1985). *Supervision Of Instruction: A Developmental Approach*. Boston:Allyn dan Bacon.
- Goodwin, L. D. dan Stevens, E. A. (1993). The Influence of Gender on University Faculty Members' perceptions of "Good" Teaching. *Journal of Higher Education*. 64(2), 166-185.
- Hart E. W. (2010) Seven Ways To Be An Effective Mentor, di akses pada 10 November 2017. <https://www.forbes.com>
- Heffner, C. L. (1997) "Communication Style", Center for Educational Development and Assesment, The CEDA Meta-Profession Project. di akses pada 5 Mac 2017. www.facultyevaluation.org/meta/communication_styles.htm
- Hobson, A. J., Ashby, P., Malderez, A. dan Tomlinson, P.D. (2009) Mentoring Beginning Teachers: What We Know And What We Don't. *Teaching and Teacher Education: An International Journal of Research and Studies*, 25(1), 207-216
- Hobson, A. J., Maxwell, B., Stevens, A., Doyle K. dan Malderez, A. (2015), *Mentoring And Coaching For Teachers In The Further Education And Skills Sector In England, Summary Report*. Artikel tidak diterbitkan, Education Research Centre, University Of Brighton Centre For Education And Inclusion Research, Sheffield Hallam University

- Hudson P. (2016). Forming the Mentor-Mentee Relationship, *Mentoring dan Tutoring: Partnership in Learning*. 24 (1) , Pages 30-43.
- Jackson, C., (1993). Mentoring: Choices For Individuals And Organizations. *International Journal of Career Management*, Vol. 5 Issue: 1, 10-16
- Jakubowski, P. dan Lange, A. J. (1978). *The Assertive Option: Your Rights and Responsibilities*. USA : Research Press
- Johnson, W. B. (2015). *On Being a Mentor: A Guide for Higher Education Faculty* (2nd Edition). New York: Psychology Press
- Koki, S. (1997) *The Role of Teacher Mentoring in Educational Reform*. Artikel Tidak Diterbitkan. Pacific Resources for Education and Learning
- Kupersmidt, J. (2014) *Readiness Matters: The Importance and Impact of Mentor Training*, Mentoring Central
- Management Mentors (2013) *Business Mentoring Matters Mentor and Mentoree Communication Style Tips*. Di akses pada 29 Oktober 2017. <http://www.management-mentors.com>
- Maxwell, B. (2014). Improving Workplace Learning Of Lifelong Learning Sector Trainee Teachers In The UK. *Journal of Further and Higher Education*. 38(3), 377-399
- Mentor Resource* (2008) *Mentee Readiness Assessment*, Wisdom Share. Di akses
- Mohd Majid, K. (1998). *Kaedah Penyelidikan Pendidikan*. Kuala Lumpur: Dewan Bahasa Dan Pustaka.
- Mohd. Asron, M. (2017). TVET kini dikenali TVET Malaysia, *Utusan Malaysia*, Diperoleh pada 1 Disember 2017, dari <http://www.utusan.com.my>
- Neal, J.T. (2013) *Mentoring: More Than Just A Pair Of Hands*. Naturejob. Di akses pada 29 Oktober 2017. <https://www.nature.com/>
- Pipas, M. D. dan Jaradat, M. (2010), Assertive Communication Skills, *Annales Universitatis Apulensis Series Oeconomica*, 2 (12), 649-656
- Raija, E. dan Sirpa P. (2015) Characteristics Of True Dialogical Mentoring Process In Teaching Practice, *International Academic Conference Proceedings*, Barcelona Spain, 18-21 Jan 2015, 54-54
- Rivers, B., Lewis, J., Carter, J., O'Neill, L., Abdullahi, S., Prevost-Derbecker, S., Martin, T., Malcolm, B. dan Denyer, C. (2016) Toolkit On Effective Mentoring For Youth Facing Barriers To Success. Ontario Mentoring Coalition. Di akses pada 4 Nov 2017, <http://ontariomentoringcoalition.ca/>

- Rowley, J. (1999) What Is Knowledge Management?. *Library Management*. 20 (8), 416-420
- Rowley, J. B., (2006). *Becoming a High-Performance Mentor: A Guide to Reflection and Action*. Thousand Oaks, United State of America: Corwin Press.
- Stevens, F. (1993, Summer). Applying Opportunity-to-Learn Conceptual Framework To The Investigation Of The Effects Of Teaching Practices Via A Secondary Analyses Of Multiple-case-study Summary Data. *Journal of Negro Education*, 62(3), 232-248.
- Sweeny, B. W. (2008). *Leading the teacher induction and mentoring program* (2nd ed.). Thousand Oaks, CA: Corwin Press.
- Tedder, M. dan Lawy R., (2009) Beyond Compliance: Lessons From Reflexive And Critical Perspective On Teacher Education Practices In Further Education , *the 39th Annual SCUTREA Conference*, 7-9 July 2009, University of Cambridge, 1-10.
- Tingum, J (2013) The Advantages of Mentoring in the Workplace, Small Business, Chron. Artikel tidak diterbitkan. Di akses pada 28 Oktober 2017 <http://smallbusiness.chron.com>
- Tomlinson, P. D., Hobson, A. J. dan Malderez, A. (2010). *Mentoring in teacher education*. Dalam McGaw, B., Peterson, P.L. dan Baker, E. (Eds.), *International Encyclopedia of Education* (3rd Edition). New York: Elsevier.
- Vennapoosa, C. (2010) *Why coaching and mentoring is important?* Exforsys Inc. Artikel tidak diterbitkan. Diakses pada 3 Mac 2017. <http://www.exforsys.com/>
- Vieno, A., Santinello, M., Pastore, M., dan Perkins, D.D. (2007). Social Support, Sense Of Community In School, And Self-Efficacy As Resources During Early Adolescence: An Integrative Model. *America Journal ofCommunity Psychology*, 39, 177-190.
- Villaros, E. T. (2012). *A Discussion on the School – Based Mathematics Mentoring Program*. Artikel Tidak Diterbitkan, Division Of Aurora.
- Wang, J (2001). Contexts of mentoring and opportunities for learning to teach: a comparative study of mentoring practice. *Teaching and Teacher Education*. 17, 51-73

IDENTIFYING THE ACADEMIC NEEDS FOR INFUSING GREEN SKILLS IN BUILDING COSTRUCTION COURSES: STUDENTS' AND TEACHERS' PERCEPTION

Samaila Hamza*¹, Aede Hatib Bin Musta'amal @ Jamal² and Yusri Bin Kamin³

¹ *Faculty of Technology Education, Abubakar Tafawa Balewa University Bauchi, Nigeria*

(Email: abdulhamidibrahim84@gmail.com)

^{2,3} *Faculty of Education, Universiti Teknologi Malaysia UTM, Malaysia*

(Email: aede@utm.my, p-yusri@utm.my)

ABSTRACT

Green skills is the skills for sustainable development that is needed in the workforce to achieve sustainable social, economic and environmental outcomes in the construction industry and the community. The need for green skills exist right from the Brundtland meeting in 1987 with a view to achieving sustainability at global level. In respect to this global concern, this paper presented the results of a qualitative study conducted to identify through the perception of students and teachers, the academic need for integrating green skills in building construction course at academic institutions in North western Nigeria. The study was a qualitative study with the students and lecturers of building technology in colleges of education as the participants. The participants were requested to provide answers to questions seeking for their perception on the academic need for infusion green skills in building construction courses at Nigeria colleges of education. 10 respondents took part in the study. Judgemental sampling was used to select 6 teachers and 4 students in adherence to their working experience and academic excellence respectively. Data collected were transcribed, code, thematic and analysed inductively using exploratory content analysis technique with the aid of Nvivo statistical tool. The findings include among other things that, in the current circumstances that environmental/ecological, social and economic problems are attached to buildings, infusing green skills in the building construction courses is highly and academically needed. It was recommended that green skills should urgently be infused into building construction courses curriculum with a view to curtailing the menace of building sector to the environment, society and economy.

Key words: Green skills, academic need, infusion and building technology

Introduction

Despite the fact that world is currently still reeling from the Global Financial Crisis (GFC), the demands on human resources, particularly green skills, on the emergence from the global economic downturn deserve serious attention (Hand *et al.*, 2013). Green skills as perceived by Lee (2013) mean the ability required to execute green jobs and to produce new green products necessary for jobs relating to manufacturing, services, and marketing. For Organisation for Economic Co-operation Development OECD (2010) described green skills as specific skills required to adapt products, services or operations to meet adjustments, requirements or regulations designed to stem further climate change or adapt to the impact it is already having. This clearly informed us that green skills acquisition gives peoples/students the ability to gain a green job in the industries.

More so, green skills are those skills necessary for industry practitioners to satisfy the growing demands of sustainable development and the advancement of technology is very rapid, requiring skill sets to be continually evolving to remain abreast of new developments (Hand, *et al.*, 2013). In the same context, green skills mean the ability required to execute green jobs and to produce new green products necessary for jobs relating to manufacturing, services, and marketing. And also green skills also include abilities for finding out and understanding and learning and innovating low-carbon technologies in addition to technical ability (Lee, 2013). Giving a wide range of the importance of green to providing green jobs, it is, however, significant to identify and fill this gap in the construction trade.

Green skills is the skills for sustainable development that is needed in the workforce to achieve sustainable social, economic and environmental outcomes in the manufacturing and services industries and the community. The need for green skills exist right from the Brundtland meeting in 1987 with a view to achieving sustainability at global level, and hence, buildings were considered as front line contributing factor for the attainment of sustainability. This brings about the need to integrate green skills in building construction courses at all level of academic institutions in Nigeria.

Purpose of the Research

The main purpose of this research was to explore through the perception of teachers and students the academic need for infusion green skills in building construction courses at Nigeria Technical academic institutions.

Research Questions/interview question

How important is the infusion of green skills in building construction courses at Nigeria technical academic institutions?

Methodology

In respect to the global concern on sustainability, this qualitative study was conducted to identify the academic needs for infusing green skills in technical education programmes at colleges of education offering technical education programme in the north western Nigeria. The area for this research were the colleges of education offering technical education in the north western zone which are college of education Gidan waya, kafancan (Kaduna state); Federal college of education (technical) Bichi (Kano state); Isah Kaita college of education Dutsin ma (Katsina state); and Federal college of education (technical) Gusau (Zamfara state). Out of these four colleges two (Isah Kaita college of education Dutsin ma and Federal college of education technical Gusau) were randomly selected for this reasearch.

The study was qualitatively conducted using semi-structured interview. A semi-structured interview was employed for the study as it gives the participants opportunity to speak out their views in relation to the topic under study. Judgemental sampling was used to select teachers and students in adherence to their paper qualification/working experience and academic excellence respectively. In line with this, 3 lecturers (PhD/Masters degree holders with at least 10 years working experience) were selected from each of the two selected college using purposive sampling; and 2 final year students with 3.5 CGPA and above were also purposely selected too.

The in-depth interview was conducted with these two categories of respondents (students and teachers). Informed consent under the ethical operations of the study was conducted with all the sampled research participants. Participants provided answers to questions seeking for their perception of the need for integrating green skills in building construction courses at Nigeria technical academic institutions. The interview was guided by the research objectives and consist of two parts: Part A seeks information on the respondent's background and part B is interview protocol of the perception of students and teachers of academic needs for infusing green skills in building construction courses at Nigeria technical academic institutions with a view to achieving sustainability in Nigeria. Lastly, the results of this textual data collected from interviews were transcribed and analysed inductively using content analysis technique.

Findings

The findings as unanimously stressed by the interviewees include among other things that, in the current circumstances that environmental/ecological, social and economic problems are attached to manufacturing and services sectors. And hence, building sector was tagged as the leading contributors to all the above listed problems. Consequently, all the participants admitted that there is an academic need for infusing green skills in the building construction courses with emphasis to technical colleges, aimed to solving these problems from the classroom and further extend to the real world situation. In short, the findings revealed that there is academic need for infusion green skills into building construction sector for the attainment of environmental, social and economic sustainability.

Discussions

The findings revealed that with infusion of green skills into building construction courses at colleges of education environmental sustainability will be attained. This finding is in line with the report of Aliagha *et al.* (2014b) that to address the environmental challenges arising from energy consumption in buildings, the Malaysian government through Construction Industry Development Board Malaysia (CIDB) established a technical committee and eco-label task force to create guidelines for good practices in sustainable construction and to develop eco-label accreditation scheme for construction materials. More so, the findings is also in congruent with the recommendation of Bobbo *et al.* (2015) that the adoption and integration of Earth Materials and Earth Construction Techniques (ECT) into modern buildings construction in Nigeria is significantly low and was attributed to lack of awareness, training and education principally on issues sustainable practices and environmentally friendly building materials utilization.

The findings also revealed that infusion of green skills into building construction courses at colleges of education will aid the attainment of social sustainability. This finding agreed with the recommendation by Denzer and Heimbeck (2011) that the general social importance of Green Building practices is well-established, particularly given the urgent conditions regarding climate change and future energy economics. It is also in line with ...that In such a scenario, sophomore (or even second-semester) instructors could anticipate these fundamentals as prerequisite knowledge, and move on to higher-order concepts and problems. Additionaaly, achieving social sustainability

ensures that the social well-being of a country, an organisation, or a community can be maintained in the long term (Ecology, 2015).

The findings revealed that infusion of green skills into building construction courses at colleges of education will aid the attainment of economic sustainability. This finding is in congruent with the UK report that the need to cultivate green economic growth had started to permeate the UK Government's agenda from 2008, when a 'green skills' base was identified as vital to a low carbon transition; there was a recognition that such skills provision was lacking within the VET system; and hence, without clear objectives to create and promote green skills, within the paradigm of transition to a low-carbon economy, it will be unlikely that sustainability goals will be fully realised (Evans and Stroud, 2014). Furthermore, Fien and Guevara (2013) maintained that achieving goals of any green economy requires existing education and vocational training systems to be capable of equipping all individuals with the requisite breadth of competencies needed to take full advantage of the opportunities being generated by the 'green economy'

Collectively, the finding indicated that the infusion of green skills into building construction sector with emphasis to technical colleges, will aid the attainment of environmental sustainability, social equity and economic prosperity. This finding is in line with the findings of Dania *et al.* (2013) it entails resolving the conflict between various competing goals and involves the simultaneous pursuits of economic prosperity, environmental quality and social equity. Moreover, it is in coherence with the recommendation made by European Centre for the Development of Vocational Training CEDEFOP (2010) that green skills are required in almost any occupation to understand and appreciate the issues and demands of green growth. Development of these skills through TVET facilitates preparation of the future workforce to understand issues of green growth (including environmental, social and economic aspects), to interpret environmental legislation, to increase energy and resource efficiency to enable the processes involved in greening the economy.

Conclusion and Recommendation

Conclusively, the findings of this study clearly shows that there is an academic need to infuse green skills into the curriculum courses under building construction sector with emphasis to that of technical colleges.

It was recommended that green skills should be integrated into Nigerian colleges of education curriculum with a view to curtailing the menace of building sector to the environment, society and economy. With this, there is need for urgent infusion of green skills to the building construction sector.

References

- Aliagha, G. U., Adnan, N. B., Baba, M., Ali, H. M. and Eluwa, S. E. (2014b). Low Carbon Green Building Skills Requirements for Existing Buildings. *Advanced Materials Research*.
- Bobbo, H., Ali, A. M., Garba, I. and Salisu, M. (2015). The Prospects and Challenges of incorporating Earth Construction Techniques (ECT) in the Nigerian Educational Curriculum. *Prospects*. 2(8).
- Dania, A. A., Larsen, G. D. and Yao, R. (2013). Mainstreaming Sustainable Construction: Case Studies Of An Indigenous And Multinational Firm In Nigeria.
- Denzer, A. and Heimbeck, K. (2011). Hands-On Green Building Activities for Beginning Students. *Proceedings of the 2011 Reston, VA: ASCE Proceedings of the 2011 Architectural Engineering National Conference, March 30-April 2, 2011, Oakland, CA/ d 20110000: American Society of Civil Engineers*,
- Ecology, C. (2015). An Introduction to Sustainability and Sustainable Developmen.
- European Centre for the Development of Vocational Training CEDEFOP (2010). Skills for green jobs.
- Evans, C. and Stroud, D. (2014). Greening steel work: Varieties of Capitalism and the ‘greening’ of skills. *Journal of Education and Work*. 1-21.
- Fien, J. and Guevara, J. R. (2013). Skills for a Green Economy: Practice, Possibilities, and Prospects *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific* (pp. 255-263)Springer.
- Hand, A., Zuo, J., Rameezdeen, R. and Xia, B. (2013). Green skills for the construction industry. *Proceedings of the 2013 38th Australasian Universities Building Education Association Conference: The University of Auckland*, 1-10.
- Lee, N. (2013). Redesigning of Curriculum and Training for Skills for Green Jobs in the Republic of Korea *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific* (pp. 281-308)Springer.
- Organisation for Economic Co-operation Development OECD (2010). *The OECD Innovation Strategy: getting a head start on tomorrow*. OECD Publishing.

IDENTIFYING THE NEW ACADEMIA LEARNING INNOVATION METHOD OF TEACHING IN TECHNICAL AND VOCATIONAL EDUCATION

Emmanuel Simon Yayock¹, Yusri Bin Kamin², Nornazira Binti Suhairom³

¹*School of Technical Education, Federal College of Education (Technical) Bichi, Nigeria*

^{2,3}*Faculty of Education, Universiti Teknologi Malaysia*

(yayockes@yahoo.com, p-yusri@utm.my, p-nazira@utm.my)

ABSTRACT

The purpose of this study was to identify the New Academia Learning Innovation method of teaching in technical and vocational education. The study explored the educational approaches employed to produce highly skilled 21st century graduates. The study used survey questionnaires to identify the NALI methods suitable for the teaching of technical and vocational programs. The data generated represents a comprehensive review through case study. The study comprised 1 Objective, 1 Research Question with the population of 89 respondents. However, random sampling was used to select the respondents from the postgraduate students of technical and vocational education department, Universiti Teknologi Malaysia. The data were analyzed using mean and standard deviation with the aid of (SPSS 22 version software). The data and results present the stakeholders' views. They identified the NALI methods for the teaching of technical and vocational programs. The findings identified insights on stakeholders' view on NALI methods; commiserating with the methods identified includes creative knowledge, critical thinking, problem solving skills, higher thinking order and confidence. The key issues include teachers becoming more like facilitators using SCL approaches, modern training facilities, relevance of curriculum content, and the collaboration between educational institutions and industry. The study recommends improve institutional approaches in student learning, highlights further research to explore with specific examples to some key themes; skills and knowledge transfer, generic skills, pedagogy and curriculum review

Keywords: *New Academia Learning Innovation, Student-Centre Learning*

Introduction

Universities are created to impart knowledge and skills to individuals with a view to make them secure a job or become self-reliant. The universities role in the society therefore has become a key area of debate in recent years. (Spencer and Jordan, 1999). The advent of knowledge-based training ushered in the breaking down of traditional academic disciplines, for transdisciplinarity, and the establishment of academic links with industry and other stakeholders.

(Latib *et al.*, 2013) posited, we need to recognize that a 21st century education is the bedrock of competitiveness-the engine, not simply an input, of the economy. This challenge has resulted in the higher education sectors acting reactively to adapt to these movement, following situational pressure, as well as scientific and sociocultural development. (Groff, 2013) pointed that, many learning environments have looked to technology in their efforts to redesign teaching and learning.

(Fadel and Trilling, 2010) enumerates on the current systems of university education, the 21st century skills refer to a broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in today's world, particularly in collegiate programs and contemporary careers and workplaces.

NALI METHODS FOR THE TEACHING OF TECHNICAL AND VOCATIONAL COURSES

There are many SCL approaches (techniques) which have been established and are widely in used today. Hence, practitioners should identify and use appropriate teaching methods that enable desired learning outcomes to be achieved effectively (Ramoroka, 2007). In agreement with the above statement, (Lixun, 2011) described these as prioritizing learning above teaching, learning outcomes above teaching objects, aligning teaching and teaching process with outcomes and assessment processes (constructive alignment) and quality of learning as representing the measure of the quality of teaching. Notable among many teaching methods include;

The case study method is an effective teaching tool in any number of disciplines. As an instructional strategy, case studies have a number of virtues. They bridge the gap between theory and practice and between the academy and the workplace (Barkley, 2015). They also give students practice, identifying the parameters of a problem, recognizing and articulating positions, evaluating courses of action, and arguing different

points of view. According to (Keevy and Keevy, 2016) the case study approach in teaching helps develop students' skills in: 1. Problem solving 2. Analytical thinking, quantitatively and/or qualitatively, depending on the case 3. Decision making in complex situations and 4. Coping with ambiguities.

The Problem-based learning (PBL) is a student-centred pedagogy in which students learn about a subject through the experience of solving an open-ended problem found in trigger material. It is focused on the student's reflection and reasoning to construct their own learning. (Barrows and Tamblyn, 1980) defines PBL as the learning that results from the process of working towards the understanding of a resolution of a problem. In PBL, learners are presented with a problem in order to activate their prior knowledge, (Schmidt *et al.*, 2011) this prior knowledge is then built upon further as the learners collaborate in small groups to construct a theory or proposed mental model to explain the problem in terms of its underlying causal structure

Scenario-based learning (SBL) uses interactive scenarios to support active learning strategies such as problem-based or case-based learning. It normally involves students working their way through a storyline, usually based around an ill-structured or complex problem, which they are required to solve (Clark, 2009). In the process, students must apply their subject knowledge, and critical thinking and problem solving skills in a safe, real-world context. Therefore, Scenario-Based Learning (SBL) is thus defined as a methodology, which aims to promote deep learning and awareness by involving participants in realistic critical incidents where they are forced to consider a wide range of factors, make decisions and reflect on the outcomes and what they have learned from this. (Errington, 2003); defined SBL as, any educational approach that involves the intentional use or dependence upon scenarios to bring about desired learning intentions'

Service learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility and strengthen communities (Felten and Clayton, 2011). Service learning is a process of involving students in community service activities combined with facilitated means for applying the experience to their academic and personal development Butin (2005); Giles and Eyster (1994).

Objective of the Study

The main objective of this study is to identify the New Academia Learning Innovation (NALI) methods of teaching technical and vocational education.

Research Question

What are the NALI methods of teaching technical and vocational courses in education?

Methodology

The data for this study was quantitatively collected using survey questionnaire to identify the NALI methods of teaching technical and vocational education. The study comprised 1 Objective, 1 Research Question with the population of 89 respondents. However, random sampling was used to select the respondents from the postgraduate students of technical and vocational education department, Universiti Teknologi Malaysia. The data was analyzed using Mean and Standard Deviation with the aid of SPSS version 22.

Findings of the study

The table below revealed that the respondents agreed in 11 items on the new academia learning innovation methods of teaching technical and vocational education. This is because, the mean responses of the respondents in all the items ranged from 4.12-4.46 which are greater than the cut-off point of 3.50. The standard deviation of the items ranged from 0.61-0.68, which indicated a consensus by the respondents.

Research Question; identify the *new academia learning innovation methods of teaching technical and vocational education*

| SN | ITEM | X | SD | REMARK |
|----|--------------------------------------|------|------|----------|
| 1. | Emphasis on thinking skills | 4.29 | .617 | Agree |
| 2. | Traditional methods of teaching only | 1.75 | .660 | Disagree |
| 3. | Guide students to discovery | 4.23 | .556 | Agree |
| 4. | Problem solving learning method | 4.30 | .560 | Agree |
| 5. | In-depth focus on student interest | 4.12 | .686 | Agree |
| 6. | Self-assessment and reflection | 4.30 | .677 | Agree |
| 7. | Job creation teaching methods | 4.32 | .626 | Agree |
| 8. | Information access, expression and | 4.41 | .612 | Agree |

| | | | | |
|-----|--|------|------|-------|
| | communication | | | |
| 9. | Collaborative learning methods | 4.35 | .561 | Agree |
| 10. | Use of technology in teaching/learning processes | 4.40 | .621 | Agree |
| 11. | Exploration and knowledge construction | 4.41 | .587 | Agree |
| 12. | Student centered learning methods | 4.47 | .569 | Agree |

Discussion on the findings

Findings on this study identified NALI methods of teaching technical and vocational education. 11 items were ticked Agree. Discussion on these identified NALI methods of teaching technical and vocational education is as follows;

The study identified that NALI methods of teaching technical and vocational education emphasizes on students thinking skills. In line with the findings made by Meldrum (2011) that scenario-based learning method uses task and projects that address the understanding of conceptual problems, enable critical thinking and transfer of ideas into real-world situation. In their observation, in accordance with the findings Hwang and Kim (2006); Razali et al (2016) asserted that the learning and teaching in engineering and technology purposefully aim to promote innovative thinking, thus equipping students with high-level problem solving skills in a way that builds on theory whilst enhancing practical competencies.

The findings in the study as buttressed by Rose A & Aris B (2016) CDIO plays an important role in guiding graduates of technology and engineering education into becoming professionals by implementing the most effective teaching and learning methods available. The findings also as observed by Latib, *et al.* (2013) the need to recognize that a 21st century education is the bedrock of competitiveness-the engine, not simply an input, of the economy.

In accordance with the findings, Barrows and Tamblyn (1980) defines PBL as the learning that results from the process of working towards the understanding of a resolution of a problem. In agreement as revealed by Barrett (2010) starting with problems can be very motivating for students who may not see why they should be interested in inputs of bodies of knowledge but may become very engaged in researching

these bodies of knowledge to address the learning issue they have identified themselves from working on the problem.

The study in an attempt to generate information about in-depth focus on student interest as founded by Zaini Ujang, Rose Alinda & Baharudin Aris, (2011) the instructor designs a suitable and systematic education curricular, providing flexible and effective teaching methodology and appropriate instructional materials to match the needs of the learners. Whatever the methods of assessment, the study reveals that students should be provided with the feedback of assessment. The study as further revealed by Barkley (2015) that assessment and self-reflection give students the parameters to identify learning difficulties, recognize and articulate positions and evaluate courses of action.

The study identified ways of creating new enterprise, jobs and organizations with values that influence the economy of nations around the globe. In line with the findings made by Anderson (1998); Hirschfeld, *et al.* (1997)) small independent firms have been heralded as the great hub for economic growth in the developed economies. The findings could not but agree with Barrows and Tamblyn (1980) that the enterprise culture resonates with heroic view of entrepreneurship, so that industrial bases are renewed and modern industrial structures are maintained.

The study delve into information access, expression and communication. As revealed by the findings, entertainment, information, education, and technology are merging into a single medium for educational and research purposes (Heidelberg, 2008). In line with the findings made by Oye, *et al.* (2012) students can access course contents, lecture notes and communication tools in addition to assessment materials including assignments and quizzes. Students prefer to communicate through e-mail and text messaging rather than face-to-face contact and prefer online technology to traditional lecture-based presentations, there is no doubt that ICT use in the classroom-increased student's motivation to learn, engage in learning and give independence in learning.

The findings of the study unearth the system of online collaborative technologies combined with a shift in educational practices toward sharing educational contents, have created global educational opportunities never witnessed before in the history of human civilization. (Lee, *et al.*, 2007). The findings as described by Nichols (2008) states that e-learning as a 'computer-based sharing and knowledge dissemination and learning medium,' its application in course modelling towards promoting, sharing and re-use of course contents and teaching materials and the support for personalized learning, has many positive outcomes from collaborating through e learning. The findings further

shade light by Rumbley, *et al.* (2014) through harnessing the advantages that technology offers in respect of enabling talent-development capacity building without boundaries. Aris, *et al.* (2013) explained the characteristics of 21st century higher education and learning methods used by students to be essential in identifying methods and technology that are suitable for their learning needs

In line with the study, the findings as put forward by Errington (2011) SBL is considered an outstanding student-centred approach based on its focus on learners' active involvement in knowledge construction as pre-requisite to professional practice. The approach is suitable and relevant in preparing learners for professional practice and motivation role in school-to-work transition. Furthermore, Breakey, *et al.* (2008), Meldrum (2011); it uses task and projects that address understanding of conceptual problems, enable critical thinking and transfer of ideas into real-world situation.

Conclusion and Recommendation

The identification of NALI teaching methods suitable for the acquisition of skills such as higher thinking order, creativity, confidence, creative thinking and entrepreneurial education is the bases for this study. The research outcomes also aims to benefit future programs and curriculum design, especially in program development for meeting both individual, institutions and industrial demands. This study recommended that the stakeholders should ensure that programs commensurate with the standard and requirements of the beneficiaries. The recommendations have significance for all stakeholders, including students, lecturers, industry, employers, training institutions, and so on.

References

- Anderson, A. R. (1998). Cultivating the Garden of Eden: environmental entrepreneuring. *Journal of Organizational Change Management*. 11(2), 135-144.
- Aris, B., Samian, Y., Ahmad, M. H., Abdullah, Z. and Rashid, M. Y. M. (2016). Enriching 21st Century Higher Education Students' Job Creation Skill: UTM Academic Staff Perceptions Toward MIT BLOSSOMS.
- Barrett, T. (2010). The problem-based learning process as finding and being in flow. *Innovations in Education and Teaching International*. 47(2), 165-174.
- Barkley, C. (2015). Major.(2005). *Collaborative learning techniques*.

- Barrows, H. S. and Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education*. Springer Publishing Company.
- Butin, D. (2005). *Service-learning in higher education: Critical issues and directions*. Springer.
- Clark, R. (2009). Accelerating expertise with scenario based learning. Learning Blueprint. Merrifield, VA: American Society for Teaching and Development.
- Errington, E. P. (2003). *Developing scenario-based learning: Practical insights for tertiary educators*. Dunmore Press.
- Fadel, C. and Trilling, B. (2010). 21st Century Skills: Learning for Life in Our Times. *Education Review//Reseñas Educativas*
- Felten, P. and Clayton, P. H. (2011). Service-learning. *New directions for teaching and learning*. 2011(128), 75-84.
- Groff, J. (2013). Technology-rich innovative learning environments. *OCED CERI Innovative Learning Environment project*. 1-30.
- Hwang, S. Y. and Kim, M. J. (2006). A comparison of problem-based learning and lecture-based learning in an adult health nursing course. *Nurse education today*. 26(4), 315-321.
- Keevy, M. and Keevy, M. (2016). Using case studies to transfer soft skills (also known as pervasive skills) Empirical evidence. *Meditari Accountancy Research*. 24(3), 458-474.
- Latib, A. A., Bujang, A. A., Kamin, Y., Udin, A. and Libunao, W. (2013). New Academia Learning Innovation: Introducing The Job Creation Program for Undergraduate Students in Universiti Teknologi Malaysia.
- Ramoroka, N. J. (2007). *Outcomes-Based Education and its Impact on their Classroom Assessment Practices*, University of Pretoria
- Schmidt, H. G., Rotgans, J. I. and Yew, E. H. (2011). The process of problem-based learning: what works and why. *Medical education*. 45(8), 792-806.
- Spencer, J. A. and Jordan, R. K. (1999). Learner centred approaches in medical education. *Bmj*. 318(7193), 1280-1283.
- Lixun, W. (2011). Designing and implementing outcome-based learning in a linguistics course: a case study in Hong Kong. *Procedia-Social and Behavioral Sciences*. 12, 9-18.
- Meldrum, K. (2011). Preparing pre-service physical education teachers for uncertain future (s): A scenario-based learning case study from Australia. *Physical education and sport pedagogy*. 16(2), 133-144.

KAJIAN AWAL MENGENALPASTI MASALAH YANG DIHADAPI OLEH PELAJAR DALAM KURSUS PERAKAUNAN

Tono Hassan, Dayana Farzeeha Ali, Mohd Bilal Ali

Faculty of Education, Universiti Teknologi Malaysia

ABSTRAK

Kajian awal telah dijalankan untuk melihat sejauhmanakah tahap penguasaan pelajar terhadap subjek perakaunan dan melihat apakah permasalahan yang dihadapi oleh pelajar dalam mempelajari subjek perakaunan melalui persepsi pelajar dan guru. Seramai 180 orang responden daripada 3 buah sekolah yang dipilih secara rawak terlibat dalam kajian ini. Hasil kajian mendapati topik yang kurang dikuasai oleh pelajar berdasarkan kepada persepsi guru dan pelajar adalah topik nyata kewangan tingkatan empat. Kesannya, pelajar sekadar mengingati fakta dan konsep tanpa benar-benar memahaminya serta gagal mengaplikasi pada situasi yang tertentu. Oleh itu perlunya satu teknik terkini dalam pembelajaran diperkenalkan dalam mata pelajaran perakaunan supaya dapat menambahkan minat dan juga kefahaman pelajar terhadap matapelajaran perakaunan.

Keyword: Perakaunan, visualisasi, Augmented Reality

Pengenalan

Pendidikan perakaunan berubah secara pantas akibat peningkatan dalam pemerhatian pihak sekolah, awam dan universiti terhadap keberkesanan cara penyampaian dan aplikasinya. Rujukan pembelajaran dan sikap pelajar melambangkan permulaan penting untuk pembinaan yang efisien dan efektif dalam program pendidikan. Teori pembelajaran mencadangkan cara pembelajaran mempengaruhi keberkesanan seseorang individu. Kejayaan sesebuah program pendidikan bergantung pada tahap penerimaan seseorang pelajar dan kebolehan mengadaptasi pembelajaran terhadap teknologi baru (Richardson et al, 2013). Pembelajaran juga merangkumi visual sebagai alat bantu mengajar. Kini visual relevan dan terus meningkat sejak ia lebih jelas dan efisien dalam informasi perakaunan (Libby, 1981; Smith and Taffler). Visual

merangsang peningkatan proses belajar di kalangan pelajar yang terlibat (Yalamova, 2010).

Dalam disiplin perakaunan, kandungan pembelajaran kebiasaannya dan masih disampaikan melalui "chalk and talk" di dalam bilik darjah (Becker & Watts, 2011). Suasana pengajaran dan pembelajaran dalam bidang ini mematuhi format asal dan setiap modul mengikut kandungan serta kaedah kuliah dan tutorial dilengkapi dengan penggunaan buku teks dan soalan tutorial (Reimann, 2004).

Kaedah tradisional ini seperti yang diperkatakan oleh Davis (2011) tidak membangunkan keperluan interpersonal, analitik dan kemahiran kreatif seiring dengan pengetahuan baru ekonomi dan perakaunan. Di dalam pendidikan perakaunan sepertimana disiplin ekonomi, terdapat pelbagai perubahan di dalam kandungan, kaedah mengajar yang digunakan, pedagogi, bagi membangunkan kompetensi profesional dan kemahiran. (Kimmel, 1995; Porter and Carr, 1999; Demski and Zimmerman, 2000; Albrecht and Sack, 2000). Banyak pembangunan baru model pengajaran dan alatan bantu mengajar seiring dengan kaedah baru di dalam ilmu perakaunan dan informasi di dalam organisasi (Bear, 2005; Goldman et al. 2002; Imel, 1998). Seiring, bagi melahirkan profesional dan pengurus bagi masa depan kita memerlukan perubahan suasana pembelajaran (Davis, 2011). Pada masa kini, tenaga pengajar perlu memperkenalkan keinovatifan dan persaingan alat bantu mengajar bagi memperbaiki kualiti penyampaian dan aplikasinya.

Strategi pengajaran dan pembelajaran yang berkesan dalam kurikulum perlu diberi penekanan sejajar dengan usaha Kementerian Pendidikan Malaysia (KPM) yang melaksanakan Transformasi Pendidikan dalam Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025. Kebanyakan pelajar belajar dengan berkesan melalui pengalaman peribadi, aktiviti "hands-on" dan peluang untuk penemuan sendiri (Pusat Perkembangan Kurikulum, 2013). Justeru itu, proses pengajaran dan pembelajaran bukan lagi berpusatkan kepada guru tetapi lebih berpusatkan kepada pelajar baik secara individu atau kumpulan (Abu bakar & Ikhsan, 2008).

Dalam menguasai kemahiran menginterpretasi konsep perakaunan yang abstrak, seseorang pelajar itu perlu mempunyai kemahiran visualisasi yang tinggi. Kemahiran visualisasi ini adalah keupayaan minda melihat sesebuah objek atau simbol dan berfikir dalam dua atau tiga dimensi dalam minda seseorang individu dan kemahiran ini penting dalam bidang kejuruteraan kerana mempunyai perkaitannya dengan pencapaian dalam bidang matematik, sains, seni dan kejuruteraan (Mohd Safarin Nordin & Muhammad Sukri Saud, 2006). Oleh itu, kejayaan dan pencapaian seseorang pelajar kerap kali dikaitkan dengan proses visualisasi di mana gaya pembelajaran seseorang pelajar perlu diberi pertimbangan untuk memastikan tahap pengetahuan dalam visualisasi dapat dikuasai berbanding kebolehan lisan atau kepintaran. Kajian-kajian terdahulu mendapati kemahiran visualisasi mempunyai hubungan yang rapat dengan domain teknikal, vokasional, matematik, dan pekerjaan berbanding kebolehan lisan (Koch, 2006; Bertoline & Wiebe, 2003; Gillespie, 1995; McGee, 1979).

Justeru itu, peranan Pendidikan Teknik dan Vokasional pada masa kini amat mencabar kerana bidang ini mempunyai tanggungjawab besar bagi melaksanakan pembaharuan pendidikan teknik dan vokasional terutama dari segi pengajaran-pembelajaran, sistem pengurusan pembelajaran dan peranan guru sudah tentu akan memberikan cabaran baharu kepada sistem pendidikan teknik dan vokasional di negara ini menjelang abad ke-21 terutamanya bagi subjek Prinsip Perakaunan. Selain itu, dasar meningkatkan penggunaan Teknologi Maklumat (Information Technology) atau IT dalam pengajaran-pembelajaran sesuai dengan perubahan era Teknologi Maklumat dan Komunikasi (Information and Communication Technology) ICT juga penting dalam memenuhi aspek pembelajaran abad ke-21. Pendidikan, sekolah dan profesion keguruan di negara ini perlu memainkan peranan yang lebih ke hadapan bagi membentuk generasi muda yang celik komputer dan dapat merealisasikan dasar dan matlamat negara bagi menjadikan Malaysia sebuah negara yang maju dalam bidang ICT.

Kepesatan penggunaan informasi dan teknologi komunikasi di dalam skop pendidikan telah merubah suasana bilik darjah tradisional yang membawa kepada keperluan berfikir mengatasi paradigma pengkomputeran di dalam pendidikan. Berdasarkan perspektif ini, beberapa kajian dijalankan dalam memperkenalkan kaedah baru yang boleh digunakan untuk memperbaiki pengalaman pengajaran dan

pembelajaran. Antaranya ialah usaha untuk membawa penambahan realiti kepada aplikasi pedagogi, membekalkan pengguna dengan visual, interaksi dan eksperimen alat bantu mengajar seperti yang diperlihatkan oleh Nincarean et al. (2013), Wu et al. (2013), Zydney & Warner (2016), dan Jooste, Rautenbach & Coetzee (2016). Melalui penambahan realiti dan kebolehupayaannya kemungkinan mampu meningkatkan saluran interaksi di antara pengguna dan kandungan pendidikan yang memberi peluang pembelajaran yang luas. Kelebihan lain yang diperoleh melalui penambahan realiti ialah mencapai tahap lebih tinggi dengan pengguna melalui visual 3D ke atas objek sebenar dengan realiti, memperlihatkan fenomena yang tidak dijangkakan di dalam dunia sebenar melalui pelbagai perspektif dan sudut. Ciri-ciri ini membantu pengguna dalam mengasimilasi abstrak dan konsep yang kompleks serta memudahkan kefahaman terhadap subjek pendidikan. Sejak penambahan realiti diperkenalkan di dalam dunia pendidikan potensi pedagogi diiktiraf, tenaga pengajar terus mencari strategi baru untuk membaiki pengalaman pembelajaran pengguna. Oleh itu, kajian ini, penyelidik mengintegrasikan persekitaran AR dalam membantuk meningkatkan kemahiran visualisasi pelajar dalam pencapaian matapelajaran perakaunan.

Metodologi

Kajian awal telah dijalankan di 3 buah sekolah yang di pilih secara rawak dan seramai 180 orang responden telah terlibat dalam kajian ini. Kajian ini bertujuan untuk melihat sejauhmanakah tahap penguasaan pelajar terhadap subjek perakaunan dan melihat apakah permasalahan yang dihadapi oleh pelajar dalam mempelajari subjek perakaunan melalui persepsi pelajar dan guru.

Kajian literatur dan juga keadah analisis document digunakan dalam kajian awal ini. Kajian literatur diambil dari jurnal yang lepas. Manakala analisis document merujuk kepada keputusan peperiksaan SPM peringkat Sekolah Menengah Teknik dan Kolej Vokasional bagi Mata Pelajaran Prinsip Perakaunan yang dikeluarkan oleh Kementerian Pelajaran Malaysia. Data di analisis setelah ditukar dalam bentuk peratus.

Keputusan

Berdasarkan analisis Keputusan Peperiksaan SPM tahun 2010 hingga 2014 peringkat Sekolah Menengah Teknik dan Kolej Vokasional bagi Mata Pelajaran Prinsip Perakaunan keputusan adalah seperti dalam jadual 1.1.

Jadual 1.1: Keputusan Peperiksaan SPM SMT/SMV Tahun 2010 hingga 2014

| | Tahun | | | | |
|-----------|-------|-------|-------|-----------|-----------|
| | 2010 | 2011 | 2012 | 2013 | 2014 |
| A | 61.37 | 56.5 | 49.68 | 58.6 9 | 64.2 7 |
| B | 20.6 | 24.74 | 24.09 | 17.3 8 | 20.7 |
| C | 12.24 | 14.23 | 15.99 | 16.3 6 | 11.7 7 |
| D | 2.79 | 3.3 | 5.97 | 5.32 | 2.18 |
| GAGA L | 3 | 1.23 | 4.27 | 2.25 | 1.09 |

Sumber: Bahagian Pendidikan Teknik dan Vokasional, Kementerian Pelajaran Malaysia.
(Mac 2015)

Perbincangan

Jadual 1.1 menunjukkan keputusan peperiksaan SPM pelajar bagi tahun 2010 sehingga 2014. Daripada jadual 1 walaupun lebih separuh daripada pelajar mendapat A, tetapi peratusannya tidak konsisten. Terdapat peningkatan bagi pelajar yang mendapat B pada tahun 2011 dan 2012 jika dibandingkan dengan tahun 2010. Walau bagaimana pun, peratusannya merosot sebanyak lebih kurang tujuh peratus pada tahun 2013 dan meningkat semula pada tahun 2014. Peratusan pelajar yang mendapat C pula semakin meningkat dari tahun ke tahun dan hanya menurun pada tahun 2014. Jika dibandingkan dengan pelajar yang mencapai tahap tidak memuaskan. Peratusannya agak meningkat dari tahun 2010 hingga 2013 dan penurunan peratusan pelajar yang gagal berlaku pada

tahun 2014. Ini menunjukkan suatu perkembangan yang positif. Walau bagaimanapun, permasalahan pelajar bagi masalah ini harus di kenal pasti.

Kajian awal telah dijalankan untuk melihat sejauhmanakah tahap penguasaan pelajar terhadap subjek perakaunan dan melihat apakah permasalahan yang dihadapi oleh pelajar dalam mempelajari subjek perakaunan melalui persepsi pelajar dan guru. Seramai 180 orang responden daripada 3 buah sekolah yang dipilih secara rawak terlibat dalam kajian ini. Hasil kajian mendapati topik yang kurang dikuasai oleh pelajar berdasarkan kepada persepsi guru dan pelajar adalah topik penyata kewangan tingkatan empat. Daripada kajian awal yang telah dijalankan, keputusan adalah seperti dalam jadual 1.2

Jadual 1.2: Permasalahan dalam pembelajaran subjek perakaunan

| Bil | Item | Skala (%) | | |
|-----|--|-----------|-------------|--------------|
| | | Setuju | Tidak pasti | Tidak Setuju |
| 1. | Topik-topik dalam prinsip perakaunan adalah mudah difahami dan diikuti. | 30 | 5 | 65 |
| 2. | Pelajar berasa seronok belajar prinsip perakaunan | 40 | 3 | 57 |
| 3. | Konsep dalam prinsip perakaunan mudah difahami | 25 | 10 | 65 |
| 4. | Pembelajaran prinsip akaun memerlukan pelajar memahami konsep yang abstrak | 80 | 5 | 15 |
| 5. | Pelajar menggunakan teknik menghafal berbanding memahami konsep prinsip perakaunan | 90 | 0 | 10 |
| 6. | Pembelajaran prinsip perakaunan memerlukan kemahiran menggambarkan (visualisasi) yang tinggi | 75 | 8 | 17 |
| 7. | Strategi pembelajaran yang | 30 | 0 | 70 |

| | | | | |
|-----|--|----|----|----|
| | digunakan (secara tradisional) dalam pembelajaran prinsip perakaunan adalah sesuai | | | |
| 8. | Penggunaan teknologi sebagai bahan bantu mengajar dapat membantu pelajar memahami konsep prinsip perakaunan dengan mudah | 78 | 12 | 10 |
| 9. | Pembelajaran prinsip perakaunan banyak melibatkan pemahaman konsep dan formula | 30 | 2 | 68 |
| 10. | Pembelajaran yang melibatkan penggunaan visual mampu membantu pelajar memahami topik yang diajar | 84 | 1 | 15 |

Melalui kajian awal didapati 65% pelajar merasakan topik-topik dan konsep-konsep dalam matapelajaran prinsip akaun sukar difahami. Mereka juga merasa tidak seronok belajar prinsip akaun. Ini menunjukkan sesuatu keadaan yang tidak baik jika berterusan dalam PdP. Majoriti pelajar menggunakan teknik menghafal berbanding memahami konsep prinsip perakaunan. Sebanyak 75% pelajar juga bersetuju pembelajaran prinsip perakaunan memerlukan kemahiran menggambar (visualisasi) yang tinggi. Ini mungkin kerana bagi mereka pembelajaran prinsip perakaunan banyak melibatkan pemahaman konsep dan formula. Selain itu majoriti pelajar bersetuju bahawa penggunaan teknologi sebagai bahan bantu mengajar dapat membantu pelajar memahami konsep prinsip perakaunan dengan mudah dan pembelajaran yang melibatkan penggunaan visual mampu membantu pelajar memahami topik yang diajar.

Kajian (Azmi, & Nias, 2010), mendapati bahawa 36.14% pelajar menghadapi masalah dalam memahami konsep, 27.71% pelajar menghadapi masalah dalam mengingat formula dan 10.04% pelajar berpendapat mereka cuai dalam menjawab soalan bagi matapelajaran perakaunan.

Selain itu, (Abdullah et al., 2016) mendapati subjek perakaunan merupakan subjek yang kurang digemari oleh para pelajar dan mereka agak sukar untuk menguasai subjek ini. Hasil penyelidikan mendapati majoriti pelajar mendapat markah yang rendah dalam penilaian berterusan dan peperiksaan akhir. Ini dibuktikan melalui markah ujian 1 dimana 11.1% pelajar gagal dan 27.8% pelajar mendapat pencapaian sederhana.

Kesimpulan

Sukatan pelajaran Prinsip Perakaunan diwujudkan bagi memenuhi keperluan badan profesional dalam menyediakan satu set lengkap rekod perakaunan berdasarkan urusan niaga atau peristiwa perniagaan mengikut prinsip perakaunan yang diterima pakai serta mentafsir maklumat kewangan yang telah disediakan. Dalam Prinsip Perakaunan, murid-murid didedahkan tentang konsep dan prinsip asas perakaunan, proses lengkap penyediaan penyata kewangan, perancangan kewangan dan pengurusan pengekos. Di samping konsep, prinsip dan kaedah perakaunan, murid-murid juga didedahkan kepada penggunaan komputer dalam sistem perakaunan serta menganalisis maklumat untuk membuat keputusan selaras dengan keperluan ekonomi dan perkembangan teknologi maklumat semasa.

Ini disebabkan, kebanyakan pelajar yang mengambil matapelajaran ini berpendapat bahawa ia adalah matapelajaran pengiraan walhal, matapelajaran ini memerlukan pelajar untuk memahami konsep, membuat analisa dan membuat penilaian. Faktor kefahaman mengenai subjek yang diajar serta kaedah dan pengajaran oleh guru didapati memainkan peranan dalam mempengaruhi keputusan peperiksaan pelajar.

Daripada kajian awal, didapati punca utama adalah kerana kemahiran menginterpretasi data dan visualisasi pelajar yang rendah. Kesannya, pelajar sekadar mengingati fakta dan konsep tanpa benar-benar memahaminya serta gagal mengaplikasi pada situasi yang tertentu.

Penghargaan

Segala puji dan syukur dipanjatkan kepada Pemilik ilmu yang Maha Mengetahui lagi Maha Bijaksana kerana mengizinkan saya untuk menjalankan kajian ini. Jutaan terima kasih yang tidak terhingga kepada penyelia saya Dr Dayana Farzeeha Ali dan Prof Madya Dr Mohammad Bilal Ali atas tunjuk ajar serta bimbingan yang begitu berguna sepanjang kajian dijalankan. Moga hasil kajian ini menjadi legasi dan seterusnya saham akhirat buat mereka.

Ucapan terima kasih juga saya tujukan khas kepada isteri saya, Zalina Binti Mohd Khalid serta anak- anak yang dikasihi Doa, sokongan, dorongan dan pengorbanan kalian amat dihargai. Akhir sekali, saya ucapkan terima kasih kepada semua pihak yang terlibat secara langsung atau tidak dengan kajian yang saya lakukan. Saya doakan semoga kalian sentiasa dirahmati Allah S.W.T.

RUJUKAN

- Abdullah, M. B., Perdagangan, J., Ayu, N., Awang, B., Perdagangan, J., Binti, A., ... Kuantan, P. M. (2016). *Persepsi pelajar mengenai penguasaan kemahiran topik*.
- Abu Bakar Nordin & Ikhsan Othman(2008). *Education Philosophy and curriculum* (2nd Edition). Tanjong Malim: Quantum Books.
- Albrecht, E. S. y Sack, R. J. (2000). *Accounting education: Charting the course through a perilous future*. Sarasota: American Accounting Association. Education Series16
- Azmi, M., & Nias, B. (2010). *Pandangan Pelajar Terhadap Matapelajaran*, (November).
- Baer L.L. (2005), *The generation gap: bridging learners and educators*, *The international digital media and Arts Association Journal*, Vol. 2, No. 1, pp. 47-52.
- Becker, William & Watts, Michael. (2011). *How departments of economics evaluate teaching*. *American Economic Review*. 89. 344-349. 10.1080/00220485.2012.686826.
- Bertoline, G. R., & Wiebe, E. N. (2003). *Technical Graphics Communication* (3 ed.). New York: McGraw-Hill.
- Davis, J.S. (2011), *Games' and students: crating innovative professionals*, *American Journal of Busines Education*, Vol. 4 No. 1, pp.1-11.
- Demski, J. S. y Zimmerman, J. L. (2000). *On «Research vs teaching»: A long perspective*. *Accounting Horizons*, 14(3), 343–352.
- Gillespie, W. H. (1995). *Using Solid Modeling Tutorials to Enhance Visualization Skills.*, University of Idaho, Idaho.
- Goldman J.D.G. and Torrisi-Staele G. (2002), *Constructivist pedagogies of interactivity on a CD-ROM to enhance academic learning at a tertiary institution*, *International Journal of Educational Technology*, Vol. 3, No. 1.
- Imel S. (1998), *Transformative Learning in Adulthood*, *Eric Digest*, No. 200.
- Jooste, D., Rautenbach, V., & Coetzee, S. (2016). *Results of an Evaluation of Augmented Reality Mobile Development Frameworks for Addresses in Augmented Reality*. *Spatial Information Research*, 24, 1-13. <https://doi.org/10.1007/s41324-016-0022-1>
- Kimmel, P. (1995). *A framework for incorporating critical thinking into accounting education*. *Journal of Accounting Education*, 13(3), 299–318.

- Koch, D. S. (2006). *The Effects of Solid Modeling and Visualization On Technical Problem Solving*. Unpublished Dissert, Virginia Polytechnic Institute and State University, Blacksburg.
- Libby, R. 1981. *Accounting and Human Information Processing*. Prentice-Hall, Englewood Cliffs, NJ.
- McGee, M. G. (1979). Human Spatial Abilities: Psychometric Studies and Environmental, Genetic, Hormon, and Neurological Influences. *Psychological Bulletin*, 86(5), 889-918.
- Mohd Safarin Nordin, & Muhammad Sukri Saud. (2006). Kemahiran Visualisasi: Kemahiran Kognitif Tahap Tinggi Dalam Pendidikan Teknik Dan Vokasional. Seminar Kebangsaan Pendidikan Teknik Dan Voksional 2006, (April), 28.
- Nincarean, D., Ali, M. B., Dayana, N., Halim, A., Hishamuddin, M., & Rahman, A. (2013). Mobile Augmented Reality: The Potential for Education. *Procedia-Social and Behavioral Sciences*, 103, 657-664. <https://doi.org/10.1016/j.sbspro.2013.10.385>
- Porter, B. A. y Carr, S. A. (1999). From strategic plan to practical realities: Developing and implementing a zero-based accounting curriculum. *Issues in Accounting Education*, 14(4), 565–588.
- Reimann, N. (2004). First-year teaching-learning environments in Economics. *International Review of Economics Education*, Vol.3, No.1. pp. 9-38. ISSN 1477-3880
- Smith, M. dan R.J. Taffler. 1984. Improving the Communication Function of Published Accounting Statements. *Accounting and Business Research*, no. 54, Spring
- Wu, H. K., Lee, S. W. Y., Chang, H. Y., & Liang, J. C. (2013). Current Status, Opportunities and Challenges of Augmented Reality in Education. *Computers and Education*, 62, 41-49. <https://doi.org/10.1016/j.compedu.2012.10.024>
- Yalamova, R. (2010). *Simple Heuristic Approach To Introduction Of The Black-Scholes Model*, Vol.3, No.2, pp. 31–42.
- Zydney, J. M., & Warner, Z. (2016). Mobile Apps for Science Learning: Review of Research. *Computers & Education*, 94, 1-17. <https://doi.org/10.1016/j.compedu.2015.11.001>

KAJIAN AWAL MENGENALPASTI TAHAP PENGUASAAN PELAJAR BAGI KURSUS PENGURUSAN EKONOMI

Nusaila Johari, Dayana Farzeeha Ali, Mohd Bilal Ali

Faculty of Education, Universiti Teknologi Malaysia

ABSTRAK

Dalam dunia pendidikan hari ini, proses Pengajaran dan Pembelajaran (PdP) yang lebih kreatif diperlukan demi menghasilkan graduan yang lebih berkualiti. Konsep menghafal akan menyebabkan pelajar kurang berfikir dan menyebabkan pelajar lupa kepada isi pembelajaran yang dipelajari apabila terdapat sesuatu gangguan semasa proses penghafalan berlaku. Kesannya pelajar kurang berusaha untuk berfikir dengan baik dan akan menyebabkan daya kognitif tidak meningkat. Kajian ini dijalankan bertujuan untuk mengenal pasti masalah yang dihadapi oleh pelajar dalam kursus *Managerial Economic* atau Pengurusan Ekonomi, di sebuah universiti tempatan Malaysia. Berdasarkan kajian awal, didapati pelajar mengalami kesukaran dalam memahami kursus Pengurusan Ekonomi. Kursus ini merupakan kursus teras dan wajib dikuasai oleh pelajar dan kegagalan menguasai kursus ini akan menghasilkan graduan yang kurang daya kemahiran berfikir, kemahiran visualisasi yang rendah dan sukar mengaplikasi teori atau ilmu yang dipelajari pada situasi yang tertentu.

Keyword: *Pengurusan Ekonomi*, visualisasi, PdP

Pengenalan

Pendidikan Teknik dan Vokasional (PTV) merupakan salah satu dasar pendidikan dan pilihan kurikulum sekolah bagi meningkatkan daya saing dalam bidang pembangunan teknologi dan ekonomi moden yang pesat. Sejajar dengan cabaran keenam Wawasan 2020, negara berhasrat untuk mewujudkan sebuah masyarakat saintifik dan progresif, masyarakat yang mempunyai daya perubahan yang tinggi dan berpandangan ke hadapan yang bukan sahaja menjadi pengguna teknologi malah juga menyumbang kepada perkembangan saintifik dan teknologi masa akan datang (Yee et. al, 2013). Oleh itu, mutu sistem pendidikan di Malaysia perlu diperbaiki bagi membangunkan generasi muda yang berilmu, berfikir secara kritis dan kreatif, mempunyai kemahiran kepimpinan

dan mampu berkomunikasi dengan seluruh dunia (Pelan Pembangunan Pendidikan Malaysia (PPPM) 2015-2025 (2015). Dalam bidang PTV, kemahiran visualisasi merupakan satu kemahiran yang perlu dikuasai oleh pelajar (Martin-Gutierrez et al, 2010; Martin-Gutierrez et al, 2013). Visualisasi dalam Pengajaran dan Pembelajaran (PdP) merupakan satu kemahiran berfikir kerana ia melibatkan proses pemikiran yang menggunakan imej-imej, gambar rajah dan simulasi mental di mana ia mampu meningkatkan daya kognitif pelajar (Reiner, 2008; Chwen Jen, 2006). Walaubagaimana pun, pelajar sukar menguasai kemahiran ini (Dayang Noorasura & Sazilah, 2011; Norabeerah, 2015) sedangkan kemahiran ini sering dikaitkan dengan kejayaan dan pencapaian terutamanya dalam bidang matematik, sains kejuruteraan dan beberapa bidang lain (McGee,1979; Ault & John, 2010; Di Serio et al, 2013). Ini memandangkan kemahiran ini banyak melibatkan penggunaan simbol dan graf dalam menyelesaikan masalah berbentuk rumus dan ramalan (Mohd Safarin & Muhamad Sukri 2006). Salah satu kursus yang memerlukan kemahiran visualisasi adalah *Pengurusan Ekonomi*. Kursus ini merupakan kursus wajib yang perlu diambil oleh kebanyakan pengkhususan di fakulti Pengurusan Perniagaan dan Perakaunan bagi membolehkan mereka mendapat Ijazah (Salam, 2016). Kemahiran visualisasi dikenal pasti sebagai satu kemahiran yang penting untuk meningkatkan tahap kognitif pelajar Chwen Jen, 2006). Namun begitu, kemahiran visualisasi ini kurang diberi perhatian dan diberikan penekanan dalam PnP (Hegarty, 2014, Meda dan Yoon, 2013; Moreau, 2012). Ini kerana sistem pendidikan negara masih berorientasikan peperiksaan memerlukan pensyarah untuk menghabiskan sukatan pelajaran. Kesannya, pelajar sukar menguasai kemahiran ini (Dayang Noorasura & Sazilah, 2011; Norabeerah, 2015).

Kemahiran visualisasi seringkali dikaitkan dengan daya kognitif di mana ianya merujuk kepada keupayaan individu untuk menyimpan dan mengingati maklumat dari memori berdasarkan keperluan (Sorby, 1999). Merujuk Teori Kon Pembelajaran Dale (1969), kandungan pembelajaran akan diingat lebih lama sekiranya verbal dan visual digunakan dalam proses PnP. Kajian oleh Farrald dan Schamber (1973) pula menunjukkan 80 peratus daripada semua pembelajaran adalah berlaku melalui mata dengan memori visual yang sedia ada. Oleh sebab itu, kemahiran visualisasi merupakan salah satu kemahiran yang penting untuk meningkatkan tahap kognitif pelajar (Chwen Jen, 2006).

Kini, terdapat pelbagai isu berkenaan visualisasi dalam pendidikan dan kepentingannya dalam pelbagai bidang pendidikan semakin meningkat (Noor Azean & Zaidatun, 2008). Kemahiran visualisasi ini merupakan kemahiran yang tidak hanya menumpukan penggunaan memori ingatan sepenuhnya untuk menghafal fakta - fakta tetapi ia dapat membantu pelajar dalam melatih proses imaginasi di dalam mental. Banyak kajian yang telah dijalankan mengakui visualisasi amat penting membantu pelajar menguasai konsep dan memahami fenomena persekitaran pembelajaran mereka (Dayana et al., 2015; Norabeerah, 2015). Oleh itu, kemahiran visualisasi merupakan antara kemahiran yang juga penting bukan sahaja dalam pekerjaan, tetapi juga diperingkat sekolah dan pendidikan tinggi, di mana pelajar perlu memvisualisasi apa yang mereka pelajari melalui tiga proses iaitu mengingat (memory), membayangkan (imagery) dan pengetahuan (knowledge) (Ramlah et. al, 2012). Kemahiran visualisasi dalam bidang vokasional perlu diberi perhatian yang lebih memandangkan kemahiran visualisasi terutamanya kebolehan spatial telah terbukti boleh menjadi faktor penentu kecerdasan individu. Selain itu pembelajaran visual dikatakan merupakan cara pengajaran yang paling sesuai untuk semua peringkat umur pelajar berhubung cara berfikir dan belajar (Inspiration, 2004). Menurut Muhammad Sukri dan Foong (2007) dan Dayana (2015) majoriti pelajar aliran teknikal kejuruteraan mempunyai tahap persepsi visualisasi yang sederhana dan tahap visualisasi yang rendah.

Oleh itu, kajian awal ini dijalankan untuk melihat masalah dalam pembelajaran kursus *Pengurusan Ekonomi*. Selain itu, Menurut (Johnston et al., 2000; Mashitah 2012) kursus ekonomi ialah kursus yang sukar di kebanyakan universiti. Ia membuatkan pengkaji ingin mendalami permasalahan dalam kursus tersebut.

Metodologi

Kajian awal ini dijalankan di sebuah universiti tempatan Malaysia yang melibatkan pelajar yang mengambil kursus Pengurusan Ekonomi di Fakulti Pengurusan Perniagaan. Kajian ini melibatkan kaedah kuantitatif dan ianya disokong oleh data kualitatif.

Kaedah analisis dokumen dan juga kajian literatur digunakan dalam kajian awal ini. Analisis dokumen dilakukan dengan merujuk kepada rekod data keputusan peperiksaan yang lepas. Data tersebut ditukarkan ke bentuk peratus sebelum di analisis. Manakala, kajian literatur pula dijalankan dengan merujuk kepada sumber jurnal-jurnal yang lepas.

Keputusan

Jadual di bawah menunjukkan jadual keputusan peperiksaan semester pelajar bagi kursus Pengurusan Ekonomi di di sebuah universiti tempatan Malaysia bagi tahun Mei 2006, Jun 2015, December 2015 dan Jun 2016.

Jadual 1: Keputusan Peperiksaan Semester Pelajar

| G R A D | KEPUTUSAN PEPERIKSAAN SEMESTER | | | |
|-----------------------|-----------------------------------|------------|------------|------------|
| | Mei- 06 | Jun- 15 | Dis- 15 | Jun- 16 |
| A | 14% | 26% | 22% | 28% |
| B | 58% | 30% | 34% | 21% |
| C | 22% | 22% | 28% | 26% |
| G A G A L | 6% | | | |
| | | 22% | 16% | 25% |

Sumber: Rekod peperiksaan universiti tempatan Malaysia (2016)

Perbincangan

Berdasarkan kajian awal, melalui analisis dokumen, masalah PnP dalam kursus Pengurusan Ekonomi masih berterusan sejak sedekad yang lalu. Pada tahun 2006, prestasi pencapaian pelajar dalam kursus ini menunjukkan majoriti pelajar mendapat grad B dan C masing-masing sebanyak 58 dan 22 peratus. Manakala, sebanyak 6 peratus pelajar gagal dalam kursus ini dan di kehendaki mengulang semula kursus ini.

Jika dilihat dari jadual 1, pada tahun 2015 dan 2016, majoriti pelajar memperoleh grad B dan C manakala peratusan pelajar yang gagal dalam kursus ini masih tinggi iaitu diantara 16% hingga 25%.

Kegagalan memahami konsep-konsep ekonomi yang abstrak antara punca utama kegagalan pelajar mengikuti pembelajaran Ekonomi (Yin, 2008). Pelajar hanya didedahkan dengan konsep-konsep tertentu tetapi tidak dibimbing sepenuhnya tentang

cara mengaplikasikannya dalam situasi tertentu. Selain itu, kegagalan pelajar menguasai kemahiran statistik asas dan matematik termasuk kemahiran menginterpretasi graf turut menyukarkan pelajar untuk memahami kaitan antara konsep ekonomi dengan data berkaitan (Lakshmi, 2012). Di sinilah kemahiran visualisasi diperlukan. Dengan adanya kemahiran data visualisasi ini, pelajar dapat mentafsirkan data melalui graf dan graf menerusi data dengan lebih mudah. Selain itu, kemahiran visualisasi dapat meningkatkan daya kognitif pelajar (Chwen Jen, 2006). Secara tidak langsung, daya kreativiti dan kemahiran sintesis terbentuk (Reiner, 2008; Lakshmi, 2012). Ini amat penting supaya pelajar tidak kekok apabila memasuki bidang pekerjaan kelak di mana kemahiran-kemahiran tersebut amat diperlukan dalam pekerjaan masa kini. Selain itu, tambahan pula, kesukaran memahami kursus ini akan membuatkan pelajar sukar menguasai kursus ini di peringkat sarjana kerana kursus ini merupakan kursus wajib yang perlu diambil oleh pelajar di peringkat sarjana (Chulkov dan Nizovtsev, 2013). Oleh itu, dalam proses PnP bagi kursus Pengurusan Ekonomi adalah penting bagi pensyarah untuk meningkatkan keupayaan pelajar dalam membangunkan kemahiran visualisasi pelajar (Adzima, 2010). Secara tidak langsung dapat meningkatkan daya kognitif pelajar.

Kesimpulan

Kursus Pengurusan Ekonomi merupakan kursus wajib bagi kebanyakan pengkhususan di Fakulti Pengurusan Perniagaan. Memandangkan kursus ini amat penting bagi menghasilkan graduan yang berdaya saing, memiliki daya kognitif serta visualisasi yang tinggi, suatu pendekatan yang baru dalam kaedah PnP diperlukan demi meningkatkan prestasi para pelajar. Daripada kajian awal, didapati punca utama adalah kerana kemahiran menginterpretasi data dan visualisasi pelajar yang rendah. Kesannya, pelajar sekadar mengingat fakta dan konsep tanpa benar-benar memahaminya serta gagal mengaplikasi pada situasi yang tertentu.

Rujukan

- C.J.(2006).Thedesign,development and evaluation of a virtual reality based learningenvironment.Australasian Journal of Educational Technology, 22 (1),39-63
- Dayang Noorasura, A. T., & Sazilah, S. (2011, 10-12 June 2011). A model of mobile learning object design for concept comprehension using reciprocal teaching strategies and AR. Paper presented at the Computer Science and Automation Engineering (CSAE), 2011 IEEE International Conference on Computer Science and Automation Engineering (CSAE).
- Dayana Farzeeha Ali (2013). The Effect of Virtual Environment Courseware on Student Visualization Skills. Unpublished doctoral thesis. Faculty of Education, Universiti Teknologi Malaysia.
- Faridah Karim & Rahman Ismail. 1992. Teaching of economics in universities: pedagogical issues. Seminar Kebangsaan Program Ekonomi Di Universiti: Suatu Penilaian Semula. Anjuran Fakulti Ekonomi Universiti Kebangsaan Malaysia 12-12 Oktober.
- Hegarty, M. . (2014). Spatial thinking in undergraduate science education. *Spatial Cognition & Computation*, 14, 142–167.
- Johnston, C.G., James, R. H., Lye, J. N. & McDonald, I. M. 2000. An Evaluation of Collaborative Problem Solving for Learning Economics. *Journal of Economic Education*, 31(1): 13-29.
- Khoo Yin Yin. 2008. Keberkesanan kaedah penyelesaian masalah secara kolaboratif dalam kalangan pelajar ekonomi tingkatan enam. Tesis Ijazah Doktor Falsafah
- Martin-Gutierrez, J., Luis Saorin, J., Contero, M., Alcaniz, M., David C. Perez-Lopez, Mario Ortega (2010) Design and validation of an augmented book for spatial abilities development in engineering students, *Computers & Graphics*, Volume 34, Issue 1, February 2010, Pages 77-91, ISSN 0097-8493
- Martin-Gutierrez, J., Trujillo, R. E. N., & Acosta-Gonzalez, M. M. (2013). AR Application Assistant for Spatial Ability Training, HMD vs Computer Screen Use Study. *Procedia- Social and Behavioral Sciences*, 93, 49- 53
- Mohd Safarin Nordin & Muhammad Sukri Saud (2006) Kemahiran Visualisasi: Kemahiran Kognitif Tahap Tinggi Dalam Pendidikan Teknik Dan Vokasional Seminar Kebangsaan Pendidikan Teknik Dan Vokasional 2006 Tve06 9-10 Disember, 2006, Sofitel Palm Resort Senai, Johor
- Mashitah Khalid (2012) Faktor-faktor mempengaruhi motivasi pembelajaran terhadap subjek ekonomi mahasiswa universiti kebangsaan malaysia Fakulti Pendidikan, Universiti Kebangsaan Malaysia

- Norabeerah Saforrudin (2016) Konsep penggunaan aplikasi luasan realiti (AR) dalam pendidikan e-Proceeding of the 4th Global Summit on Education GSE 2016 (e-ISBN 978-967-0792-07-1).14-15 March 2016, Kuala Lumpur, MALAYSIA. Organized by <http://worldconferences.net/home> Kementerian Pendidikan Malaysia. (2013).
- Noor Azean Atan & Zaidatun Tasir (2008), Visualisasi Menerusi Sistem Berasaskan Pendekatan Pembelajaran Situasi Dalam Persekitaran Autentik Dalam Mempelajari Rekabentuk Infrastruktur Rangkaian Komputer Bagi Program Perguruan, Proceeding of 2nd International Malaysian Educational Technology Convention 2008, Kuantan, 4 – 6 November 2008.
- Pelan Pembangunan Pendidikan Malaysia 2015-2025. Putrajaya: Kementerian Pendidikan(2015)
- Yee, M. H., Yunos, J. M., Hassan, R., Mohamad, M. M., Othman, W., & Tee, T. K. (2013). Penilaian Kualiti Manual Pembelajaran Kendiri Pengintegrasian Gaya Pembelajaran KOLB dan Kemahiran Visualisasi Marzano. Proceeding of the International Conference on Social Science Research, (Jun), 1357–1368

MODUL YANG SUKAR DIKUASAI OLEH PELAJAR KURSUS TEKNOLOGI PEMBINAAN DI KOLEJ VOKASIONAL DAN FAKTOR YANG MEMPENGARUHI KESUKARAN TERSEBUT: KAJIAN AWAL

Nurkhadijah binti Abdul Kadir, Dayana Farzeeha binti Ali, Nornazira binti Suhairom

Fakulti Pendidikan, Universiti Teknologi Malaysia, Skudai Johor

ABSTRAK

Sistem pendidikan abad ke-21 menyaksikan rombakan transformasi pendidikan yang besar dalam usaha mencorakkan setiap pelajar agar dilengkapi dengan pelbagai kemahiran agar mampu bersaing dan menangi cabaran abad ke-21. Antara kemahiran yang perlu dikuasai oleh pelajar adalah kemahiran pembelajaran dan inovasi, kemahiran maklumat, media dan teknologi serta kemahiran hidup dan kerjaya (PPPM, 2013-2025). Pendidikan Teknik dan Vokasional juga turut memainkan peranan yang penting dalam bersama-sama menjayakan transformasi pendidikan ini dengan melahirkan lebih ramai tenaga kerja mahir yang berdaya saing, kreatif dan inovatif. Walaubagaimanapun, gaya pengajaran bersifat statik dan konvensional yang masih menjadi pilihan para pensyarah di Kolej Vokasional sebagai strategi pengajaran mereka telah menjadi antara penghalang kepada kejayaan transformasi ini. Oleh hal yang demikian, satu kajian awal bagi mengenalpasti modul yang sukar dikuasai oleh para pelajar Tahun 1 kursus Teknologi Pembinaan serta faktor-faktor yang mempengaruhi kesukaran tersebut telah dijalankan. Seramai 10 orang pensyarah kursus Teknologi Pembinaan dari seluruh Malaysia telah terlibat sebagai responden dalam kajian kuantitatif ini. Kajian awal ini akan diteruskan dengan langkah mengatasi masalah yang dikenalpasti agar transformasi Pendidikan Teknik dan Vokasional ini dapat direalisasikan dengan jayanya.

Kata kunci: Jenis modul, Faktor kesukaran, Kursus Teknologi Pembinaan. Kolej Vokasional

Pengenalan

Penaiktarafan dan penjenamaan semula sekolah-sekolah vokasional kepada Kolej Vokasional merupakan salah satu transformasi dalam sistem pendidikan negara seiring dengan peredaran dan tuntutan semasa. Transformasi sistem Pendidikan Teknik dan Vokasional (PTV) kini menjadi keutamaan di kebanyakan negara

membangun sebagai alternatif untuk mengadaptasi perubahan globalisasi. Selain itu, perubahan pesat pembangunan industri dan teknologi juga turut memberi impak kepada sistem PTV di Malaysia (Jamaliah. 2014). Seiring dengan perkembangan dan kemajuan ekonomi negara dan dianggap sebagai satu proses yang dinamik dan seimbang, kurikulum Pendidikan Teknik dan Vokasional (PTV) secara tidak langsung turut mengalami perubahan. Justeru, transformasi sistem pendidikan memperlihatkan telah berlakunya perubahan yang besar dalam kurikulum bagi melengkapkan pelajar dengan segala kemahiran baru untuk menjadikan pelajar berdaya saing dan mampu untuk menangani cabaran abad ke-21 (Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025).

Oleh hal yang demikian, kurikulum vokasional dirombak secara komprehensif dengan berpandukan kepada Piawai Kemahiran Guna Tenaga Kebangsaan (NOSS), Sijil Kemahiran Malaysia (SKM) dan lain-lain bentuk pensijilan yang diiktiraf oleh pihak industri bagi mencapai standard yang memenuhi keperluan pasaran kerja dan pasaran semasa. Tambahan pula, menurut Bahagian Pendidikan Teknik dan Vokasional (BPTV), rombakan kurikulum ini adalah bertujuan untuk melahirkan generasi muda yang berkemahiran, berpengetahuan, mampu berfikir secara kreatif dan kritis, berupaya berkomunikasi dengan berkesan di peringkat global dan mempunyai kemahiran kepimpinan yang mantap. Menurut Muhamad Azhar, Mohamad Ibrahim dan Amri (2015), beberapa elemen seperti kemahiran insaniah, kreativiti dan inovasi, kemahiran teknologi dan keusahawanan merupakan elemen yang diterapkan di dalam kurikulum yang dikenali sebagai Kurikulum Standard Kolej Vokasional (KSKV).

Walaupun bagaimanapun, rombakan kurikulum ini secara tidak langsung mampu memberi cabaran dan kesukaran kepada pelajar mahupun para pensyarah untuk dikuasai dengan baik. Oleh hal yang demikian, pelbagai pendekatan dan inisiatif perlu difikirkan dan dirancang bagi membantu kedua-dua pihak menjayakan transformasi ini. Menurut Harith (2014), kemahiran abad ke-21 perlu diterapkan dalam diri setiap pensyarah dan pelajar bertujuan untuk memanfaatkan perkembangan teknologi agar Pengajaran dan Pembelajaran (PdP) yang dijalankan dapat menarik minat pelajar serta membantu melahirkan pelajar yang kreatif serta inovatif. Tambahan pula, kepelbagaian kaedah pengajaran berasaskan teknologi seperti penggunaan web pembelajaran merupakan antara kaedah PdP abad ke-21 yang membawa banyak impak positif dalam bidang pendidikan seperti

memberangsangkan pencapaian pelajar, meningkatkan motivasi pelajar serta turut dapat menyediakan pelbagai kaedah dalam teknik mengajar (Rafiza & Maryam, 2013). Justeru, seiring dengan pelaksanaan Kolej Vokasional yang masuk tahun kelima, satu kajian perlu dilakukan bagi mengenalpasti masalah yang terdapat di Kolej Vokasional terutama dalam perspektif KSKV atau modul yang menjadi tunjang utama kepada perubahan ini. Kajian ini juga adalah bertujuan untuk menambahbaik perubahan yang telah dilakukan agar transformasi pendidikan ini dapat direalisasikan dengan jayanya.

Objektif Kajian

Kajian ini merangkumi objektif-objektif seperti berikut:

1. Menenalpasti modul yang sukar dikuasai oleh pelajar Tahun 1 Teknologi Pembinaan di Kolej Vokasional.
2. Menenalpasti faktor-faktor yang mempengaruhi kesukaran pelajar Tahun 1 Teknologi Pembinaan di Kolej Vokasional untuk menguasai modul berkenaan.

Persoalan Kajian

Beberapa persoalan kajian dibentuk bagi mencapai setiap objektif kajian. Antara persoalan kajian adalah seperti berikut:

1. Apakah modul yang sukar untuk dikuasai oleh pelajar Tahun 1 Teknologi Pembinaan di Kolej Vokasional?
2. Apakah faktor-faktor yang mempengaruhi kesukaran pelajar Tahun 1 Teknologi Pembinaan di Kolej Vokasional untuk menguasai modul berkenaan.

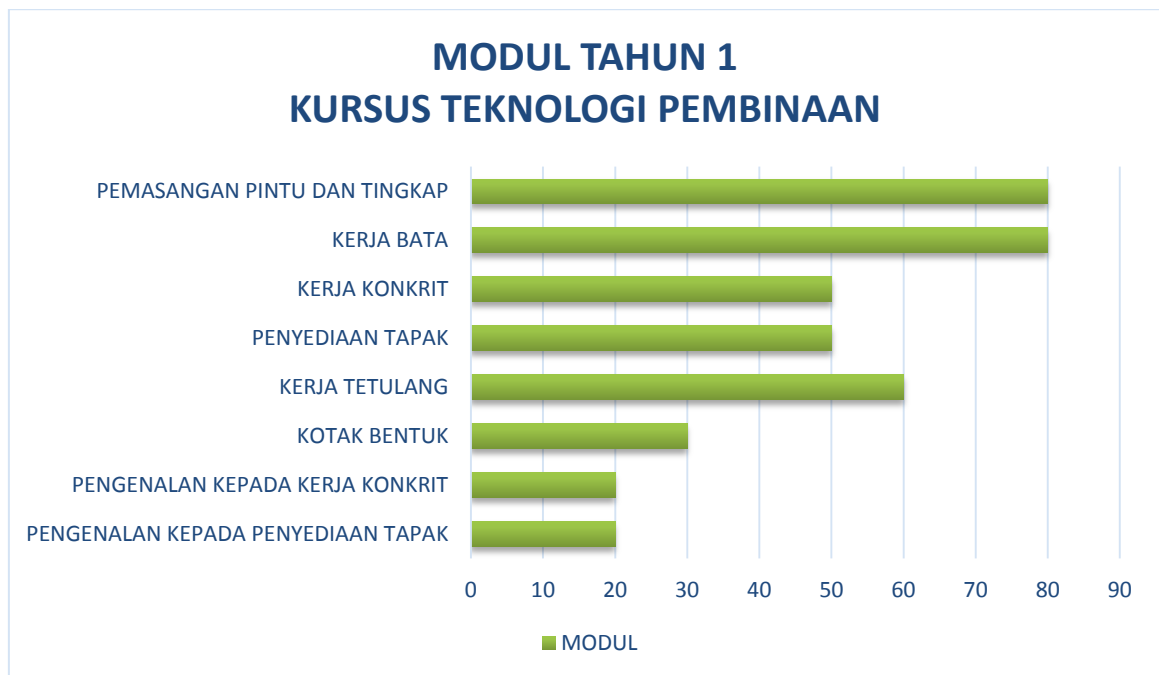
Metodologi Kajian

Kajian ini berbentuk kuantitatif yang melibatkan penggunaan borang soal selidik. Seramai 10 orang pensyarah dari kursus Teknologi Pembinaan di seluruh Malaysia telah dipilih secara rawak untuk dijadikan sebagai responden bagi kajian awal ini. Hasil data deskriptif ini telah dikaji dan diterjemahkan dalam bentuk kekerapan (*f*) dan peratusan (%).

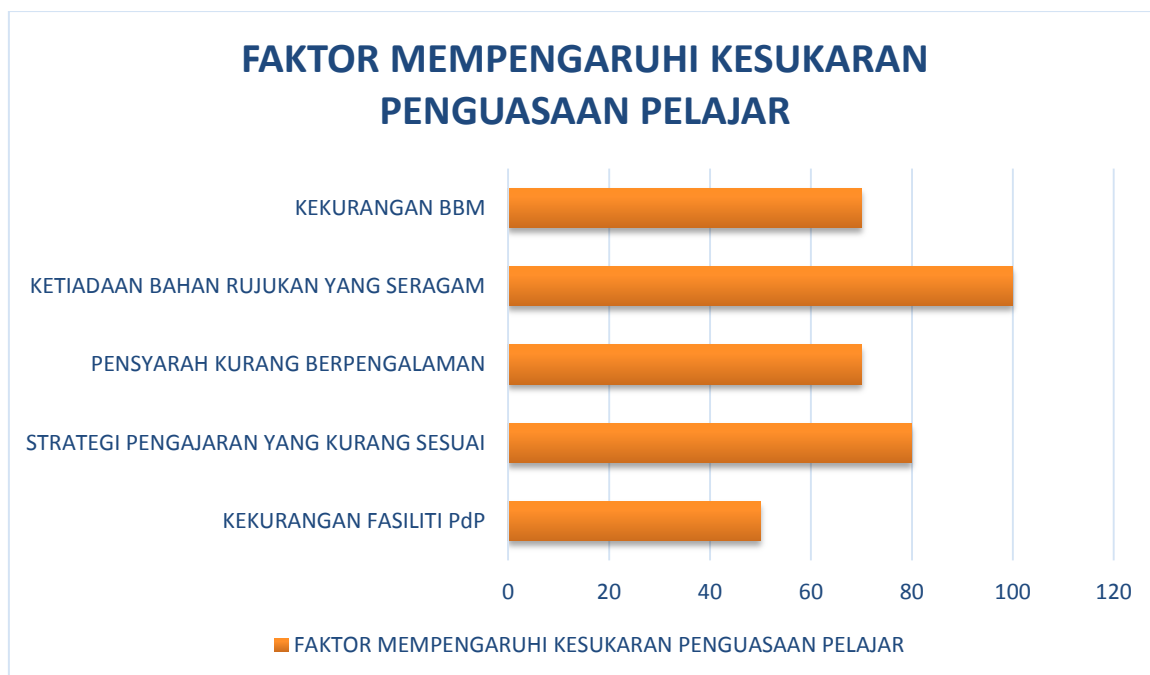
Dapatan Kajian

Kajian awal telah dijalankan terhadap 10 orang pensyarah kursus Teknologi Pembinaan mengenai modul (bagi pelajar tahun 1) yang sukar untuk dikuasai oleh para

pelajar melalui borang soal selidik. Selain itu, kajian ini adalah bagi mengenalpasti masalah yang sedang dihadapi oleh pelajar mahupun pensyarah dalam proses PdP mereka. Modul bagi pelajar tahun 1 dipilih kerana ianya merupakan modul penting yang perlu dikuasai dengan baik oleh pelajar selain merupakan modul asas kepada modul-modul seterusnya. Rajah 1 menunjukkan modul yang sukar dikuasai oleh pelajar tahun 1. Manakala Rajah 2 pula menunjukkan faktor yang mempengaruhi kesukaran pelajar untuk memahami dan menguasai modul Kerja Bata.



Rajah 1: Pemilihan modul yang sukar dikuasai oleh pelajar Tahun 1 bagi kursus Teknologi Pembinaan



Rajah 2: Faktor yang mempengaruhi kesukaran pelajar untuk memahami dan menguasai modul Kerja Bata

Perbincangan

Daripada hasil kajian awal ini, dapat diperhatikan menerusi Rajah 1 bahawa seramai 80% pensyarah menyatakan bahawa modul Kerja Bata dan modul Pemasangan Pintu dan Tingkap merupakan modul yang sukar dikuasai oleh pelajar Tahun 1 Teknologi Pembinaan di Kolej Vokasional. Seterusnya seramai 60% pensyarah memilih modul Kerja Tetulang dan diikuti seramai 50% bagi modul Penyediaan Tapak serta Kerja Konkrit. Manakala, seramai 30% pensyarah memilih modul Kotak Bentuk sebagai modul yang sukar untuk dikuasai oleh pelajar dan diakhiri dengan modul Pengenalan Kepada Penyediaan Tapak serta Pengenalan Kepada Kerja Konkrit dengan masing-masing seramai 20%. Pemilihan modul ini adalah berdasarkan kepada markah pencapaian pelajar bagi setiap modul. Berdasarkan daripada hasil kajian awal ini, modul Kerja Bata serta modul Pemasangan Pintu dan Tingkap menyaksikan perkongsian peratusan yang tertinggi. Walau bagaimanapun, pemilihan modul Kerja Bata sebagai fokus utama kepada kajian ini adalah kerana modul ini merupakan modul asas yang memerlukan penguasaan yang tinggi daripada para pelajar. Kegagalan menguasai modul ini dengan baik akan menyebabkan kesukaran kepada pelajar untuk menguasai modul-

modul kursus Teknologi Pembinaan yang lain seperti modul Pemasangan Pintu dan Tingkap, modul Kerja Melepa dan modul Kerja Kemasan.

Seterusnya, Rajah 2 pula menunjukkan faktor-faktor yang mempengaruhi kepada kesukaran pelajar untuk menguasai modul-modul berkenaan. Kesemua pensyarah memilih kekurangan bahan rujukan dan ketiadaan modul yang seragam di Kolej Vokasional sebagai faktor utama yang menyumbang kepada masalah ini. Hal ini adalah kerana, para pensyarah perlu menyediakan bahan pengajaran secara peribadi dengan rujukan yang berkemungkinan tidak setaraf dan sumber yang terhad. Oleh hal yang demikian, dengan terhasilnya web pembelajaran bagi modul Kerja Bata ini dapat menghasilkan satu bahan PdP serta sumber rujukan yang seragam, berkualiti, bersifat dinamik, inovatif, mempunyai kepelbagaian media dan seterusnya dapat menarik minat para pelajar serta membantu memudahkan dan meningkatkan tahap pemahaman pelajar. Seramai 80% pensyarah memilih pendekatan atau strategi pengajaran yang kurang sesuai dalam proses PdP sebagai punca kepada kesukaran penguasaan pelajar dalam modul Kerja Bata ini. Pembahagian kaedah pengajaran bagi modul Kerja Bata ini sering dimulakan dengan pengajaran teori dan diikuti dengan kerja amali. Oleh hal yang demikian, sangat penting untuk memastikan para pelajar dapat menguasai pembelajaran teori dengan baik sebelum menterjemahkan kepada kerja amali. Berdasarkan rajah 2 ini menunjukkan bahawa pendekatan yang digunakan oleh para pensyarah dalam menyampaikan pengajaran berbentuk teori adalah tidak bersesuaian sehingga menyebabkan pelajar tidak dapat menguasai isi pembelajaran dengan baik.

Manakala seramai 70% pensyarah berpendapat bahawa faktor yang mempengaruhi kesukaran pelajar untuk menguasai modul ini adalah kerana kekurangan BBM yang boleh digunakan sepanjang sesi PdP serta pensyarah kurang berpengalaman dan kurang berkemahiran untuk mengajar modul berkenaan. Justeru, dengan pembangunan web pembelajaran ini, masalah ketiadaan BBM dapat diatasi dengan baik selain ianya juga dapat menggalakkan serta menarik minat pelajar untuk belajar secara sendiri. Hal ini seterusnya dapat dijadikan langkah pertama dalam menerapkan konsep Pembelajaran Sepanjang Hayat (PSH) dalam diri setiap pelajar. Tambahan pula, penghasilan web pembelajaran modul Kerja Bata ini juga dapat dijadikan sebagai rujukan serta panduan yang lengkap kepada para pensyarah yang baru khasnya dalam membantu menyediakan bahan pengajaran dan seterusnya dapat

meningkatkan motivasi serta keyakinan para pensyarah untuk menyampaikan pengajaran dengan lebih yakin dan berkesan.

Rumusan

Daripada dapatan kajian ini, penyelidik akan menjalankan kajian pembangunan web pembelajaran bagi modul Kerja Bata bagi membantu pelajar untuk lebih memahami modul ini dengan lebih baik. Menurut Azhar, Ibrahim dan Amri (2015) penghasilan web pembelajaran ini turut dapat merealisasikan proses PdP lebih aktif dan berpusatkan pelajar yang dapat membawa banyak kelebihan dalam melahirkan pelajar yang berkualiti tinggi kerana lebih banyak kerjasama dapat dijalinan sama ada antara pelajar dengan pelajar mahupun antara pelajar dengan pensyarah. Hal ini seterusnya dapat membantu meningkatkan keyakinan, motivasi serta menggalakkan perkembangan kognitif dan psikomotor pelajar. Tambahan pula, penghasilan web pembelajaran ini juga mampu menjadikan sesi PdP lebih dinamik, menarik dan kreatif bersesuaian dengan perkembangan sistem pendidikan dan teknologi semasa (Harith, 2014). Para pelajar juga dapat menambah minat, meningkatkan rasa ingin tahu, mudah menguasai pelajaran dan meningkatkan kemahiran kerana kaedah ini mampu menyumbang kepada persekitaran pembelajaran yang mudah difahami, lebih efektif dan berkualiti (Norhapizah, Ab. Halim & Norazah, 2016; Lily & Janudin, 2014).

Selain itu, menurut Lily dan Janudin (2014) serta Norhapizah, Ab. Halim dan Norazah (2016) penggunaan modul digital atau web pembelajaran dalam bahasa Arab dan pendidikan Agama Islam telah menunjukkan perkembangan yang sangat positif terhadap penguasaan serta pemahaman pelajar serta turut dapat menambah minat dan meningkatkan kemahiran pelajar. Tambahan pula, bidang sains juga telah membuktikan bahawa penggunaan web pembelajaran ini dapat meningkatkan motivasi pelajar dalam proses PdP yang melibatkan aktiviti seperti simulasi, amali dan aktiviti konflik kognitif (Johari, Hasniza & Rohaya, 2014). Aplikasi yang digunakan dalam proses PdP ini turut menjadikan pembelajaran lebih berkesan serta dapat dijadikan sumber rujukan bahan pembelajaran yang lengkap, ringkas, berinovasi dan seragam untuk kegunaan seluruh Kolej Vokasional di seluruh Malaysia dan juga memberi kemudahan kepada para pensyarah untuk menyediakan bahan pengajaran.

Justeru, penggunaan web dalam proses pembelajaran ini dilihat dapat menjadi satu titik permulaan yang baru bagi pendidikan Teknik dan Vokasional secara amnya serta Kolej Vokasional secara khasnya. Perubahan perlu dilakukan bagi menyelesaikan masalah ketidaksesuaian pendekatan pengajaran yang digunakan dalam PdP serta kekurangan bahan rujukan yang seragam di Kolej Vokasional. Selain itu, transformasi PdP yang mampu menarik minat pelajar untuk melibatkan diri secara aktif perlu dilakukan dan diperluaskan secara menyeluruh. Menurut Salina, Muhd Zulkifli dan Norazmi (2016), bahan pengajaran yang menggabungkan kepelbagaian elemen multimedia seperti teks, grafik, audio, video dan animasi amat diperlukan dalam usaha menyediakan pembaharuan terhadap gaya penyampaian PdP. Tambahan pula, kepesatan perkembangan teknologi kini telah menyebabkan para pelajar lebih memilih bahan pembelajaran mereka yang berbentuk dinamik seiring dan setanding dengan kemajuan teknologi pada masa kini. Oleh itu, aplikasi teknologi dalam PdP bagi bidang PTV terutama di Kolej Vokasional dilihat mampu memberi impak positif kepada pelajar selain dapat meningkatkan kualiti pendidikan di Malaysia dan seterusnya menyokong kepada perubahan dan transformasi pendidikan yang sedang giat dijalankan (Nur Izzah Amalina, 2015).

Rujukan

- Harith Azidin bin Kamarudin (2014). *Impak Penggunaan Multimedia dalam Pengajaran Topik Isometrik Terhadap Pencapaian dan Motivasi Pelajar Tingkatan 2*. Fakulti Pendidikan Teknikal dan Vokasional, Universiti Tun Hussein Onn Malaysia. Tesis Sarjana Pendidikan Teknikal.
- Jamaliah binti Jamaludin (2014). *Kesediaan Guru Kolej Vokasional dalam Pengajaran Amali di Negeri Pahang*. Fakulti Pendidikan Teknik dan Vokasional, Universiti Tun Hussein Onn Malaysia. Tesis Ijazah Sarjana.
- Johari Surif, Nor Hasniza Ibrahim & Rohaya Abu Hassan (2014). Tahap Amalan dan Pengintegrasian ICT dalam Proses Pengajaran dan Pembelajaran Sains. *Jurnal Sains Humanika* 2:4 (2014), 13-18. e-ISSN ISSN: 2289-6996. Universiti Teknologi Malaysia, Skudai.
- Lily Hanefarezan Asbullah & Janudin Sardi (2014). *Tinjauan Pembangunan Teknologi Multimedia dalam Pengajaran dan Pembelajaran Bahasa Arab*. Prosiding Seminar Pengajaran & Pembelajaran Bahasa Arab 2014, ISBN 978-967-5478-78-9. Fakulti Pengajian Islam, UKM & Fakulti Kontemporari Islam, UniSZA.
- Muhamad Azhar Stapa @ Mustapa, Mohamad Ibrahim & Amri Yusoff (2015). *Engaging Vocational College Students through Blended Learning: Improving*

Class Attendance and Participation. 4th World Congress on Technical and Vocational Education and Training (WoCTVET), 5th-6th November 2015, Malaysia.

Norhapizah Mohd Burhan, & Ab. Halim Tamuri (2013, April 6-7). Persepsi pelajar terhadap kaedah pengajaran pensyarah dalam Pendidikan Islam: Pendekatan Blended Learning (BL) sebagai suatu alternatif. Kertas kerja International Conference on Islamic Education (ICIED). Anjuran Persatuan Intelektual Muslim Malaysia (PIMM), ESSET KWSP.

Nur Izzah Amalina Karim (2015). Pembangunan Mobile-Learning bagi Lukisan Isometrik. Fakulti Pendidikan, Universiti Teknologi Malaysia: Tesis Sarjana Muda.

Pelan Pembangunan Pendidikan Malaysia (2013-2025). Kementerian Pendidikan Malaysia.

Rafizah Abdul Razak & Maryam Abdul Rahman (2013). Pembinaan Media Pengajaran Berasaskan Multimedia Di Kalangan Guru ICTL. Jurnal Kurikulum & Pengajaran Asia Pasifik, Bil. 1 Isu 2.

Salina Husain, Muhd Zulkifli Ismail & Norazmi Danuri (2016). Trend Pembinaan Blog dalam Pembelajaran Bahasa Sepanyol. Jurnal Kemanusiaan Vol. 25, Issue 1. ISSN A675-1930. Universiti Teknologi Malaysia, Skudai.

Zamri Mahamod & Nur Aisyah Mohamad Nor (2011). Persepsi Guru Tentang Penggunaan Aplikasi Multimedia Dalam Pengajaran Komponen Sastera Bahasa Melayu. GEMA OnlineTM Journal of Language Studies, Volume 11(3).

PENGAPLIKASIAN SENI ORIGAMI DALAM PEMBELAJARAN LUKISAN KEJURUTERAAN

Mohd Salehudin Marji^{1*} Aede Hatib Musta' amal,¹ Nor Aisyah Derasid,¹ Norzanah Rosmin²

¹ *Jabatan Pendidikan Teknikal dan Kejuruteraan Fakulti Pendidikan, Universiti Teknologi Malaysia*

² *Jabatan Kejuruteraan Elektrik Kuasa, Fakulti Kejuruteraan Elektrik, Universiti Teknologi Malaysia*

ABSTRAK

Kajian ini dijalankan untuk menguji sejauh mana potensi penggunaan seni Origami dalam pendidikan Lukisan Kejuruteraan. Terdapat tiga objektif yang ingin dicapai dalam kajian ini iaitu untuk mengetahui pengetahuan sedia ada pelajar terlibat dalam seni Origami. Selain itu, kajian ini juga dijalankan untuk mengetahui persepsi pelajar terlibat terhadap kepentingan seni Origami serta persepsi mereka terhadap penggunaan seni Origami dalam pembelajaran Lukisan Kejuruteraan. Seramai 30 orang pelajar dari Kolej Vokasional Tanjung Puteri Johor Bahru mengambil bahagian dalam program yang telah dijalankan oleh penyelidik sekaligus menjadi responden dalam kajian ini. Proses pengumpulan data kajian ini menggunakan kaedah kuantitatif melalui borang soal selidik yang diedarkan selepas tamat program dijalankan. Hasil daripada kajian yang dijalankan menunjukkan para responden mempunyai pengetahuan sedia ada yang baik dalam seni Origami. Selain itu, para pelajar juga memberikan persepsi yang positif terhadap kepentingan seni Origami serta penggunaan seni ini dalam pembelajaran Lukisan Kejuruteraan.

Kata Kunci: Seni Origami, Lukisan Kejuruteraan, Persepsi Pelajar

Pengenalan

PTV adalah salah satu bidang pendidikan yang boleh menjadi pilihan di negara ini selain pendidikan yang berteraskan akademik. PTV merupakan satu sistem pembelajaran yang melatih individu untuk sesuatu pekerjaan tertentu dengan memberikan penekanan terhadap kemahiran dan juga ilmu pengetahuan. Dalam PTV, subjek Lukisan Kejuruteraan merupakan salah satu asas utama yang perlu dikuasai oleh para pelajar bagi memudahkan mereka memahami dan menguasai konsep-konsep dalam teori dan amali pendidikan ini (Muhammad Sukri & Lee Ming Foong, 2007; Lee GooH

Mo, Mohd Safarin, & Mohd Fazlan, 2012; Marlissa & Dayana Farzeeha, 2013). Untuk menguasai mata pelajaran Lukisan Kejuruteraan dengan lebih berkesan, seseorang pelajar itu hendaklah memiliki keupayaan visualisasi yang baik. Kebanyakan pelajar sukar untuk mengaplikasikan konsep dan teori dalam menyelesaikan masalah dalam Lukisan Kejuruteraan adalah kerana mereka memiliki tahap keupayaan visualisasi yang lemah. Kenyataan ini disokong oleh (Dayana Farzeeha & Mahani, 2014) yang menyatakan bahawa kebanyakan pelajar mempunyai masalah dalam tajuk-tajuk dalam Lukisan Kejuruteraan yang memerlukan tahap keupayaan visualisasi yang tinggi.

Sungguhpun begitu, beberapa kajian yang telah dijalankan di Malaysia menunjukkan bahawa majoriti pelajar yang menjadi responden mempunyai tahap keupayaan visualisasi yang rendah. Sebagai contoh, kajian yang telah dibuat oleh Muhammad Sukri & Lee Ming Foong (2007) menunjukkan bahawa pelajar tingkatan empat dari sembilan buah Sekolah Menengah Teknik di negeri Johor memiliki tahap visualisasi yang lemah. Dapatan kajian ini juga hampir selari dengan dapatan kajian yang dijalankan oleh Mohd Safarin & Diyana (2010) terhadap 160 orang (75 lelaki dan 55 perempuan) pelajar di sekolah-sekolah menengah harian biasa daerah Johor Bahru. Dapatan kajian menunjukkan bahawa pelajar mempunyai tahap kemahiran memutar yang sederhana rendah dan tahap kemahiran menggabung yang sederhana tinggi. Melihat pada dapatan-dapatan kajian ini, adalah penting bagi kita untuk mencari kaedah dan langkah yang sesuai bagi meningkatkan tahap keupayaan visualisasi para pelajar. Peningkatan tahap keupayaan visualisasi ini secara tidak langsung akan menyumbang kepada peningkatan dalam pencapaian Lukisan Kejuruteraan mereka.

Salah satu kaedah yang boleh digunakan untuk meningkatkan tahap keupayaan visualisasi pelajar adalah dengan menggunakan seni Origami (Arici & Aslan-Tutak 2013; Boakes 2006). Origami adalah seni lipatan kertas dalam Bahasa Jepun di mana perkataan 'ori' bermaksud lipat dan 'kami' bermaksud kertas (Cakmak et al., 2014; Purnell, 2009; Aprilia Dyah, 2013; (Caruana dan Pace, 2007). Menurut Boakes (2006) pula, seni Origami merupakan seni melipat kertas yang digunakan untuk menghasilkan pelbagai objek berbentuk 2D dan 3D. Seni Origami dilihat sesuai dalam meningkatkan keupayaan visualisasi kerana menurut Huffman (2011), kaedah yang berkesan dalam meningkatkan keupayaan visualisasi adalah dengan menggabungkan kedua-dua elemen Haptic dan Visual dalam kaedah tersebut. Elemen Haptic menuntut para pelajar menyentuh dan merasai sesuatu objek untuk mempelajari atau mengetahui sesuatu perkara mengenai objek tersebut manakala Visual pula menuntut para pelajar

untuk memerhati sesuatu objek untuk memahaminya (Huffman 2011; Study 2001). Oleh yang demikian, seni Origami ini dilihat merupakan satu seni yang sesuai digunakan kerana seni ini menggabungkan kedua-dua elemen Haptic dan Visual seperti yang telah dicadangkan oleh Huffman (2011).

Hasil penelitian menunjukkan bahawa terdapat hubungan yang kuat antara Origami dengan keupayaan visualisasi (Arıcı and Aslan-Tutak 2013; Boakes 2006; Wares 2011). Keupayaan visualisasi pula merupakan salah satu elemen terpenting yang perlu ada pada para pelajar untuk menguasai matapelajaran matematik (Arslan 2016; Boakes 2006; Schmidt 2015) dan Lukisan Kejuruteraan (Dayana Farzeeha & Mahani, 2014; Mohd Fairuz, Jamil, Mohd Bekri, & Mohd Salleh, 2011). Sungguhpun begitu, rata-rata kajian yang melibatkan antara Origami dengan keupayaan visualisasi lebih tertumpu kepada pendidikan matematik tetapi tidak dalam subjek Lukisan kejuruteraan walaupun Widad & Hatta (2001) telah menyatakan bahawa matematik dan Lukisan Kejuruteraan mempunyai hubung kait yang kuat antara satu sama lain. Pernyataan ini jelas menunjukkan bahawa terdapat jurang yang jelas tentang penggunaan Origami untuk meningkatkan Keupayaan Visualisasi dalam matapelajaran Lukisan Kejuruteraan. Boakes (2006) pula menyatakan bahawa walaupun terdapat potensi yang besar untuk Origami digunakan sebagai alat bantuan dalam pendidikan, masih terdapat kekurangan yang jelas dari segi kajian yang dijalankan tentang keberkesanan penggunaan seni ini dalam meningkatkan tahap keupayaan Visualisasi. Oleh yang demikian, kajian ini dijalankan untuk mengetahui sejauh mana peranan Origami dalam membantu meningkatkan tahap keupayaan visualisasi pelajar dalam subjek Lukisan Kejuruteraan.

Metodologi Kajian

Kajian ini menggunakan reka bentuk kajian kuantitatif melibatkan 30 orang pelajar dari Kolej Vokasional Tanjung Puteri Johor Bahru. Proses pengumpulan data dijalankan menggunakan borang soal selidik yang diedarkan oleh penyelidik. Sebelum borang soal selidik diedarkan, penyelidik telah menjalankan sebuah program bersama para pelajar tersebut mengenai seni Origami dan Kirigami. Program tersebut dijalankan bertujuan untuk memberi pendedahan kepada pelajar mengenai asas seni-seni ini selain memberi kesedaran kepada mereka mengenai kelebihan yang terdapat di dalamnya. Pelajar-pelajar yang terlibat dalam program tersebut adalah pelajar-pelajar yang telah dipilih sendiri

oleh pihak sekolah. Borang soal selidik yang diedarkan berbentuk skala likert 5 mata dan dianalisis menggunakan statistik deskriptif menggunakan perisian SPSS versi 15.0.

Dapatan Kajian

Dapatan kajian ini dibahagikan kepada dua bahagian mengikut objektif kajian yang telah dinyatakan. Objektif kajian yang pertama adalah untuk mengetahui pengetahuan sedia ada para pelajar mengenai seni Origami. Jadual 1 menunjukkan nilai min yang diukur dari setiap item dari bahagian A borang soal selidik yang telah diedarkan.

Jadual 1: Pengetahuan sedia ada para pelajar mengenai seni Origami.

| Perkara | Min |
|---|------------|
| Saya tahu apa itu seni origami | 4.63 |
| Saya pernah belajar membuat origami | 4.54 |
| Saya belajar membuat origami dengan rakan-rakan | 4.63 |
| Saya belajar membuat origami melalui pelajaran di sekolah | 4.63 |
| Saya belajar origami melalui buku | 4.29 |
| Saya belajar origami melalui rancangan televisyen | 4.21 |
| Saya mempunyai minat untuk mempelajari seni origami | 4.50 |
| Saya pernah mengajar rakan-rakaan saya membuat origami | 4.38 |

Objektif kedua dalam kajian ini pula adalah untuk mengetahui persepsi pelajar terhadap kepentingan seni Origami. Item-item yang disoal merupakan item dalam bahagian B borang soal selidik. Dapatan kajian untuk bahagian ini dinyatakan dalam Jadual 2.

Jadual 2: Persepsi pelajar mengenai kepentingan seni Origami

| Perkara | Min |
|---|------------|
| Seni origami boleh membantu meningkatkan daya imaginasi saya | 4.38 |
| Seni origami boleh membantu meningkatkan kreativiti saya | 4.54 |
| Seni origami boleh membantu meningkatkan kemahiran saya dalam berinovasi. | 4.33 |
| Seni origami boleh membantu meningkatkan tahap kemahiran visualisasi saya | 4.40 |

| | |
|---|------|
| Saya tahu seni origami boleh digunakan dalam pendidikan matematik | 4.08 |
| Saya tahu seni origami boleh digunakan dalam pendidikan Lukisan Kejuruteraan. | 4.50 |
| Saya tahu seni origami mempunyai perkaitan dengan bidang kejuruteraan. | 4.50 |
| Seni origami sesuai digunakan sebagai alat bantu mengajar di dalam kelas | 4.25 |
| Seni Origami boleh dikomersialkan sebagai sumber pendapatan | 4.50 |
| Kaedah pembelajaran Lukisan Kejuruteraan berdasarkan Origami mampu membantu meningkatkan minat saya terhadap Lukisan Kejuruteraan | 4.50 |

Perbincangan

Dapatan kajian menunjukkan bahawa para pelajar mempunyai pengetahuan sedia ada yang baik mengenai seni Origami. Majoriti daripada mereka mengetahui apa itu seni Origami dan pernah membuatnya. Dapatan kajian juga menunjukkan bahawa mereka telah mendapat pendedahan dan belajar membuat seni Origami melalui medium seperti rakan-rakan, pembelajaran di sekolah, buku serta rancangan televisyen. Mereka juga menunjukkan minat yang tinggi untuk memepelajari seni Origami serta pernah mengajar rakan-rakan mereka untuk membuat seni Origami. Daripada dapatan kajian ini menunjukkan bahawa para pelajar sudah mempunyai pengetahuan asas mengenai seni Origami ini. Ini adalah kerana mereka sudah didedahkan dengan seni ini dari pelbagai medium yang telah dinyatakan. Oleh yang demikian, usaha untuk memperkenalkan seni ini dalam pembelajaran Lukisan Kejuruteraan adalah dilihat akan menjadi lebih mudah kerana para pengajar tidak lagi perlu untuk memberikan pengenalan kepada seni ini secara terperinci kepada para pelajar. Ini secara tidak langsung mampu memudahkan tugas para guru sekaligus mampu menarik minat para pelajar kerana seni ini sudah dekat di hati mereka. Melalui kerjasama antara pelajar yang mengajarkan seni Origami ini kepada rakan-rakan pula, secara langsung aktiviti ini akan mampu memupuk nilai setiakawan dan melatih sifat kepimpinan serta semangat kerjasama antara para pelajar.

Para pelajar juga memberikan persepsi yang positif mengenai kepentingan seni Origami ini. Para pelajar mempunyai kesedaran yang tinggi bahawa seni ini mampu meningkatkan daya imaginasi dan juga kreativiti mereka. Selain itu, pelajar juga sedar akan kepentingan seni ini dalam mengembangkan kemahiran inovasi serta meningkatkan

tahap keupayaan visualisasi mereka. Dalam bidang pendidikan pula, pelajar juga mempunyai kesedaran yang tinggi tentang potensi penggunaan seni Origami ini dalam pendidikan matematik dan kejuruteraan. Selaian itu, mereka juga mempunyai persepsi yang baik tentang penggunaan seni ini sebagai alat bantu mengajar di dalam kelas. Mereka juga berpendapat bahawa pengaplikasian seni Origami dalam Lukisan Kejuruteraan mampu meningkatkan minat mereka dalam subjek tersebut. Dari bidang keusahawanan pula, mereka juga mempunyai persepsi yang baik tentang potensi untuk mengkomersialkan seni ini sebagai sumber pendapatan. Berdasarkan dapatan kajian ini, dapatlah disimpulkan bahawa para responden mempunyai persepsi yang baik sekiranya seni ini diaplikasikan dalam pengajaran di sekolah terutamanya Lukisan Kejuruteraan. Oleh yang demikian, usaha untuk memperkenalkan seni ini dalam pembelajaran Lukisan kejuruteraan perlulah dilakukan kerana hasil kajian ini membuktikan bahawa para pelajar bersetuju dan bersedia untuk menggunakan seni ini di dalam proses pembelajaran mereka.

Sungguhpun begitu, masih terdapat jurang yang jelas tentang kurangnya kajian-kajian yang dijalankan mengenai seni ini di dalam pendidikan terutamanya dalam subjek Lukisan Kejuruteraan di negara ini. Walaupun seni ini telah terbukti untuk meningkatkan keupayaan visualisasi pelajar seperti yang dinyatakan oleh (Arslan 2016; Boakes 2006), kajian-kajian yang dijalankan lebih tertumpu kepada subjek matematik semata-mata. Oleh yang demikian, penyelidik memberikan cadangan untuk dilakukan lebih banyak kajian-kajian di negara ini berhubung penggunaan seni Origami dalam pendidikan khususnya Lukisan Kejuruteraan. Antara kajian yang boleh dijalankan adalah seperti penghasilan kerangka, modul pembelajaran serta model pengajaran berkaitan seni Origami ini di Malaysia.

Kesimpulan

Berdasarkan kajian yang telah dijalankan, dapatlah disimpulkan bahawa seni Origami ini mempunyai potensi untuk digunakan bagi meningkatkan keupayaan visualisasi serta penguasaan Lukisan Kejuruteraan dikalangan pelajar. Ini dibuktikan dengan kajian-kajian terdahulu yang telah berjaya meningkatkan keupayaan visualisasi pelajar menggunakan pendekatan seni ini. Sungguhpun begitu, penyelidik melihat bahawa masih terdapat kekurangan tentang kesedaran tentang kepentingan seni ini di Malaysia kerana masyarakat lebih melihat seni ini sebagai hasil kraf tangan dan seni

semata-mata. Dengan adanya lebih banyak kajian-kajian yang dijalankan mengenai seni ini, penulis mengharapkan agar ia mampu untuk membuka mata masyarakat khususnya para pelajar dan pendidik akan potensi besar seni ini dalam bidang pendidikan terutamanya matematik, seni dan juga kejuruteraan.

Penghargaan

Penghargaan kepada Kementerian Pendidikan Tinggi Malaysia di atas pembiayaan *Fundamental Research Grant Scheme (FRGS)* Vot No 4F556

Rujukan

- Aprilia Dyah Kusumaningrum. 2013. "Efektifitas Penggunaan Kertas Lipat (Origami) Dalam Meningkatkan Kreativitas Pada Anak." *Journal of Chemical Information and Modeling* 53(9): 1689–99.
- Arici, Sevil, and Fatma Aslan-Tutak. 2013. "The Effect of Origami-Based Instruction on Spatial Visualization, Geometry Achievement, and Geometric Reasoning." *International Journal of Science and Mathematics Education* (November 2013): 1–22.
- Arslan, Okan. 2016. "Turkish Prospective Middle School Mathematics Teachers' Beliefs and Perceived Self-Efficacy Beliefs Regarding the Use of Origami in Mathematics Education." *EURASIA Journal of Mathematics, Science & Technology Education* 13(6): 1533–48. <http://ejmste.com/ms.aspx?kimlik=10.12973/eurasia.2016.1243a>.
- Boakes, Norma. 2006. "The Effect Of Origami Lessons On Student's Spatial Visualization Skills And Achievement Levels In A Seventh-Grade Mathematics Classroom." Temple University.
- Cakmak, Sedanur, Mine Isiksal, and Yusuf Koc. 2014. "Investigating Effect of Origami-Based Instruction on Elementary Students' Spatial Skills and Perceptions." *The Journal of Educational Research* 107(January 2015): 59–68. <http://www.tandfonline.com/doi/abs/10.1080/00220671.2012.753861>.
- Dayana Farzeeha Ali, and Mahani Mokhtar. 2014. "Visualization Skills among Universiti Teknologi Malaysia Student." *ISTMET 2014 - 1st International Symposium on Technology Management and Emerging Technologies, Proceedings (Istmet)*: 139–42.
- Huffman, Katie L. 2011. "What Is The Effect Of Real Versus Augmented Models For The Advancement Of Spatial Ability Based On Haptic Or Visual Learning Style Of Entry-Level Engineering Graphics Students?" Purdue University.
- Lee Gooch Mo, Mohd Safarin Nordin, and Mohd Fazlan Mahazir. 2012. "Kemahiran

- Visualisasi Dan Gaya Pembelajaran Pelajar.” *Journal of Psychology & Counseling* 7(September): 66–75.
- Marlissa Omar, and Dayana Farzeeha Ali. 2013. “The Level Of Visualization Skills Among Engineering Student In Universiti Teknologi Malaysia.” 96(1986): 427–31.
- Mohd Fairuz Marian, Jamil Abd Baser, Mohd Bekri Rahim, and Mohd Salleh Tahar. 2011. “Keberkesanan Penggunaan CD Interaktif Lukisan Isometrik Terhadap Kemahiran Visualisasi Pelajar.” *Persidangan Kebangsaan Penyelidikan dan Inovasi Dalam Pendidikan dan Latihan Teknik dan Vokasional (CIETVT)*: 1–15.
- Muhammad Sukri Saud, and Lee Ming Foong. 2007. “Kaitan Tahap Kognitif Visual Pelajar Pendidikan Kejuruteraan.” *Jurnal Pendidikan Universiti Teknologi Malaysia* 12(Oktober): 15–25.
- Purnell, Annette. 2009. “Providing for Creativity through Origami Instruction.” *New York*: 1–7.
- Schmidt, Teresa A. 2015. “A Study of the Impact of a Drawing Intervention on the Spatial Visualization Skills of Sixth Grade Students By Teresa A . Schmidt A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Mathematics and.” Middle Tennessee State University.
- Study, N. E. 2001. “The Effectiveness of Using the Successive Perception Test I to Measure Visual-Haptic Ability in Engineering Students.” Doctoral Dissertation, Purdue University.
- Wares, Arsalan. 2011. “Using Origami Boxes to Explore Concepts of Geometry and Calculus.” *International Journal of Mathematical Education in Science and Technology* 42(2): 264–72.

PENGURUSAN RISIKO KESELAMATAN DAN KESIHATAN PEKERJA DALAM KALANGAN KONTRAKTOR ELEKTRIK

Mohd Azwan Md Yasim,¹ Aede Hatib Musta'amal,^{2*} Norzanah Rosmin³
Nornazira Suhairom⁴

¹ *Sekolah Menengah Kebangsaan Pangkor, 32300 Pangkor, Perak, Malaysia*

^{2,4} *Jabatan Pendidikan Teknikal dan Kejuruteraan, Fakulti Pendidikan, Universiti
Teknologi Malaysia, 81310 Skudai, Johor, Malaysia*

³ *Jabatan Kejuruteraan Elektrik Kuasa, Fakulti Kejuruteraan Elektrik, Universiti
Teknologi Malaysia, 81310 Skudai, Johor, Malaysia*

ABSTRAK

Kajian ini bertujuan untuk mengenalpasti tanggungjawab dan menentukan tahap risiko terhadap kontraktor elektrik dalam menguruskan risiko keselamatan dan kesihatan pekerja. Responden sebanyak 39 kontraktor elektrik negeri Johor yang terdiri daripada pelbagai kelas telah terlibat dalam menjawab soal selidik. Melalui hasil analisis data menggunakan perisian *Statistical Package for the Social Sciences* (SPSS versi 15), 40 daripada 44 tanggungjawab yang telah dikenalpasti berada pada tahap risiko rendah. Keseluruhannya menunjukkan kontraktor elektrik melaksanakan tanggungjawab mereka dalam menguruskan risiko keselamatan dan kesihatan pekerja. Bagaimanapun empat tanggungjawab lagi didapati mencatatkan tahap risiko sederhana. Ia termasuklah menyediakan prosedur kerja bertulis, latihan mengangkat objek, latihan ketika situasi cemas dan latihan khusus terutamanya kerja berisiko tinggi. Justeru itu, tanggungjawab ini perlu diberi perhatian oleh pihak kontraktor elektrik dalam menguruskan risiko keselamatan dan kesihatan pekerja. Penambahbaikan terhadap prosedur kerja, latihan dan pendidikan patut dilaksanakan untuk mengurangkan tahap risiko sederhana kepada tahap risiko rendah.

Katakunci: *kontraktor elektrik, Pengurusan risiko keselamatan dan kesihatan, pendawaian elektrik*

Pengenalan

Suruhanjaya Tenaga (2010) mendapati bahawa statistik mangsa maut dan tidak maut tertinggi berlaku dalam aktiviti kerja elektrik sepanjang 2002 hingga 2010 di Malaysia yang berpunca daripada pihak kontraktor. Laporan daripada Jabatan Keselamatan Dan Kesihatan Pekerja (JKKP) pula menunjukkan kemalangan maut di sektor ini mencatatkan angka tertinggi berbanding sektor lain pada tahun 2009 dan 2010 iaitu masing-masing 71 orang dan 66 orang (Kementerian Sumber Manusia, 2012). Di United Kingdom (UK) pula, Guang dan Fosbroke (1998) mendapati kadar kecederaan maut tertinggi di sektor pembinaan ialah pekerja pemasangan elektrik kuasa (96.6 kematian/100 000 pekerja) mengatasi pekerja struktur logam (86.4) dan jurutera operasi (41.0). Selain itu, analisis laporan *Fatality Assessment and Control Evaluation* (FACE) yang berpusat di Amerika Syarikat (US) mendapati kemalangan maut tertinggi mengikut jenis industri ialah daripada kontraktor elektrik (41.33 peratus) (Batra dan Ioannides, 2001).

Keadaan yang tidak selamat sebelum memulakan tugas disebabkan oleh kelemahan dalam tindakan pengurusan risiko bahaya di tempat kerja (Abdelhamid, 2000; Baxendale dan Jones, 2000). Pihak majikan perlu sedar bahawa sebarang aktiviti dan pengurusan risiko merupakan tanggungjawab orang yang mewujudkan risiko iaitu kontraktor, subkontraktor dan pemaju (Edwards dan Cooper, 1990). Akta Keselamatan dan Keselamatan Pekerja (AKKP 1994) Bahagian IV (Seksyen 15 dan Seksyen 16) telah menggariskan kewajipan am majikan terhadap keselamatan pekerja dan membentuk dasar keselamatan dan kesihatan (Kementerian Sumber Manusia, 2006). Salah satu tujuannya ialah bagi memastikan keselamatan, kesihatan dan kebajikan pekerja dengan mengambil kira risiko, pengetahuan mengenai risiko dan kaedah mengatasi risiko tersebut. Bagaimanapun beberapa kelemahan pihak pengurusan dapat dikesan. Ia termasuklah pengetahuan tentang bahaya, prosedur kerja dan latihan yang tidak mencukupi (Neitzel, 2011; University Safety Committee, 2010). Mereka juga didapati gagal menyediakan peralatan perlindungan peribadi (PPE) dan pakaian perlindungan peribadi (PPC) yang mencukupi, gagal mengekalkan kelengkapan yang selamat, dan memerlukan pekerja melaksanakan tugas yang melebihi keupayaan pekerja (Chockalingam, 2011). Justeru, kajian ini cuba mengenalpasti tanggungjawab dan menentukan tahap risiko terhadap kontraktor elektrik dalam menguruskan risiko keselamatan dan kesihatan pekerja semasa menjalankan kerja mereka.

Metodologi Kajian

Kajian ini menggunakan soal selidik sebagai kaedah untuk mengumpul data di mana pengesahan kandungan soal selidik telah dilakukan oleh seorang pakar daripada Institut Keselamatan dan Kesihatan Kebangsaan (NIOSH). Soal selidik ini terdiri daripada dua bahagian iaitu Bahagian A yang mengandungi lapan maklumat demografi (iaitu: jawatan yang disandang, pengalaman kerja, tempoh penubuhan syarikat, kelas kontraktor, bilangan pekerja, dasar keselamatan dan kesihatan, penubuhan JKKP, dan mengambil pelajar LI) dan Bahagian B pula terdiri daripada lima faktor yang diukur yang berkaitan amalan majikan dalam menguruskan aspek keselamatan dan kesihatan (iaitu prosedur kerja, latihan dan pendidikan, penyeliaan, penyenggaraan, dan PPE/PPC). Ia diukur menggunakan *likert like scale* lima pilihan iaitu Sangat Kerap (SK), Kerap (K), Kadang-kadang (KK), Sangat Jarang (SJ), dan Tidak Pernah (TP) sebagai jawapan kepada setiap item. (M. Al-Muz-Zammil dan Muli, 2011)

Soal selidik ini diagihkan kepada kontraktor elektrik yang berurusan dengan JKR Bahagian Elektrik di Negeri Johor. Negeri ini dipilih kerana statistik kemalangan elektrik (maut) tertinggi mengikut negeri sepanjang tahun 2002 hingga 2010 ialah di negeri ini (Suruhanjaya Tenaga, 2010). Sebanyak 40 set soal selidik diedarkan bagaimanapun hanya 39 set soal selidik sahaja berjaya dianalisis. Teknik persampelan yang digunakan pula ialah persampelan rawak mudah.. Hasil analisis data Bahagian A akan dipaparkan dalam jadual kekerapan dan peratusan manakala Bahagian B akan dipaparkan dalam jadual peratusan dan nilai min mengikut tahap risiko. Skor min yang diperolehi setiap item dan tahap risiko dirujuk berpandukan Jadual 1 di bawah:

Jadual 1: Skor dan Min

| Bil. | Skor Min | Tahap Risiko |
|------|-----------|--------------|
| 1. | 1.00-2.33 | Rendah |
| 2. | 2.34-3.67 | Sederhana |
| 3. | 3.68-5.00 | Tinggi |

(Sumber: Landell, 2007)

Kesemua data dikumpul dan di analisis menggunakan perisian SPSS versi 15. Bagi menentukan nilai kebolehpercayaan, ia dirujuk berdasarkan nilai Alpha Cronbach (α). Nilai α yang boleh diterima ialah 0.7 hingga 0.99 (George dan Mallery, 2003; Mohd

Majid, 1993). Nilai kebolehpercayaan untuk setiap pemboleh ubah adalah tinggi seperti dalam Jadual 2:

Jadual 2:Nilai Kebolehpercayaan

| Bil. | Aspek Pengurusan Risiko Keselamatan dan Kesihatan Pekerja | Nilai alpha |
|-------------|--|--------------------|
| 1. | Tanggungjawab majikan berkaitan prosedur kerja | 0.916 |
| 2. | Tanggungjawab Majikan Berkaitan Latihan dan Pendidikan. | 0.826 |
| 3. | Tanggungjawab Majikan Berkaitan Penyeliaan | 0.942 |
| 4. | Tanggungjawab Majikan Berkaitan Penyenggaraan | 0.820 |
| 5. | Tanggungjawab Majikan Berkaitan PPE/PPC | 0.925 |

Dapatan

Bahagian A merupakan maklumat demografi responden yang dianalisis mengikut nilai kekerapan dan peratusan. Secara keseluruhan, hasil analisis terhadap 39 wakil kontraktor yang menjawab soal selidik menunjukkan bahawa wakil daripada majikan mencatatkan bilangan tertinggi menjawab soal selidik iaitu 17 orang (43.6 peratus), diikuti penyelia iaitu 15 orang (38.5) dan jurutera iaitu tujuh orang (17.9 peratus). Kebanyakan kontraktor mempunyai pengalaman kerja selama enam hingga 10 tahun iaitu 11 orang (28.2 peratus), dan selebihnya berpengalaman melebihi 10 tahun ke atas. Frekuensi tempoh penubuhan syarikat paling tinggi ialah di antara 11 hingga 15 tahun iaitu 30.8 peratus, diikuti oleh enam hingga 10 tahun iaitu 10 kontraktor (25.6 peratus), 20 tahun ke atas iaitu sembilan kontraktor (23.1 pratus) dan selebihnya ialah sehingga lima tahun iaitu enam kontraktor (15.4 peratus). Bilangan kelas kontraktor paling ramai menjawab soal selidik ialah daripada kontraktor Kelas C iaitu 43.6 peratus, diikuti oleh Kelas B (25.6 peratus), Kelas D (20.5 peratus) dan Kelas A (10.3 peratus). Sebanyak 20 kontraktor (51.3 peratus) mencatatkan bilangan tertinggi yang mempunyai pekerja seramai enam hingga 39 orang, 17 kontraktor (43.6 peratus) lagi sehingga lima orang dan dua kontraktor (5.1 orang) mempunyai pekerja melebihi 40 orang. Hasil analisis juga mendapati 36 kontraktor (92.3 peratus) daripada 39 kontraktor telah membentuk dasar keselamatan dan kesihatan. Manakala selebihnya tidak berbuat demikian.

Bagaimanapun, sebanyak 24 kontraktor (61.5 peratus) daripadanya menubuhkan JKPP manakala 15 kontraktor (38.5 peratus) lagi tidak menubuhkan JKPP.

Jadual 3:Tanggungjawab Majikan Berkaitan Prosedur Kerja.

| | Penyataan | Min | Tahap Risiko |
|--|---|------------|---------------------|
| | Menyediakan prosedur kerja bertulis | 2.4 | Sederhana |
| | Memperincikan prosedur kerja dengan jelas | 2.0 | Rendah |
| | Tunjuk ajar mengenai prosedur kerja | 1.8 | Rendah |
| | Prosedur kerja sentiasa dipatuhi | 1.7 | Rendah |
| | Prosedur kerja disertakan langkah kawalan keselamatan | 1.9 | Rendah |
| | Perancangan kerja yang rapi sebelum tugas bermula | 1.8 | Rendah |
| | Mengenalpasti amalan kerja selamat | 1.7 | Rendah |
| | Memastikan amalan proses kerja yang selamat | 1.7 | Rendah |
| | Prosedur kerja mengikut perubahan semasa | 2.0 | Rendah |
| | MIN KESELURUHAN | 1.9 | Rendah |

Berdasarkan Jadual 3, sembilan item yang dikenalpasti merupakan tanggungjawab kontraktor berkaitan prosedur kerja. Hasil analisis mendapati item 1 iaitu menyediakan prosedur kerja bertulis merupakan tahap risiko sederhana dengan catatan min 2.4. Lapan item yang lain berada dalam tahap risiko rendah iaitu mempunyai nilai min dalam julat 1.7 hingga 2.0. Analisis keseluruhan tanggungjawab kontraktor yang diukur ialah risiko pada tahap sederhana iaitu mencatatkan min 1.9

Jadual 4: Tanggungjawab Majikan Berkaitan Latihan dan Pendidikan.

| | Penyataan | Min | Tahap Risiko |
|--|--|------------|---------------------|
| | Sesi pengenalan bahaya kepada pekerja/pelajar (LI) | 2.2 | Rendah |
| | Program keselamatan kepada pekerja/pelajar (LI) | 2.2 | Rendah |
| | Latihan mengangkat objek | 2.5 | Sederhana |
| | Latihan ketika situasi cemas | 2.7 | Sederhana |
| | Latihan khusus terutamanya kerja berisiko tinggi | 2.4 | Sederhana |
| | Latihan membaik pulih peralatan dan kelengkapan elektrik | 2.3 | Rendah |
| | Latihan menjalankan kerja pendawaian dengan betul | 1.8 | Rendah |
| | Pendidikan mengenai amalan/sikap yang selamat | 1.8 | Rendah |
| | Menunjukkan cara pengendalian peralatan yang betul | 1.8 | Rendah |
| | Keseluruhan latihan yang disediakan mencukupi | 2.2 | Rendah |
| | MIN KESELURUHAN | 2.2 | RENDAH |

Jadual 4 di atas memaparkan 10 item tanggungjawab kontraktor berkaitan latihan dan pendidikan. Berdasarkan 10 item yang dikenalpasti, didapati tiga item merupakan

tahap risiko sederhana iaitu latihan mengangkat objek, latihan ketika situasi cemas dan latihan khusus terutamanya kerja berisiko tinggi. Selebihnya ialah item yang berisiko rendah. Keseluruhannya menunjukkan tahap risiko rendah dengan mencatatkan nilai min 2.2.

Jadual 5:Tanggungjawab Majikan Berkaitan Penyeliaan.

| Bil. | Penyataan | Min | Tahap Risiko |
|-------------|---|------------|---------------------|
| 20. | Mengenalpasti kerja yang dijangka merbahaya | 2.0 | Rendah |
| 21. | Menganalisis bahaya setiap aktiviti kerja | 2.0 | Rendah |
| 22. | Menilai kesukaran sesuatu tugas | 1.9 | Rendah |
| 23. | Mengenalpasti potensi bahaya elektrik | 1.7 | Rendah |
| 24. | Membimbing pelajar menjalankan tugas | 1.8 | Rendah |
| 25. | Memberi arahan yang jelas dan sepatutnya | 1.9 | Rendah |
| 26. | Memastikan pekerja bebas daripada bahaya | 1.7 | Rendah |
| 27. | Memastikan bekalan kuasa dimatikan sebelum kerja penyambungan wayar | 1.6 | Rendah |
| 28. | Memastikan langkah yang betul diikuti | 1.7 | Rendah |
| 29. | Mengawal setiap aktiviti kerja yang dilakukan | 1.8 | Rendah |
| 30. | Mematuhi kerja pengujian elektrik | 1.7 | Rendah |
| 31. | Mengelaskan kawasan/situasi bahaya | 1.8 | Rendah |
| 32. | Menyampaikan tanggungjawab yang jelas | 1.9 | Rendah |
| 33. | Mengarahkan pekerja melakukan tugas bergilir-gilir jika perlu | 2.0 | Rendah |
| 34. | Memastikan/memaksa pekerja | 2.1 | Rendah |

| | | | |
|------------------------|------------------------|------------|---------------|
| | supaya memakai PPC/PPE | | |
| MIN KESELURUHAN | | 1.8 | RENDAH |

Jadual 5 memaparkan 15 item tanggungjawab kontraktor berkaitan penyeliaan. Sebanyak 15 item yang dikenalpasti dan kesemuanya mencatatkan tahap risiko rendah. Min item-item tersebut berada dalam julat di antara 1.6 hingga 2.1 di mana hasil analisis keseluruhan menunjukkan tahap risiko rendah dengan mencatatkan min 1.8.

Jadual 6:Tanggungjawab Majikan Berkaitan Penyenggaraan

| | Penyataan | Min | Tahap Risiko |
|------------------------|---|------------|---------------------|
| | Penyenggaraan mengikut jadual | 2.2 | Rendah |
| | Memastikan penyenggaraan dalam keadaan sempurna | 2.0 | Rendah |
| | Pemeriksaan penyenggaraan oleh pekerja mahir | 1.8 | Rendah |
| | Pengujian selepas penyenggaraan | 1.5 | Rendah |
| | Menyenggara dan memeriksa PPE/PPC | 2.0 | Rendah |
| | Menyegerakan penyenggaraan apabila rosak | 1.9 | Rendah |
| MIN KESELURUHAN | | 1.9 | RENDAH |

Jadual 6 memaparkan enam item tanggungjawab kontraktor berkaitan penyenggaraan. Sebanyak enam item yang dikenalpasti dan kesemuanya menunjukkan tahap risiko rendah di mana min item-item tersebut berada dalam julat di antara 1.5

hingga 2.0.. Keseluruhannya menunjukkan tahap risiko rendah dengan mencatatkan nilai min 1.9.

Jadual 7: Tanggungjawab Majikan Berkaitan PPE/PPC

| Bil. | Penyataan | Min | Tahap Risiko |
|------------------------|---|------------|---------------------|
| 41. | Menyediakan PPE/PPC | 2.0 | Rendah |
| 42. | PPC/PPE sentiasa mencukupi | 2.2 | Rendah |
| 43. | PPE/PPC yang berupaya mengurangkan bahaya | 1.8 | Rendah |
| 44. | PPE/PPC sesuai dengan kerja | 1.6 | Rendah |
| MIN KESELURUHAN | | 1.9 | RENDAH |

Jadual 7 memaparkan empat item tanggungjawab kontraktor berkenaan PPE/PPC . Empat item yang diukur dan kesemuanya merupakan tahap risiko rendah. Min item-item tersebut berada dalam julat 1.6 hingga 2.2 dan hasil analisis keseluruhan pula mencatatkan tahap risiko rendah iaitu min 1.9.

Perbincangan dan Kesimpulan

Melalui analisis tanggungjawab kontraktor yang dijalankan, secara keseluruhannya adalah pada tahap risiko rendah. Ia menunjukkan kontraktor menjalankan tanggungjawab mereka dengan baik. Bagaimanapun, terdapat item-item dalam kalangan empat tanggungjawab tersebut yang berada pada tahap risiko sederhana (rujuk Jadual 3 dan 4). Risiko tahap sederhana ini memerlukan kawalan pentadbiran dan perhatian daripada pihak pengurusan dan penilaian terancang perlu untuk kawal atau kurangkan risiko secara praktikal mengikut tempoh yang ditetapkan (Workplace Safety and Health Council, 2010; Kementerian Sumber Manusia, 2008).

Justeru itu, penyeliaan, prosedur, arahan (Langford, 2000), dan latihan perlu dilaksanakan kepada pekerja (Arnolds, 2012). Ia bertujuan untuk memastikan pekerja yang layak sahaja dapat melaksanakan tugas dengan betul (Roberts, 2012). Prosedur kerja yang diaplikasikan tersebut merupakan operasi yang telah didokumenkan dengan baik, amalan yang selaras dengan prosedur kerja, dan melaksanakan kerja tanpa jalan

pintas (Aeiker *et. al* 2008). Ia merupakan tanggungjawab majikan yang perlu wujudkan prosedur kerja selamat dan ia mesti dipatuhi kerana ia menjamin risiko keselamatan (Bellamyb, *et al.* 2007; Baxendale dan Jones, 2000). Majikan juga sepatutnya menekankan latihan dan pendidikan kepada pekerja dengan menumpukan kepada latihan mengangkat objek, latihan ketika situasi cemas dan latihan khusus terutamanya yang berisiko tinggi. Ia merupakan tanggungjawab majikan dan telah termaktub dalam AKKP, 1994 Bahagian IV (Seksyen 15) yang perlu mereka patuhi (Kementerian Sumber Manusia, 2006).

Penghargaan

Penghargaan kepada Kementerian Pendidikan Tinggi Malaysia di atas pembiayaan *Fundamental Research Grant Scheme(FRGS)* Vot No 4F556

Rujukan

- Abdelhamid T. S., and Everett J. G. (2000). Identifying Root Causes of Construction Accidents. *Journal of Construction Engineering and Management*, ASCE, 126(1), 52-60.
- Aeiker, J., et al. (2008). Electrical Safety Program Impact On Process Safety Performance. *IEEE Industry Applications Magazine*.
- Batra, P. E., and Ioannides, M. G. (2001). Electric Accidents in the Production, Transmission, and Distribution of Electric Energy: A Review of the Literature. *International Journal Of Occupational Safety and Ergonomics*. Vol. 7, No. 3, 285–307.
- Baxendale, T., and Jones, O. (1999). *Construction Design And Management Safety Regulations In Practice Progress On Implementation*. Faculty of the Built Environment, University of the West of England, Bristol, UK.
- Bellamyb, L. J., et al., (2007). Storybuilder: A Tool for the Analysis of Accident Reports. *Reliability Engineering and System Safety*, 92 (2007) 735–744.
- Chockalingam, S and Sornakumar, T. (2011). An Effective Tool for Improving the Safety Performance in Indian Construction Industry. *European Journal of Scientific Research*. Vol.53 No.4 (2011), pp.533-545.
- Edwards, J. R., and Cooper, C. L. (1990). The Person-Environment Fit Approach To Stress: Recurring Problems And Some Suggested Solutions. *Journal Of Organizational Behavior*, 3(4), 293-307.

- Guang, X. C. and Fosbroke D. E. (1998). Work-Related Fatal-Injury Risk of Construction Workers by Occupation and Cause of Death, Human and Ecological Risk Assessment. *An International Journal*. 4:6, 1371-1390.
- George, D., and Mallery, P. (2003). *SPSS for Windows step by step: A Simple Guide and Reference*. 11.0 update (4th ed.). Boston: Allyn & Bacon.
- Kementerian Sumber Manusia. (2012). *Statistik Jabatan*, Jabatan Keselamatan dan Kesihatan Pekerjaan <<http://dosh.mohr.gov.my/>>(5 September 2012),Malaysia.
- Landell, K. (1997). *Management By Menu*. London: Wiley And Soms Inc.
- Langford, D., Rowlinson, S., and Sawacha, E. (2000). Safety Behavior and Safety Management: Its influence on the Attitudes in the UK Construction Industry. *Jurnal Engineering, Construction and Architectural Management*, 7(2), 133–140.
- Liggett, D. (2006). Refocusing Electrical Safety IEEE Transactions on Industry Applications, VOL. 42, NO. 5, September/October. *Senior Member, IEEE*.
- M. Al-Muz-Zammil, Y., dan Muli, M. (2011). *Cara Pengurusan Konflik Peserta Program Khas Pensiswazahan Guru Besar Di Fakulti Pendidikan, Universiti Teknologi Malaysia*. Fakulti Pendidikan. Universiti Teknologi Malaysia.
- Mohd. Majid Konting (1993), *Kaedah Penyelidikan Pendidikan*, c.2, Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Neitzel, D. K. (2011). Controlling Electrical Hazards Through Effective Risk Management . *Copyright Material IEEE*.
- NFPA 70E. (2004). *Standard for Electrical Safety in the Workplace*. Quincy, MA: National Fire Protection Association, 2004.
- Roberts, D. (2012). Risk Management of Electrical Hazards. *Copyright Material IEEE*. Paper No. ESW17 Member CSA, ASSE Senior Member IEEE Schneider Electric Canada Inc. 5985 McLaughlin Road Mississauga, ON L5R 1B8905-366-9943
- Suruhanjaya Tenaga Malaysia. (2010). *Analisa Kemalangan Elektrik Di Malaysia Bagi Tahun 2002 Hingga 2010*, <<http://www.st.gov.my/>>(March 22, 2012), Jabatan Kawalselia keselamatan Elektrik, Malaysia.
- University Safety Committee. (2010). *Safety Risk Management Procedure*. The University of Western Australia.
- Workplace Safety and Health Council, (2010). *Code of Practice for Workplace Safety and Health (WSH) Risk Management*. Document Number: WSHP-HKS-01.

PILOT STUDY ON INNOVATION PERSPECTIVE OF UTM UNDERGRADUATE STUDENTS: RASCH MODEL ANALYSIS

Nor Aisyah Che Derasid,^{1*} Aede Hatib Musta' amal,² Nor Fadila Mohd Amin,³ Abdul
Rashid Husain⁴, Mohd Salehudin Bin Marji⁵, Norzanah Rosmin⁶
^{1,2,3,5} *Department of Technical & Engineering Education, Universiti Teknologi Malaysia*
⁴ *Department of Control and Mechatronic Engineering, Universiti Teknologi Malaysia*
⁶ *Department of Electrical Power Engineering, Universiti Teknologi Malaysia*

ABSTRACT

Since the establishment of UTM-CSI in 2010, various efforts have been made to foster innovation and to recognize individuals who have managed to develop innovation and creativity in Malaysia in improving the standard of living and quality of life. The objective of this study is to develop an instrument in measuring three constructs; Human Capital Innovativeness, Culture Innovativeness and Leadership Innovativeness which have good features in terms of reliability. This study is a pilot study with a quantitative approach using survey method by questionnaire. The data have been analyzed by using the Statistical Package for Social Sciences version 19 and Winsteps software version 3.69.1.11. Samples for this study are selected using random sampling with the feature of those who are undergraduate students in Universiti Teknologi Malaysia, Skudai. The results found that Human Capital Innovativeness, Culture Innovativeness and Leadership Innovativeness are highly recommended constructs in measuring students' innovation level. The item reliability of 132 items is in acceptable range, >0.7 and showing that items can be categorized into 2 groups of item ability. As a result, 2 items were rephrased and 23 items to be omitted. Thus, 109 items were used for the actual study. Future work will be discussed on further analysis on actual survey.

Keywords: *instrument, innovation, reliability, pilot test*

Introduction

Malaysia was a developing country and various initiatives, as well as measures, have been taken to make Malaysia a developed and high-income country by the year 2020. In pursuing the 21st-century, Malaysia needs its people to have the level of innovation comparable with high-income developed countries such as Switzerland, Sweden, and the USA. A mechanism has been taken to ensure that the target of a high-income nation by 2020 shifts the economy through creativity and innovation.

The best approach in assessing the perception or notion of innovation is to assess the behavior of individuals. Evaluation and measurement need to have a variety of approaches to ensure the effectiveness of the efforts that have been done before.

Based on preliminary study with innovation officer and supporting staff, indicates that there are problems arise from the extent to which the overall effectiveness of innovation programs that were held and how to measure the effectiveness of these can be identified through feedback and reactions that have been given by students. Clearly shows that until now UTM-CSI does not have the appropriate tool to measure the level of innovation of students in particular and their effectiveness of efforts taken so far could not be known.

This study focuses on the necessity of pilot test when constructing tests or other measuring instruments. Pilot test was conducted in order to make sure the study well test performs. The aims of this pilot study are to test the reliability and examine the consistency of measurement tools being used. The pilot studies often requires gathering extra data such as a criterion measure and the length of time needed to complete the test (McIntire & Miller, 2007).

Methodology

The survey was administered randomly to 62 students who are studying at Universiti Teknologi Malaysia, Johor Bahru Campus (UTM JB). There are 28 engineering students and 34 non-engineering students. Meanwhile, this study is significant towards students at UTM JB only because of the UTM-CSI location and their accessibility to this organization facilities and activities throughout their study period in UTM. At this stage, the researcher knows that not all items will perform as expected. Respondents will misinterpret some items. Other items will be either too easy or too difficult, and a few items might be answered differently by male and female students.

The instrument testing was conducted among 62 students, which involved an analysis of 132 items. These items measuring 3 main constructs and 15 sub constructs or dimensions. Content and face validity is essential to make sure the concept and meaning of the questionnaire do not contradict, easy to understand and valid (Gay et al., 2006). Instruments in this study consist of 2 parts namely; i) Part A contains items related to the background of respondents such as gender, race, age, CGPA, year of study and programme and ii) Part B consist of items measure the innovation construct. In this

study, the students measure their own perception of innovation in determining their level of innovation based on Rasch Measurement Model (RMM). The Rasch Measurement Model (RMM) is one of IRT-based measurement (sometimes called latent trait measurement) and has been reported by researchers around the world (Abd-El-Fattah et al., 2014; Panayides et al., 2013) as RMM have an increase in the importance of good measurement.

Basically, there are three concepts of Rasch analysis; the estimates of item difficulty; person ability and the relationship between item difficulty and person ability. According to RMM estimates the item difficulty from the responses of a set of respondents, by taking into account the ability of the candidates and the degree of match between the ability of the group and the difficulty of the items. In Rasch analysis, items and person parameters are estimated according to the probability of their response patterns given the person ability and item difficulty. Further, Rasch also estimates a person ability are equivalent to scoring in a test.

Results

Validity of instrument is very basic requirement to achieve good measure. The findings of the pilot study found that The value for person reliability is 0.98 with separation index of 6.91. This demonstrates that the instrument has wider ability range and there are about 7 levels of person ability to be categorized.

The value of item reliability for the instrument is 0.78 with the item separation index of 1.88. Thus, Items reliability greater than 0.7 indicates items in this instrument is highly acceptable (Bond & Fox, 2015) .Reliability of 3 main constructs show good person reliability from 0.94 to 0.96. In addition, the respondents separation index for all constructs is acceptable, ranging from 3.92 to 4.31.

Unidimensionality is one of the fundamental requirement for RMM to obtain the items in the instrument measure only a single construct. Raw variance explained by measures is the benchmark of the instrument unidimensionality. Based on the analysis, the raw variance explained by measures is 34.5% and closely match the model 34.9% and should be greater than 20% (Reckase, 1979). The value of unexplained by variance in 1st contrast is 5.4% and found to be well controlled because does not exceed 15% (Azrilah et al., 2013).

Polarity item analysis determines whether all items are moving in one direction with the constructs. Results shows 132 items consists of 15 sub-constructs indicate the PTMEA correlation value is positive.

The value of infit MNSQ and outfit MNSQ of each item and person show the suitability of items in measuring the constructs. Wright et al. (1994) stated that the infit MNSQ and outfit MNSQ of rating scale instrument should be in range between 0.6 to 1.4. Table 1 shows that person 43 appears in every construct as the misfit person. Besides, other respondents with ID 11, 37 and 49 also considered as misfit since their value of MNSQ more than 1.4. Items TP06, OC06 and CS01 might be confused. Other misfit items that have value below than 0.6 logit represent by each construct are items VO02 and EV04. Wright et al. (1994) stated that the infit MNSQ and outfit MNSQ of rating scale instrument should be in range between 0.6 to 1.4. Thus, more attentions need to be put into these five items and four respondents.

Table 1 : Item and Person Fit for Each Construct in Instrument

| Constructs | Item Infit MNSQ | | | | Person Infit MNSQ | | | |
|---------------|-----------------|------|------|------|-------------------|----|------|----|
| | Min | Item | Max | Item | Min | ID | Max | ID |
| Human Capital | - | - | 1.77 | TP06 | .06 | 43 | 2.99 | 11 |
| Culture | .45 | VO02 | 1.72 | OC06 | .05 | 43 | 2.37 | 49 |
| Leadership | .44 | EV04 | 2.57 | CS01 | .15 | 43 | 2.32 | 37 |

Discussions and Conclusion

Based on data analysis of pilot study showed the reliability of 62 students with 132 items in three main constructs (15 sub constructs) is very high to measure student innovation. Based on Rasch Measurement Model, person reliability more than 0.8 is consider very high (Bond & Fox, 2015; Green & Frantom, 2002; Linacre, 2005). Besides, items reliability greater than 0.7 indicates items in this instrument is highly acceptable (Bond & Fox, 2015) . This implies that items can be categorized into 2 groups of item ability. It means that items are enough to separate items.

Positive PTMEA CORR value shows the item measure the constructs to be measured (Bond & Fox, 2015). Thus, the items contribute to the measurement of innovation level. Positive and high value of CORR PTMEA shows the items are able to distinguish between respondents' ability.

Wright et al. (1994) stated that the infit MNSQ and outfit MNSQ of rating scale instrument should be in range between 0.6 to 1.4. Items with value more than 1.4 logit are considered as ambiguous item but not degrading. If the items below 0.6 logit, indicate that the items are too predictable. Thus, the items must be dropped or repaired if the items do not meet the conditions stated. Based on analysis, there is no item from Human Capital construct with minimum value of MNSQ. Thus, more attentions need to be put into these five items (TP06, OC06 and CS01, VO02 and EV04) and four respondents (ID43, ID11, ID37 and ID49). Thus, from analysis, model commends these items whether to be deleted, rephrased and improved.

Based on analysis, in order to achieve the standard validity and reliability of the instrument based on the Rasch measurement model, the items must meet the criteria to be followed by reference to any standard index set. Preferably, purification and removal of the items done by reviewing the literature, objectives and purpose of measurement.

Results from the analysis in pilot study found 3 items in Culture Innovativeness constructs were rephrased and 23 items were retained. Thus, 109 items were used for the actual study. Therefore, the yielded items are tested and have been verified by Rasch measurement model in ensuring the items and instrument itself to be used in the actual study have better quality. Table 2 shows the summary for the development of a new innovation measurement instrument for the actual study.

Table 2: Summary of pilot study analysis

| CONSTRUCT | SUB CONSTRUCT | TOTAL | OMMITED | REPHRASED | ADDED | TOTAL |
|------------------|--------------------------------|-------|---------|-----------|-------|-------|
| HUMAN CAPITAL | Knowledge | 11 | 4 | 0 | 0 | 7 |
| | Skills | 14 | 3 | 0 | 0 | 11 |
| | Towering Personality | 8 | 1 | 0 | 0 | 7 |
| CULTURE | Innovation Propensity | 6 | 0 | 1 | 0 | 6 |
| | Organizational Constituency | 6 | 1 | 0 | 0 | 5 |

| | | | | | | |
|--------------|----------------------------|------------|-----------|----------|----------|------------|
| | Organizational Learning | 7 | 1 | 0 | 0 | 6 |
| | Creativity and Empowerment | 12 | 0 | 1 | 0 | 12 |
| | Market Orientation | 7 | 0 | 1 | 0 | 7 |
| | Value Orientation | 5 | 1 | 0 | 0 | 4 |
| | Implementation Context | 8 | 1 | 0 | 0 | 7 |
| LEADERSHIP | Openness | 10 | 0 | 0 | 0 | 10 |
| | Conscientiousness | 10 | 6 | 0 | 0 | 4 |
| | Extraversion | 9 | 2 | 0 | 0 | 7 |
| | Agreeableness | 7 | 2 | 0 | 0 | 5 |
| | Neuroticism | 12 | 1 | 0 | 0 | 11 |
| TOTAL | | 132 | 23 | 2 | 0 | 109 |

As a conclusion, a pilot study conducted prior to the actual survey. Thus, the researcher has an opportunity to improve items proposed after taking into consideration the revised version of the instrument, which was ultimately administered for the actual test. All the constructs tested are highly recommended although there some items that need improvement and discarded. Research objective to identify undergraduate students' understanding the items proposed based on each construct is achieved and successfully discussed using Rasch Measurement Model. In addition, the researcher also make sure that only items that meet the standards based on the item analysis before and have high reliability and validity were chosen to be put in the questionnaire to be administered to the actual population (Adibah, 2013).

Acknowledgement

We would like to render our appreciation to Center for Student Innovation (UTM CSI) in supporting this research project, and also to Universiti Teknologi Malaysia for providing GUP Grant Vot.No: 18H21

References

Abd-El-Fattah, Sabry M, AL-Sinani, Yousra, El Shourbagi, Sahar, & Fakhroo, Hessa A. (2014). Using Rasch Analysis to Examine the Dimensionality Structure and Differential Item Functioning of the Arabic Version of the Perceived Physical Ability Scale for Children. *Australian Journal of Educational & Developmental Psychology, 14*, 29-44.

- Adibah, Abdul Latif. (2013). *Pembangunan instrumen penilaian akhlak pelajar di Institusi Pengajian Tinggi Awam*. (PHD), Universiti Teknologi Malaysia, Skudai, Johor
- Azrilah, Abdul Aziz, Mohd Saifudin, Masodi, & Azami, Zaharin. (2013). *Asas Model Pengukuran Rasch; Pembentukan Skala dan Struktur Pengukuran*. *Bangi, Selangor: Penerbit UKM*.
- Bond, Trevor, & Fox, Christine M. (2015). *Applying the Rasch model: Fundamental measurement in the human sciences*: Routledge.
- Gay, LR, Mills, GE, & Airasian, P. (2006). *Educational research: Competencies for analysis and research*: Upper-Saddle River, NJ: Pearson Education.
- Green, Kathy E, & Frantom, Catherine G. (2002). *Survey development and validation with the Rasch model*. Paper presented at the International Conference on Questionnaire Development, Evaluation, and Testing, Charleston, SC.
- Linacre, JM. (2005). WINSTEPS Rasch measurement [Computer software]. *Chicago: WINSTEPS.com*.
- McIntire, Sandra A, & Miller, Leslie A. (2007). *Foundations of psychological testing: A practical approach*: Sage.
- Panayides, Panayiotis, Gavrielides, Marios, Galatopoulos, Christodoulos, & Gavriilidou, Mikaella. (2013). Using Rasch Measurement to Create a Quality of Sleep Scale for a Non-Clinical Sample Based on the Pittsburgh Sleep Quality Index (PSQI). *Europe's Journal of Psychology*, 9(1), 113-135.
- Reckase, Mark D. (1979). Unifactor latent trait models applied to multifactor tests: Results and implications. *Journal of educational statistics*, 4(3), 207-230.
- Wright, Benjamin D, Linacre, John M, Gustafson, JE, & Martin-Lof, P. (1994). Reasonable mean-square fit values. *Rasch measurement transactions*, 8(3), 370.

**PURPOSES AND BENEFITS OF INDUSTRIAL TRAINING PROGRAM AS
CAREER PRAPARATION FOR UNDERGRADUATE ENGINEERING
STUDENTS ACROSS VARIOUS UNIVERSITIES IN MALAYSIA**

Aini Najwa Azmi, Yusri Kamin and Muhammad Khair Noordin

*Department of Technical and Engineering Education, Faculty of Education,
Universiti Teknologi Malaysia, 81310 UTM, Skudai, Johor Darul Takzim, Malaysia
Email: aininajwa.azmi@gmail.com, p-yusri@utm.my, mdkhair@utm.my*

ABSTRACT

Industrial training program is one of career education that includes in the academic curriculum in higher education institutions. This training is an opportunity for undergraduate students to incorporate work-related experience and knowledge into their formal education in a university by taking part in supervised and planned work in real-world professional environments. Industrial training program is able to develop students' technical, non-technical skills, and good work ethics. Industrial training is a platform for students to gain confidence and face challenges at work such as teamwork, working under pressure and dealing with people from all levels of the organization. Through industrial training, students can expose themselves to be as potential future employers, develop real workplace skills and gain a lot of work experience. The purpose of this paper is to review the purposes and benefits of industrial training program as career preparation across several private and public universities in Malaysia. The paper is written based on secondary data analysis. As conclusion, industrial training program is a platform for engineering students to learn and feel the real work place experience in the industry. In addition, students can bridge the theory they have learned in the lecture with the practice in the industry.

Keywords: industrial training, engineering, career, higher learning institution, industry, skills development

Introduction

In Malaysia, paper qualification seems to be the most important part when applying for a job. However, nowadays employers are looking for employees who have at least a couple of years of work experience (Saat and Ahmad, 2009). Universities are now accommodating students with the opportunity to convert the theory learned in the lecture into practice through industrial training. Furthermore, more students from higher learning institutions have the advantage of achieving an interesting practice and experience through industrial training. It is aiming to develop the skills that are required by the industry that can be necessary to the students in building their future career (Omar et al, 2008).

Generally, the terminology of 'industrial training' is referring to "on the job training" which student is supervised by both faculty and industry supervisors. This training is one of career education in the standard curriculum to prepare university's students in order to make transition between campuses to career. The industrial training program is considered as a platform for students to improve their employability skills (Pillai, Khan, Syahirah, & Raphael, 2012). It is supposedly will be the opportunity for engineering students to expose to work environment and incorporate theories with practices. But, recently in Malaysia, there are too much concerning on the gap of competence graduates with industries expectations (Renganathan, Ambri, Abdul, & Li, 2013). In order to overcome that, the Malaysian Engineering Accreditation Council (Engineering Program Accreditation Manual, 2012) requires all bachelor degree engineering programs to undergo at least 8 weeks of industrial training in order to be accredited by the council.

Students can get exposed to an actual work life through industrial training and it aims to connect the gap between theory and practice. Generally, all industries in Malaysia, regardless local or international, they give continuous support in providing both technical and financial supports in term of machines and monthly pay to all trainees who undergoing industrial training in their company. Based on review done by the research across universities in Malaysia regarding to their industrial training management, students have their own opportunity to choose the industries that are related to the students' program. Sometimes, students like to choose companies that near to their residents. While training, students need to show good ethics, willing and passionate to learn new knowledge and skills and also independent. Industrial training usually has

durations between 10 weeks to eight months, students are able to learn all knowledge and skills such as communication skills, management, working with different levels of people in organization such as supervisor, colleagues and clients (Saat & Ahmad, 2008). All these skills or competencies can enhance students' employability (Mason, Williams, & Cranmer, 2009). Based on Semedo et al. (2010) and Young (1995), industrial training can provide effectively in developing technical and non-technical skills that demanded by the industry. This happens when they are still pursuing their study. Thus, they are career readied once they are graduated. In addition, based on Bhurtun, Jahmeerbacus, Oolun, & Feliachi, (1999), who were study about industrial training for Electrical and Electronics students, not all engineering practice can be learned in classroom, but they must undergo to real industry to learn the actual engineering practices.

Almost all of universities and higher learning institution offer industrial training for their students, the aims and objectives are difference based on institution itself. Yet, the main objective of industrial training is to give the opportunity for undergraduates to experience practical knowledge through hands-on in real industry environments before their study ends (Pillai et al., 2012; Renganathan et al., 2013). In general, industrial training is the platform for student to bridge between knowledge in the lecture and real-work environment (Pillai et al., 2012). In addition, classroom inputs are usually uniform for all students whereas during industrial training, the learning environment differs for each student (Agarwal & Gupta, 2008).

Purposes of Industrial Training

Basically, the main objective of industrial training is to create an opportunity for graduating students to learn about profession, developing new and potential skills and to generate values (Laguador, 2013). Industrial training program is an important part of academic curriculum in higher learning institutions that requires all engineering students to undergo industrial training program before completing their degree. Each university has its own objectives and aims. However, the main objective is to get their students exposed to real practical knowledge in the industries. This section describes about industrial training system or procedure that are used in various public universities in Malaysia. It can be seen that there are a lot of differences between each universities.

Moreover, many universities organise and promote the placement of industrial training in government organisations, government-link companies, private enterprises and other organizations to boost work experience so that students will attain the necessary skills to supplement their theoretical training (Mihail, 2006). Others scholars viewed industrial training as a platform to create opportunities to develop their knowledge, skills and good work ethics (Ab Rahman et al., 2009; Osman et al., 2016; Renganathan et al., 2013).

A private university in Malaysia, Universiti Teknologi PETRONAS (UTP) was established with the objective to produce holistic engineering graduates who are not only technically competent but also possess other traits such as lifetime learning capacity, critical thinking, communication and behavioural skills, business acumen, practical aptitude and solution synthesis ability. UTP has always placed great emphasis in having a close collaboration with the industries in which its graduates will eventually gain recognition from industry players locally and abroad. This industrial training program is a main example of the University-Industry collaboration (Renganathan et al., 2013).

The main aims of UTP in its industrial training program are to integrate theory with practice, to experience industry work and its culture, establish contacts with industrial practitioners, present opportunities for students to meet potential employers, and to familiarise students with industry and its programs. To achieve these aims, the industrial training program should be developed accordingly with some important elements. The important elements are hands-on practical training, project-based/research-based assignments and activities, individual/ team projects and activities. All students are expected to learn and developed their skills that are very important in workplace. These workplace competencies are leadership and management skills, critical thinking, communication skills and business fundamentals.

Based on UTP's curriculum, fourteen credit-hours awarded to the students for the industrial training program. UTP has developed a structured assessment method to allow university and industry communicate in assessing students' performances during the

training. The assessments include overall performance evaluation, oral presentation, logbook assessment and final report.

The industrial training program in UTP comprises of two semesters as shown in Table 1. The gap between Student Industrial Training (SIT) and Student Industrial Project (SIP) is upon discretion of Host Company.

Table 1: Two Semesters of Industrial Training Program in UTP.

| Semester | Type | Duration |
|----------|-----------------------------------|----------|
| | Student Industrial Training (SIT) | 12 weeks |
| | Student Industrial Project (SIP) | 12 weeks |

Student Industrial Training (SIT) is designed with a very specific purpose which is to expose UTP students to the real professional working surroundings. As a result, they can bridge theory which has learned in the university with practice in the industry. Safety practices is an important skill that emphasized by UTP to be developed by their students while industrial training besides work ethics, management and communication. Based on (Malhi, 2008; Malhi, 2016), strong work ethics and effective communications skills are the most important non-technical skills that demanded by today's employers. Malhi, (2008) and Malhi, (2016) also stated that non-technical skills is has the highest important hiring criteria which reached nearly 45%. Industrial training helps students in developing their non-technical skills. In addition, a linkage between university and industry can be strengthen through SIT (Renganathan et al., 2013).

On the other hand, Students Industrial Project (SIP) is the continuity of SIT that is a part of industrial training for engineering students in UTP. SIP is purposely designed to create opportunity to students in developing a solid understand of business fundamentals and organization performance; for example competitive positioning, models of business and strategy execution. As students get exposed with this real environment in industry, students are able to develop skills such as assessing performance, explore the

consequences of change, interpret trends and make better decisions (Renganathan et al., 2013).

Based on above paragraphs, it can be seen that UTP gives a strong emphasize in their industrial training program to their students. While in Universiti Teknikal Malaysia Melaka (UTEM), industrial training is also compulsory for degree program of Electrical Engineering students. The experiences and skills acquired from a duration of placement can be precious and provide the advantage to the students to plan their future career. Students are allow to choose industry that relevant to their course and expected to get involved in the following areas of training in order to achieve the underlying objectives. The areas include mechanical design and product or system development, manufacturing or production process and its optimization process, and product testing and quality control, and maintenance and repair of machineries or equipment. In the industrial training learning outcomes that are set by UTEM, students are expected to have a certain level of hands-on practical experience related to their own field of engineering studies (www.utm.edu.my).

In addition, the aims that Universiti Tun Husein Onn Malaysia (UTHM) set for their students in industrial training are to give an opportunity to students to undergo practical training in engineering, technology, education and management sectors to enhance the interpersonal skills. The course outcomes that set by UTHM are almost similar to other universities. Students who have done industrial training should be able to enhance competencies and competitiveness in their courses, to relate working experience and theoretical knowledge that learned in university, to apply the theoretical and knowledge that have learned, to enhance effective communication skills, and finally to gain as much as possible working experience that can be as a guide for them to choose a right career in the future (<https://eli.uthm.edu.my/eli>).

Benefits and Learning Outcomes of an Industrial Training Program.

As non-technical skills is highly demanded by employers to a new graduated employee, industrial training is suggested by scholars as a part in the formal curriculum for engineering students in developing necessary skills for employers. Industrial training can help in improving the skills that lack by the students. Based on many previous literatures,

industrial training targets to exposed students into real working environment or industries (Ab Rahman et al., 2009; Osman et al., 2016; Phang, Yusof, Saat, & Yusof, 2014; Renganathan et al., 2013; N. Yusof, Amin, Arshad, Dahlan, & Mustafa, 2012). This exposure can guide student in planning their path of career and adapting well in the industry (Phang et al., 2014). In addition, students who have undergone industrial training are revealed to be more confident after graduated and start their career (Maher & Graves, 2008). These are the reasons why industrial training is compulsory in many higher learning institution curriculum for engineering students to be graduated as stated in Engineering Accredited Council (EAC).

There are a lot of study regarding to industrial training do not identify the skills that a student needs to be a career ready graduate; most of the study focus on benefits of industrial training that can be gained from industrial training (N. A. Yusof, Mohd Fauzi, Zainul Abidin, & Awang, 2013). To support this statement specifically, Kagaari, (2007) mentioned that engineering graduates who had their industrial training are performing better in their career comparing to who have not undergone industrial training. Furthermore, career entry shock can be prevented by undergoing the industrial training which is one of the industrial benefits that pointed out by Shipton, West, Dawson, Birdi, & Patterson, (2006). To be more précised, students can improve their personal attitudes, working attitude, communication skills and many non-technical skills after done their industrial training (Ab Rahman et al., 2009). Thus, graduates' employability can be enhanced by undergoing industrial training.

Paulins, (2008) pointed out another benefit of industrial training which is providing opportunity to strengthen the collaboration between university and industry, and forming network in the professional field. Besides collaborating in research innovations and projects, this networks can hugely profiting the students in their future careers search.

As discussed in previous section, UTP divided its industrial training to two parts which are Student Industrial Training (SIT) and Student Industrial Project (SIP). SIT is the first part or semester of two semester of UTP industrial training program. At the end of SIT, students are expected to demonstrate skills in communication, management and teamwork. Besides, the students should be able to adopt ethics, professional and Health, Safety and Environment (HSE) practices in work culture. Students are also expected to demonstrate continuous building of skills and knowledge throughout the training and appreciation of sustainability issues in industries. The training approach in SIT include

safety awareness, continuous technical building skill and exposure, hands-on training, teamwork activities, leadership and management skills and sustainability awareness. SIP is the second part of the UTP's industrial training program that expected their students to have an ability to investigate theoretical knowledge in the industries and analyse complex engineering or technical projects or problems. At the end of SIP, students will be able to evaluate and propose solutions for given complex projects or problems. In order to complete the projects, students will be able to communicate effectively. The training approaches of SIP includes hands-on training, real project-based assignments, research-based activities, teamwork activities, leadership and management skills and safety awareness. In UTP, industrial training program is really benefit to the industry in many ways. It can provide opportunity for industry to assess the capabilities of potential future engineer. By recognizing industry's support to the educator sector, the university and industry linkage can be strengthen by a good collaboration between them. In addition, industries receive fresh, energetic, enthusiastic and productive employees that can enhance the company's reputation among graduates.

Industrial training program in Universiti Kebangsaan Malaysia (UKM) intents to increase diversity in student experiences. This is a great opportunity for students to get exposed to real working life and learn about organisational structure. In addition, students are able to communicate with all employers in the organisation to grasp all knowledge and experience that are available in the campus. The objectives that were set by UKM are to train their students to expose the capability and potential of UKM's graduates to the industries, to apply theory to the practices in the industry and finally to strengthen the linkage between university and industry (www.ukm.my).

Since students are doing practical task, they will be assessed during training that require them to apply and practice all technical and non-technical skills which include intrapersonal and interpersonal skills during the training. Those skills are important in enabling students to adapt, communicate and survive employment challenges. During and after completing the task, students can self-reflect on their capabilities and weaknesses in performing the task or project given (Khairiyah et al., 2016).

Discussions

Engineering Education needs to move from a formal learning that is instructive to a constructivist approach because of industries' demand and to reduce employability

issues. In conventional classes, students normally learn based on what their lecturers deliver in class. However, students can no longer survive by memorizing textbooks, they now need to explore and experience genuine tasks that connects to the real-world in which they can develop, master, and demonstrate authentic work-related skills.

This was a flexible way of learning because learning occurs not rigidly in a formal classroom but in a variety of places, such as at home, work, and through daily interactions and shared relationships among members of society (Kiely & Brophy, 2001). This is a self-regulated learning in which “people learn and generate ideas from experience” (Suhairom, Musta’amal, Amin, & Johari, 2014). Learning from experience is a theory that introduced by D. Kolb, (1983). In their theory, knowledge and skills can be grasped when he or she does a specific action and look for the effects. Industrial training becomes significant when students can gain maximum skills and knowledge that they are not able to find in the classroom.

A combination of formal and informal learning may be beneficial for engineers. This was because workers of all skill levels have to update their technical skills and enhance their general skills to keep pace with the continuous technological changes and new job requirements (Field, 2011). Changes in work require workers to deal with instability, fragmentation or uncertainty, which are typical work experiences. Marhuenda, Strieska- Iliina, & Zukersteinova (2005) advocated that common experiences and practices, through formal and informal learning processes and, competence acquisition and shared meanings, workers will be able to develop their knowledge and expertise in their job area. This suggests that the combination and inclusion of both formal and informal learning have attributes that contribute to the assessment of a quality workforce. This in turn, contributes to organisational quality.

Inadequate practical training for engineering student becomes the main factor of engineering program to fail. To support the argument, Shuman et al., (2005) stated that engineering graduates who are searching for a job should stay relevant industries and learn to adapt in the industry needs as fast as they could because many industries have needed to downsize and outsource engineering related functions. In addition, based on Salzman, (2007), fresh graduated engineers might need extra training to develop missing competencies which will cost the employers. Furthermore, based on Suhairom, Musta’amal, Amin, & Johari, (2014), practical in the university and practical in the industry will give a huge different to the students in grasping the professional experience and real industries exposure. Skills like effective communication and teamwork can be

effectively practiced in the industry. These skills are often used when the students start to work in the industries especially in presenting orally and working on the technical reports. Furthermore, communication on the job via email and phone are usually while working in the industry. It can be concluded that the technical knowledge and skills that students learned in school were important towards attaining employment, however findings by Seering (2009), Grohowski-Nicometo, Nathans-Kelly, & Anderson, (2009) and Anderson et al., (2011) indicated that new engineering graduates continued to refine and expand their knowledge and skills after starting their career. However, during industrial training, it will be the starting point for the students to be exposed in the industry. If the exposures are enough, more competence engineers can be born even they are freshly graduated

Conclusions

As conclusion, industrial training program is important for undergraduate students to grasp experience that they could not get in the formal lecture in university. On the other hand, Industrial training program is a win-win situation for all stakeholders includes students, university and industry. Potential staffs can be determined as early as they undergo industrial training. Simultaneously, industries are contributing in terms of their technologies in machines and processes that can helps students developing those skills needed by industry. Thus, the new insight can be embedded to the university's curriculum. On the other hand, students benefit by developing their technical and non-technical skills. These include communication skills, basic of business and management, teamwork skills and also becoming marketable in the industry. The most important part is the linkage or relationship between university and industry can be strengthen by doing collaboration in projects, innovations and commercialization.

References

- Ab Rahman, M. N., Omar, M. Z., Kofli, N. T., Mat, K., Osman, S. A., & Darus, Z. M. (2009). Assessment of engineering students perception after industrial training placement. *European Journal of Social Sciences*, 8(3), 420–431.
- Agarwal, V., & Gupta, O. K. (2008). Summer internship projects in management education: An Indian experience. *International Journal of Innovation and Learning*, 5(1), 94–107. <https://doi.org/10.1504/IJIL.2008.015950>

- Anderson, K., Courter, S. S., Nathan, M. J., Prevost, A. C., Nicometo, C. G., Nathans-Kelly, T. M., ... Atwood, A. K. (2011). Special Session: Moving towards the Intended, Explicit, and Authentic: Addressing Misalignments in Engineering Learning within Secondary and University Education. *American Society for Engineering Education*. Pp. 00491-24. 2011., 424–491.
- Bhurtun, C., Jahmeerbacus, I., Oolun, K., & Feliachi, A. (1999). Short-term practical training for electrical engineering undergraduates. *IEEE Transactions on Education*, 42(2), 109–113. <https://doi.org/10.1109/13.762938>
- Grohowski-Nicometo, C., Nathans-Kelly, T., & Anderson, K. J. B. (2009). Work in progress - Educational implications of personal history, undergraduate experience, and professional values of practicing engineers. In *Proceedings - Frontiers in Education Conference, FIE*. <https://doi.org/10.1109/FIE.2009.5350720>
- Kagaari, J. R. K. (2007). Evaluation of the effects of vocational choice and practical training on students' employability. *Journal of European Industrial Training*, 31(6), 449–471. <https://doi.org/10.1108/03090590710772640>
- Khairiyah, M. Y., et. al. (2016). Scenario Research On Industrial Training/Practicum in Malaysian Higher Learning Institutions. Higher Education Leadership Academy (AKEPT), Ministry of Higher Education Malaysia.
- Kiely, T., & Brophy, M. (2001). Competencies ; A New Sector ; Developing a Competency Model for Three Star Hotels, 0–32.
- Kolb, D. (1983). David A. Kolb on Experiential Learning. In www.infed.org/biblio/b-explrn.htm (pp. 1–11). <https://doi.org/10.1177/0255761407088489>
- Laguador, J. (2013). Engineering Students' Academic and on-the-Job Training Performance Appraisal Analysis. *International Journal of E-Education, E-Business, E-Management and E-Learning*, 3(4), 4–8. <https://doi.org/10.7763/IJEEEE.2013.V3.245>
- Maher, A., & Graves, S. (2007). Making students more employable: can higher education deliver? *Proceedings on EuroChrie Conference 2007*, (January 2007), 1–9.
- Malhi, R. S. (2008). The Hard Truth about Graduate Employability and Soft Skills. *The Hard Truth about Graduate Employability and Soft Skills*, 448(December 2008), 1–20.
- Mason, G., Williams, G., & Cranmer, S. (2009). Employability skills initiatives in higher education: What effects do they have on graduate labour market outcomes? *Education Economics*, 17(1), 1–30. <https://doi.org/10.1080/09645290802028315>
- Mihail, D. M. (2006). Journal of Workplace Learning Internships at Greek universities: an exploratory study. *Journal of Workplace Learning Education + Training Iss Career Development International Universiti Teknologi MARA At*, 18(21), 28–41. <https://doi.org/10.1108/13665620610641292>

- Osman, S. A., Khoiry, M. A., Rahman, N. A., Rahni, A. A. A., Mansor, M. R. A., Nordin, D., & Johar, S. (2016). The effectiveness of industrial training from the perspective of students of the civil and structure engineering department. *Journal of Engineering Science and Technology*, 11(Special Issue onpendidikankejuruteraanandalambina), 1–12.
- Paulins, V. A. (2008). Characteristics of retailing internships contributing to students' reported satisfaction with career development. *Journal of Fashion Marketing and Management: An International Journal*, 12(1), 105–118. <https://doi.org/10.1108/13612020810857970>
- Phang, F. A., Yusof, K. M., Saat, M. M., & Yusof, N. M. (2014). Perceptions of engineering students on industrial training in Malaysia, (JULY), 1–6. <https://doi.org/10.5339/qproc.2014.wcee2013.20>
- Pillai, S., Khan, M. H., Syahirah, I., & Raphael, S. (2012). Enhancing employability through industrial training in the Malaysian context, 187–204. <https://doi.org/10.1007/s10734-011-9430-2>
- Renganathan, S., Ambri, Z., Abdul, B., & Li, C. S. (2013). Students' perception of industrial internship programme. <https://doi.org/10.1108/00400911211210288>
- Shipton, H., West, M. A., Dawson, J., Birdi, K., & Patterson, M. (2006). HRM as a predictor of innovation. *Human Resource Management Journal*. <https://doi.org/10.1111/j.1748-8583.2006.00002.x>
- Suhairom, N., Musta'amal, A. H., Amin, N. F. M., & Johari, N. K. A. (2014). The Development of Competency Model and Instrument for Competency Measurement: The Research Methods. *Procedia - Social and Behavioral Sciences*, 152, 1300–1308. <https://doi.org/10.1016/j.sbspro.2014.09.367>
- Yusof, N. A., Mohd Fauzi, S. N. F., Zainul Abidin, N., & Awang, H. (2013). Improving graduates' employability skills through industrial training: Suggestions from employers. *Journal of Education and Practice*, 4(4), 23–29.
- Yusof, N., Amin, M. M., Arshad, M., Dahlan, H. M., & Mustafa, N. (2012). Authentic Assessment of Industrial Training Program: Experience of Universiti Teknologi Malaysia. *Procedia - Social and Behavioral Sciences*, 56(Ictthe), 724–729. <https://doi.org/10.1016/j.sbspro.2012.09.709>

A PRELIMINARY STUDY: VOCATIONAL COLLEGE NEEDS THROUGH FORMATION STRATEGIC COLLABORATION WITH AUTOMOTIVE INDUSTRY

Norisham Bin A.Rahim¹, Yusri Bin Kamin²,
Faculty of Education, Universiti Teknologi Malaysia 81310 Johor

ABSTRACT

In line with the aspiration to become a high-income developed country, along with increasing economic complexity and technological advances, some efforts need to be made to provide quality skilled manpower and meet industry needs. Among the efforts to focus on is building a strategic collaboration between education and training institutions with the industry. The objectives of this study are to study the strategic collaboration between vocational colleges and the automotive industry in Malaysia in terms of the needs of the vocational college from the automotive industry and the key areas in the establishment of collaboration between vocational colleges with the automotive industry. This study used mixed method in the preliminary study to obtain data (document analysis and interview). Interviews were conducted with the parties from vocational colleges. From this study, it is found that the key areas in the formation of collaboration between vocational colleges and automotive industries are curriculum development, placement for training, technology and information sharing, social networking and industrial visits.

Keywords: *Strategic Collaboration, Automotive Industry, Education and Training*

Introduction

Every year, educational institutions and technical and vocational training in Malaysia will produce semi-skilled and skilled manpower in various fields to meet the needs of industry. It is an effort to realise the national economy and a benchmark to become a high-income developed nation by the year 2020 (Affero *et al.*, 2014; Mohd Jalil *et al.*, 2015 and Norsyuhaili *et al.*, 2016). According to the Bulletin Anjakan (2015), Manpower Department Strategic Plan 2016-2020 (2016), and the Annual Report of the Malaysia Education Blueprint 2013-2025 (2017), stated that the economic agenda outlined in the 11th Malaysia Plan (RMK-11) expects around 1.5 million jobs in various sectors with a target of 60 per cent of jobs will require skills related to the field of education and technical and vocational training. The target will be the key performance

indicators to all stakeholders in the education system and vocational training in order to create a workforce that can meet the required criteria.

The strategic collaboration between the educational institutions and the industry has become a necessity and a key element in the educational system and employment. According to Miller *et. al* (2009); Heinemann *et al.*, (2009); Ramli (2011); Mohtadi *et al.*, (2014); Shamsudin *et. al* (2015); Abdul Wahid, (2015) and Belyaeva *et. al* (2017), they said that the collaboration between education and training institutions and the industry is seen as essential and indispensable to achieve the objective of producing a competent workforce. Hence, the strategic collaboration between education and training institutions with the industry is a necessity and became one of the elements that should be considered by all stakeholders to malfunction and fail to produce skilled manpower can be overcome with more effective methods.

Therefore, to achieve a developed nation status by 2020, all parties especially the education and training institutions and industry should give serious emphasis on the importance of forming strategic collaborations effective for labour generated which can spur economic growth to a higher level. Therefore, collaboration between education and training institutions with industry should be promoted and implemented with an appropriate approach to negative perceptions in order to establish the collaboration that did not occur.

Statement of Problem

Collaboration between educational institutions and vocational technical and vocational training with the industry is essential in order to produce a quality workforce and competitive environment for industrial purposes and meet the aspirations of the country's development. Siti Hamisah (2010); Reports of the Companies Commission of Malaysia (2013); Sa'adatul Mahfuzah (2016); JTM Strategic Plan (2016-2020), 2016 stated that the close relationship between the educational institutions and industry is needed in the development of today's increasingly complex world while producing a quality workforce is required.

In many studies conducted by researchers either from within the country and abroad, the study shows that the relationship of cooperation between educational institutions and industry is still at a low level and lack of awareness of its importance. This can be proved through research conducted by (Report of Higher Education Malaysia, 2006; Siti Hamisah *et. al*, 2010; Ahamad Nurulazam *et al.*, 2011; Abeda *et al.*,

2013; Shamsudin *et. al* 2015; Ekaterina *et. al* 2017 and Widforss *et. al* 2017), which states that the cooperation between industry and educational institutions are weak and are still at a low level.

Previous research mostly makes collaboration between educational institutions and technical and vocational training with the industry as a small fraction of their research. In addition, research conducted by Mohd Zulkifli, (2004); Harris, (2007); and Christina, (2011), only provides analysis and research results that focus on the types of collaboration and strategic collaboration among educational institutions and industry. Study on the rise and overcome problems in the establishment of collaboration between educational institutions in the area of collaboration and the appropriate use of strategies are not implemented in addition to not see deeper collaboration particularly in terms of quality, productivity, governance and evaluation. Holmberg and Cummings (2009); Christina (2011); Ramli (2013); And Omar Salleh (2013) and Kaupilla (2015) states that the vulnerability of a collaboration that was formed also by elements of governance and involvement of management in planning and policy provide a good addition to the assessment element in preserving the established collaboration.

Hence, this study is to identify the implementation of the strategic collaboration between vocational colleges with industry appropriate to the atmosphere and climate system of education and the automotive industry in Malaysia. It is our hope that the parties involved, especially from the educational institutions and technical and vocational training and the industry benefited from this research to improve the quality of collaboration which in turn can increase the production of human capital for the country towards a developed and high income nation by 2020.

Objectives of The Study

The objective of this study was to examine the implementation of the strategic collaboration between vocational colleges with the automotive industry in Malaysia. Specifically this study aims to:

- i. Identify the needs of the vocational college from the automotive industry

Limitation of Study And Scope of The Study

In general, this study is a study which would identify the needs of the vocational colleges from the automotive industry, the focus areas of collaboration and implementation strategies through curriculum development, improvement of training and the sharing and transfer of technology and information. The study focused on vocational college lecturer in the field of automotive in Vocational College Ministry of Education.

Methodology

The study design is a method used to collect detailed information and give a clear picture so as to obtain the findings and conclusions of the study (Gupta, 2005; Abbott et al. 2013). In this study, the design is to obtain information and to see the implementation of the strategic between vocational colleges with the automotive industry.

In this study, researchers used the method of individual interviews to obtain information from a vocational college lecturer. According to Creswell (2008) based on interviews conducted individually is more ideal because it provides a comfortable space and opportunities for sharing ideas without feeling hesitant to express an opinion and to explain the issues clearly. In addition, based on the statement submitted by Sidek (2002) interviewing individually allows information obtained which is more personal. This is the beginning of the survey respondents involved 8 vocational college lecturers in the field of automotive technology.

In addition, the researchers also conducted analysis on documents during the execution of this initial study. Document analysis is a process of gathering information through the investigation and analysis of written materials which would be appropriate for the study. In this study, the researchers wanted to see the documents involved in the organization and implementation of the program. According to Creswell (2009) document analysis will involve researchers examined documents such as minutes of meetings, newspaper articles and also related documents in understanding the issues and problems that exist. Documents accessed are categorized into two categories: common documents and confidential documents.

b) Document Analysis

Table 2 Educational Institutions And Vocational Technical And Vocational Training Needs

| No. | Year | Researchers | Educational Institutions And Vocational Technical And Vocational Training Needs | | | | | | |
|-----|--------------|--------------------|---|---------------------|--------------------|----------------|-----------------------------|--------------------|------------------|
| | | | Curriculum Development | Industrial Training | Sharing Technology | Financial Fund | Staff Training and Mobility | Career Information | Industrial Visit |
| 1 | 1989 | Bradshaw | / | | | | / | / | |
| 2 | 1991 | Prince | / | / | / | | / | | / |
| 3 | 1995 | Najmabadi and Lall | / | | / | / | | | |
| 4 | 1998 | Hull | / | / | / | / | / | / | / |
| 5 | 2004 | Mohd Zulkifli | / | / | / | / | / | / | / |
| 6 | 2007 | Perkmann and Walsh | | | / | | / | | |
| 7 | 2008 | Syahrul | / | / | / | / | / | / | |
| 8 | 2013 | Mohd Zaidi | / | / | / | / | / | | |
| 9 | 2015 | Mervi and Suvi | | | / | | / | | |
| | Total | | 7/9 | 5/9 | 8/9 | 5/9 | 8/9 | 4/9 | 3/9 |

Table 2 shows the results of the research analysis related to the Educational Institutions and Vocational Technical and Vocational Training Needs undertaken by previous researchers. It is derived from the analysis of literature materials relating to collaboration and collaboration of industry and educational institutions and training from the end of 1980 to the latest.

Table 1 shows a summary of the findings that were conducted with vocational college lecturers in the field of automotive technology. While Table 2 show the Educational Institutions and Vocational Technical and Vocational Training Needs based on documents analysis. The majority of respondents involved in this preliminary study indicated that the vocational colleges require sharing of information and technology. It is well-known that the automotive technology field was changing fast enough, especially in the development of technology. The latest technology is happening in the industry should be in line with the process of teaching and learning to ensure that students produced can meet the needs of the industry and enhance their marketability in the job market. In addition, respondents also noted that, vocational colleges require feedback from the industry, particularly the curriculum being used for learning. One of the respondent said that:

The teaching process is more demanding now, the teacher must update with new technology quickly, again in the field of auto-in, inappropriate technology, each time changing, college facilities is really difficult to get in line with technology service center outside. Vocational College situation is not the same as the real industry

(Vocational College Lecturer)

The curriculum is an important issue to be considered in ensuring that no longer applies mismatch in the supply of skilled labour. The issue has arisen due to a mismatch career and curriculum quality education and training provided by the training provider that does not meet the requirements of industry (PrachiKapil, 2014; Ivascu et al., 2016). Indirectly the issue of skills mismatch among potential new employees related to the issue of parallelism established curriculum.

The speed of technological development has resulted in a curriculum built, training and equipment used for teaching and learning processes which are not in line with current technological developments in the industry (Barry, 2013; PrachiKapil 2014; Dian Hikmah and Mohd Zaidi, 2016). In addition, due to the rapid development of technology has also led to less competent teachers with new technology. This should be resolved by the formation of an effective collaboration to ensure that weaknesses can be addressed. As it is known for sure along with technology in line with the industry, the education and training institutions face challenges such as high investment, especially in the purchase of

equipment and technology training as well as consumables due to lack of financial resources. Therefore through the study states that, advisory services of the industry is also one of the requirements needed by the industry. Advisory services are more focused on the provision of facilities and equipment specifications in Vocational College. This is seen as important because the advice given by the industry to help the vocational college provides the tools that can be used across the board. Indirectly, preventing wastage especially in controlling and managing the allocation given by the government for the purchase of teaching and teaching equipment.

A significant correlation with these findings is sharing element. Sharing technology, sharing of knowledge, expertise and industry partnerships. Elements of this partnership can be seen generally assist the vocational colleges provide skilled manpower required by the industry more effectively, thus realizing highly skilled workforce by year 2020. The main purposes of vocational colleges in providing a skilled workforce that is competent in the automotive market is more a factor of knowledge and technology. A move seen to help in that direction is to develop a curriculum that is in line with current industry requirements to ensure quality education and training in Vocational College. This effort is particularly important in giving confidence to the community outside the system of education provided.

Based on studies that have been conducted s, the researchers have made a comparative analysis between the main areas of collaboration that are discovered through the analysis of documents and interviews. Results of interviews indicated that collaboration through the development of curriculum, industrial training placement, sharing technology, training enhancement programme are in line with reality and the results of research of Bradshaw (1989), Prince (1991), Najmabadi and Lall (1995), Hull (1998), Mohd Zulkifli (2004), Mohd Zaidi (2013).

Conclusion

In conclusion, the needs of the vocational colleges was formed has in common with the previous model and findings. Therefore, given the vocational college is an institution that recently upgraded from vocational school, the need for appropriate collaboration framework views is essential in ensuring that collaboration can achieve the objectives set. Generally, the basic components to the marketability and quality of students affected by the curriculum used in training institutions. Through the curriculum, it will affect the various aspects such as sharing information, sharing of technology and training.

References

- Abdul Wahid Omar (2015). *Universiti-Industri Memperkasa Institusi Pengajian Tinggi*. Kuala Lumpur: Utusan Publication.
- Affero Ismail dan Razali Hassan. (2013) Issue and Challenges of Technical and Vocational Education and Training in Malaysia for Knowledge Worker Driven. *National Conferences on Engineering Technology (NCET)* . 1-2 Julai 2013. Putrajaya, 1-10
- Ankrah S. dan Al Tabbaa O. (2015) University-Industry Collaboration: A Systematic Review. *Journal of Management*. Volume 31. 387-408
- Barry A.M. dan Fenton M (2013). University -Industry Links in R&D and Consultancy in Ireland's Indigenous high-tech sector. *Irish Geography*, 46, 51-77
- Bradshaw L. (1989), *Linking Schools and Industry: Making Links*. England: T.J Press (Padstow) Ltd.
- Buletin Anjakan (2015) Transformasi Pendidikan Vokasional. Bil 8/2015. PADU: Putrajaya
- Christina Chin May May (2011). *Development of A Project Management Methodology For Use in A University-Industry Collaborative Research Environment*. Tesis Doktor Falsafah. University Nottigham
- Ekaterina A, Irin.a F. , James C. (2017). "A Micro Level Study of University Industry Collaborative Lifecycle Key Performance Indicators". *Journal of Technology Transfer*, Springer Verlag Germany
- Gupta S. (2005). *Research Methodology and Statistical Technique*. New Delhi : Deep & Deep Publication PVT. LTD
- Harris T., (2007), *Collaborative, Research and Development Project - A Practical Guide*. Jerman : Springer
- Hull D., Grevelle J.H. (1998). "Tech Prep: The Next Generation". New York, CORD Communication.
- Kauppila O., Mursula A., Harkonen J. and Kujala J.(2015). *Evaluating university–industry collaboration: the European Foundation of Quality Management excellence model-based evaluation of university–industry collaboration*. Industrial Engineering and Management. University of Oulu: Finland
- Perkembangan dan Hala Tuju Pendidikan Tinggi Malaysia. (2006) Shah Alam: Pusat Penerbitan Universiti (UPENA) Universiti Teknologi MARA.
- Laporan Penyiasatan Tenaga Buruh Malaysia Suku Tahunan Pertama 2009, Siri 18 Bil. 2/2009 JUN 2009. Jabatan Perangkaan: Putrajaya, Malaysia.

- Miller R.C, Le Boeuf B.J, (2009), *Developing University-Industry Relations Pathways to Innovation from the West Coast*. United State of America: Jossey- Bass A Wiley Imprint.
- Mohd Jalil Ahmad, Noor Hisham Jalani dan Anas Akhmal Hasmori (2015). “*TVET di Malaysia: Cabaran dan Harapan.*” Seminar Kebangsaan Majlis Dekan-Dekan Pendidikan Awam 2015. 340-346
- Mohd Zaidi Omar dan Mohd Shukor Salleh (2013). *University and Industey Collaboration in Malaysia*. 6th International Forum on Engineering Education, Procedia Social and Behaviour Science 102 (2013) 654-664
- Mohd Zulkifli Mohd Ghazali (2004). *University – Industry Link: Persidangan TNC (A)/ Dekan/ Pengarah Fakulti/ Pusat IPTA Kali Pertama*. Skudai : Universiti Teknologi Malaysia.
- Norsyuhaili binti Haji Shahrudin, Samsol Kamal bin Mohd Saad dan Mohd Salleh bin Mat Yusop (2016). “Memperluas TVET bagi Tenaga Kerja Berpendapatan Tinggi.” Majlis Amanah Rakyat. 1-29
- Pelan Induk Latihan dan Pembangunan Kemahiran Pekerjaan Malaysia 2008-2020 (2008), Kementerian Sumber Manusia, Putrajaya.
- Perkmann, M., Walsh K. (2007). *University-Industry Relationships And Open Innovation: Towards A Research Agenda*. International Journal of Management Review 9 (4): 259-280.
- Prince B. (1991). *School Industry Link: The Consequences of Minding Other People's Business*. Australia: Brown Prior Anderson Pty Ltd.
- Ramli Haji Rashidi (2013). *Evaluation of Collaboration between Public Training Institutions and Private Industries and its Importance in improving the Quality of Training Delivery in TVET in Malaysia*. Sarawak: ADTEC Bintulu.
- Shamsuddin Baharin, Hartini Ahmad, Oon Fok Yew (2015), *University-Industry Partnership: The Strenght of ICoE*. Batu Pahat: Penerbit Universiti Tun Hussein Onn
- Siti Hamisah Tapsir, Nor Aeini Mokhtar, Ahmad Fauzi Ismail, Abdul KARim Mirasa, Suhaila Mohd Sanip, Fazilah Abd .Manan (2010), *University-Industry Partnership Fostering Strategic Linkages at Institution of Higher Learning in Malaysia*. Skudai: Penerbit Universiti Teknologi Malaysia
- Syahrul N.Junaini, Sy F.Seyed Fadzir, Jonathan Sidi, Mohd J. Ahamd Khiri dan Rosita Mohamed Othman (2008). *Harnessing University-Industry Collaboration in Malaysia Through Industrial Training*. Sarawak: Universiti Malaysia Sarawak.
- Widforss G., Rosqvist M., Wallin P. (2017). “A Mutual Collaboration Model For Improved Impact Of Research”. Conference/Workshop Paper, University-Industry Interaction Conference (Malardalen Univesity Sweeden)

KOMPETENSI PENGETAHUAN TEKNIKAL GURU DALAM PENGAJARAN AMALI DI KOLEJ VOKASIONAL

Nur Shafiqah bt Suhaimi, Ahmad Nabil bin Md Nasir

Universiti Teknologi Malaysia

ABSTRAK

Dalam usaha untuk melahirkan pelajar yang berkemahiran tinggi, guru memainkan peranan yang amat penting. Justeru itu, guru seharusnya mempunyai kompetensi yang tinggi semasa mengajar bidang kemahiran teknikal dari aspek pengetahuan, sikap dan kemahiran. Instrumen soal selidik telah digunakan dalam kajian ini dan kaedah kuantitatif telah dipilih. Kajian yang dijalankan adalah untuk mengenal pasti tahap kompetensi pengetahuan teknikal guru dalam pengajaran amali Teknologi Pembinaan di kolej vokasional, di samping melihat perbezaan tahap kompetensi pengetahuan teknikal berdasarkan jantina. Pengkaji membina soal selidik berpandukan Kurikulum Sekolah Kolej Vokasional (KSKV) bagi mengukur tahap kompetensi pengetahuan teknikal guru Teknologi Pembinaan di kolej vokasional negeri Johor. Persampelan secara bertujuan dipilih dalam kajian ini iaitu guru-guru yang mengajar subjek vokasional dalam Program Teknologi Pembinaan dan seramai 44 orang guru telah terlibat. Data yang diperoleh melalui soal selidik dianalisis menggunakan program “Statistical Package For Social Science” (SPSS) versi 20. Hasil kajian mendapati guru lelaki dan guru perempuan mempunyai tahap kompetensi pengetahuan yang mahir dengan nilai min yang tinggi. Ujian Man Whitney U juga dilakukan dan menunjukkan bahawa tidak terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru.

Kata Kunci: *Kompetensi, Pengetahuan Teknikal, Guru, Kolej Vokasional*

Pengenalan

Pada tahun 2011, Kementerian Pendidikan Malaysia (KPM) telah merangka satu Pelan Strategik Transformasi Pendidikan Vokasional yang berperanan dalam menyediakan pekerja yang berkemahiran tinggi dalam aspek teknikal, mampu bersaing, professional, mahir dan layak dalam aspek pekerjaan tertentu serta mampu member sumbangan kepada negara Malaysia sehingga mencapai sebuah negara yang digelar berpendapatan tinggi. Menjelang tahun 2020, matlamat negara adalah untuk menjadikan Malaysia sebagai sebuah negara maju hendaklah direalisasikan dengan melahirkan insan

atau generasi yang berketerampilan, mahir, berkebolehan, inovasi, kreatif, bertanggungjawab serta bermoral tinggi. Mengikut laporan Rancangan Malaysia Kesepuluh (2011-2015), terdapat 20 buah universiti awam, 26 buah universiti swasta, 405 institusi latihan kemahiran awam dan 584 buah institusi latihan kemahiran swasta telah ditubuhkan di negara Malaysia untuk golongan pendidikan menengah dan tertiar.

Sasaran seramai 50 peratus pelajar di peringkat menengah atas akan menceburi dan mengikuti kursus vokasional telah diunjurkan oleh Kementerian Pendidikan Malaysia melalui Bahagian Pendidikan Teknik dan Vokasional (BPTV) (Pelan Pembangunan Pendidikan Malaysia 2013-2025). Sasaran seramai 50 peratus pelajar yang mengikuti kursus teknik dan vokasional memberi impak yang besar terhadap perkembangan dan kemajuan negara dalam menyediakan pekerja mahir. Pembangunan PTV direalisasikan bagi mengatasi masalah pelajar yang tercicir di alam persekolahan seawal usia 15 tahun kerana seramai 250 000 orang pelajar dianggarkan akan mengikuti kursus vokasional pada setiap tahun (Ahmad Tajudin, Pengarah Bahagian Pendidikan Teknik dan Vokasional, 2009). Kurikulum sistem pengajaran dan pembelajaran di kolej vokasional telah di ubahsuai mengikut modul daripada “*National Occupational Skills Standard*” sehingga meliputi 80 peratus berbentuk amali dan 20 peratus berbentuk akademik (Pelan Transformasi Pendidikan Vokasional, 2011).

Latihan berasaskan keterampilan dan pendidikan berasaskan kompetensi telah bermula seawal tahun 1990an di negara luar iaitu USA dan Australia dan telah mendapat ikutan dinegara Malaysia pada tahun 2002 dengan memperkenalkan beberapa matapelajaran aliran vokasional seperti Kemahiran Hidup di peringkat sekolah menengah (Ahmad Tajudin, 2005). Kualiti guru yang mengajar mempengaruhi kemajuan serta kejayaan institusi pendidikan.

Kaedah Kajian

Kajian kuantitatif dipilih dalam kajian ini. Dalam menghasilkan kajian kuantitatif, tinjauan melalui soal selidik dilakukan. Soalan-soalan yang dibina adalah berpandukan Kurikulum Sekolah Kolej Vokasional (KSKV) bagi mengukur tahap kompetensi pengetahuan teknikal guru Teknologi Pembinaan di kolej vokasional negeri Johor. Kandungan soal selidik adalah meliputi aspek demografi responden dan soalan-soalan yang berkaitan dengan kompetensi pengetahuan yang diperlukan oleh guru dalam proses pengajaran dan pembelajaran amali. Di dalam kajian ini, Kolej Vokasional merujuk kepada 5 buah kolej vokasional negeri Johor yang menyediakan kursus teknologi

pembinaan sehingga ke peringkat diploma iaitu Kolej Vokasional Segamat, Kolej Vokasional Kota Tinggi, Kolej Vokasional Muar, Kolej Vokasional Kluang dan Kolej Vokasional Tanjung Puteri

Pengkaji membuat persampelan secara bertujuan bagi mendapatkan data untuk kajian ini. Setelah data kajian diperolehi, data dianalisis secara statistik deskriptif untuk melihat tahap kompetensi pengetahuan teknikal guru teknologi pembinaan dalam pengajaran amali manakala ujian *Man Whitney U* dilakukan bagi melihat adakah terdapat perbezaan dari segi tahap kompetensi pengetahuan teknikal guru berdasarkan jantina guru dalam pengajaran amali Teknologi Pembinaan di kolej vokasional. Program “*Statistical Package for Social Science*” (SPSS) versi 20 digunakan oleh pengkaji untuk menganalisis data yang diperolehi.

Hasil Kajian

Jadual 1 menunjukkan analisis keseluruhan kompetensi pengetahuan teknikal guru di Kolej Vokasional mengikut fasa. Nilai min bagi fasa sebelum aktiviti konkrit dijalankan adalah 5.33 dengan sisihan piawai 0.584. Diikuti pula dengan fasa semasa aktiviti konkrit dijalankan dengan nilai min 5.36 dan sisihan piawai 0.705. Pada fasa terakhir, hasil analisis menunjukkan nilai min 5.07 dengan sisihan piawai 0.925. Kesemua nilai min yang diperolehi menunjukkan guru berada di tahap mahir dalam mengendalikan pengajaran dan pembelajaran amali konkrit.

Jadual 1: Analisis keseluruhan kompetensi pengetahuan teknikal guru di kolej vokasional.

| No | Item | Fasa Aktiviti (Amali Konkrit) | Min | Sisihan Piawai | Penggunaan (Tahap Kompetensi) |
|----|-------|-------------------------------|------|----------------|-------------------------------|
| 1 | 1-5 | Sebelum | 5.33 | 0.584 | Mahir |
| 2 | 6-16 | Semasa | 5.36 | 0.705 | Mahir |
| 3 | 17-22 | Selepas | 5.07 | 0.925 | Mahir |

Berdasarkan hasil kajian nilai kompetensi guru lelaki adalah lebih tinggi daripada guru perempuan (Jadual 2). Kompetensi ini diukur berdasarkan soal selidik yang

dijalankan berpandukan silibus Kurikulum Standard Kolej Vokasional (KSKV). Nilai min antara jantina menunjukkan perbezaan yang kecil iaitu 0.25.

Jadual 2: Min Kompetensi Pengetahuan Teknikal Guru

| Kompetensi Pengetahuan Teknikal Guru | Min |
|--------------------------------------|------|
| Lelaki | 5.36 |
| Perempuan | 5.11 |

Manakala ujian *Man Whitney U* telah dilakukan bagi melihat perbezaan antara jantina tahap kompetensi pengetahuan teknikal guru. Dua hipotesis telah dibina iaitu:

H_{01} : Tidak terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru dalam proses pengajaran amali Teknologi Pembinaan di Kolej Vokasional

H_A : Terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru dalam proses pengajaran amali Teknologi Pembinaan di Kolej Vokasional

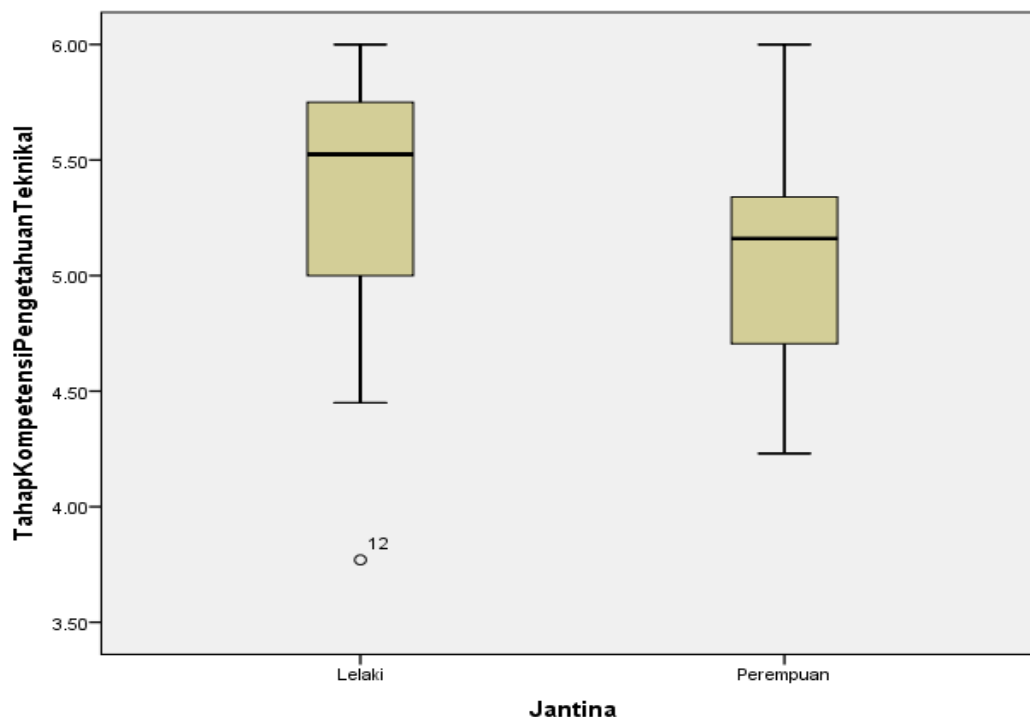
Jadual 3: Analisis *Man Whitney U* perbandingan tahap kompetensi pengetahuan teknikal antara jantina

| Jantina(n=44) | Min Pangkatan | Nilai signifikan(2-tailed) | z |
|-----------------|---------------|----------------------------|-------|
| Lelaki(n=28) | 24.86 | 0.106 | - |
| Perempuan(n=16) | 18.38 | | 1.615 |

Keputusan ujian *Man Whitney U* menunjukkan bahawa guru lelaki mempunyai kompetensi pengetahuan teknikal yang lebih tinggi berbanding guru perempuan. Nilai min pangkatan guru lelaki adalah 24.86 mengatasi guru perempuan iaitu 18.38. Namun perbezaan ini hanya disebabkan oleh ralat piawai min yang besar yang wujud dalam data kajian.

Perbezaan yang kecil pada nilai z iaitu -1.615 dengan perbezaan tidak signifikan $0.106 > 0.05$ menunjukkan bahawa pengkaji gagal menolak hipotesis null. Oleh itu, dapat disimpulkan bahawa tidak terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru dalam proses pengajaran amali Teknologi Pembinaan di Kolej Vokasional. Hipotesis nul diterima.

Graf Boxplot seperti dalam Rajah 1 jelas menunjukkan bahawa nilai min kompetensi pengetahuan guru lelaki dan guru perempuan tidak menunjukkan perbezaan yang ketara. Hal ini menyokong Ujian Man Whitney U bahawa tidak terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru dalam proses pengajaran amali Teknologi Pembinaan di Kolej Vokasional.



Rajah 4.1 Graf boxplot jantina guru

Perbincangan

Kemahiran mengendalikan amali konkrit bagi kursus Teknologi Pembinaan merupakan perkara asas bagi seorang guru untuk memastikan penyampaian mereka ketika sesi pengajaran dan pembelajaran berjalan dengan sempurna. Dengan itu, amat penting bagi seorang guru untuk meningkatkan kompetensinya agar tugas yang dilaksanakan lebih efisien dan sempurna. Ke kerapannya melakukan rutin yang sama pada setiap semesta akan menambahkan kecekapan dalam pengajaran mereka. Secara tidak langsung juga, piawaian yang ditetapkan oleh Bahagian Pendidikan Teknik dan Vokasional (BPTV) dapat dicapai kerana kualiti kerja semakin meningkat. Ini selaras dengan kenyataan Zainudin dan Huszaifah (2009) bahawa setiap guru yang mengajar amali perlu mahir dalam pengurusan bengkel kerana ianya akan memberi kesan terhadap aktiviti amali yang dijalankan olehnya. Penguasaan pengetahuan guru dalam sesi pengajaran dan pembelajaran adalah penting untuk menarik minat pelajar dan memahami

sesuatu topik dengan lebih jelas. Pengetahuan dan kepintaran guru adalah berkadar langsung iaitu semakin tinggi ilmu pengetahuan yang dikuasai, maka semakin pintar seseorang guru (Mohd Said & Yunus, 2006). Zaiha Nabila (2014) juga berpendapat bahawa semakin tinggi nilai kompetensi, semakin tinggi prestasi kerja seseorang

Dalam kajian ini, secara keseluruhannya tahap kompetensi pengetahuan teknikal guru Teknologi Pembinaan di negeri Johor berada pada tahap yang tinggi dan dikategorikan sebagai mahir. Ianya didapati seiring dengan Model Kompetensi Iceberg Spencer & Spencer (1993), yang mendapati kompetensi terbahagi kepada dua bahagian sama ada boleh diukur atau tidak boleh diukur. Menurut teori ini, pengetahuan tergolong kepada kompetensi yang boleh diukur. Maka nilai min yang diperolehi adalah tinggi dan dapat disimpulkan bahawa kompetensi pengetahuan teknikal guru berada pada tahap yang mahir. Penguasaan pengetahuan merupakan asas kepada profesionalisma sebagai seorang guru. Bagi seorang guru, penguasaan terhadap pengetahuan teknikal secara menyeluruh amat penting kerana sikap guru yang kurang menguasai pengetahuan teknikal boleh menjejaskan tumpuan dan pencapaian pelajar serta boleh mengakibatkan kesukaran untuk mencapai objektif dalam pengajaran dan pembelajaran (Abu Hasan dan Roslan, 2014). Selari juga dengan kajian Ariffin (2010), yang melihat kompetensi sebagai nilai tambah kepada seseorang dalam menyempurnakan tugas dalam sesuatu pekerjaan.

Antara aktiviti yang melibatkan kompetensi pengetahuan guru adalah melibatkan kesesuaian jenis pasir, jenis air, pemilihan batu baur halus, batu baur kasar dan jenis simen yang digunakan untuk membuat bancuhan konkrit, membuat campuran mengikut nisbah simen, batu, dan pasir yang sesuai, membuat ujian penurunan konkrit, mengukur 'slump' konkrit, menggunakan peralatan ujian penurunan konkrit, menggaul konkrit dengan menggunakan penyodok, membancuh konkrit menggunakan mesin penggaul konkrit, mengira nisbah air yang boleh ditambah jika konkrit terlalu keras, mencampur kuantiti pasir yang diperlukan untuk membancuh konkrit, menggunakan mesin penggetar untuk memadatkan konkrit, memilih bahan tambah pencepat untuk mempercepatkan proses pengerasan konkrit dan akhir sekali adalah memilih bahan tambah pelambat untuk melambatkan proses pengerasan konkrit. Semua aktiviti di atas terlibat dalam penghasilan konkrit. Konkrit merupakan bahan utama dalam industri pembinaan. Ianya seiring dengan kenyataan P.Kumar Mehta (2006) dan M.Vamshykrishna (2015) yang turut menyatakan penggunaan konkrit yang kian meluas dalam industri pembinaan

sehingga kini. Penerapan dan penekanan awal tentang konkrit kepada pelajar amat penting supaya mereka dapat memahami pengetahuan asas dalam industri pembinaan.

Kompetensi pengetahuan guru adalah berbeza tahap penguasaannya dari segi jantina. Secara umumnya kompetensi guru lelaki adalah lebih mahir kerana ianya melibatkan aktiviti berasaskan amali dan teknikal. Analisis kajian yang dibuat oleh Syed Jaafar (2014) mendapati guru lelaki lebih mahir berbanding guru perempuan kerana sifat semulajadi jantina lelaki yang menyukai sesuatu yang mencabar. Namun setelah kajian dijalankan, hasil kajian menunjukkan pengetahuan teknikal guru dalam proses pengajaran amali Teknologi Pembinaan di kolej vokasional negeri Johor berdasarkan jantina tidak menunjukkan perbezaan. Hal ini selari dengan hasil kajian Zaiha Nabila dan Jamaliah (2014) yang mendapati kompetensi pengetahuan teknikal berdasarkan jantina tidak menunjukkan perbezaan yang signifikan.

Kesimpulan

Hasil dapatan kajian menunjukkan bahawa guru lelaki dan guru perempuan mempunyai tahap kompetensi pengetahuan yang mahir dengan nilai min yang tinggi. *Ujian Man Whitney U* juga dilakukan dan menunjukkan bahawa tidak terdapat perbezaan dari segi pengetahuan berdasarkan jantina guru dalam proses pengajaran amali Teknologi Pembinaan di kolej vokasional. Sebagai kata penutup, kajian ini merupakan kajian awal tentang kompetensi pengetahuan teknikal guru Teknologi Pembinaan di kolej vokasional. Oleh itu, analisis yang lebih terperinci boleh dilakukan seperti untuk memperkukuhkan dapatan kajian di seluruh Malaysia.

Rujukan

- Abu Bakar, N. H. (2009). Cabaran-Cabaran Dalam Pendidikan Teknik Dan Vokasional Dalam Membangunkan Sumber Manusia. *Journal of Edupress*, Volume 1, 159-164.
- Ali, S., & Jaafar, S. (2014). Kompetensi Guru Dalam Pengajaran Amali Teknologi Pembinaan di Kolej Vokasional. Universiti Tun Hussein Onn Malaysia: Tesis Doktor Falsafah.
- Azhar Harun & Nawi Abdullah (2004). *Metodologi Penyelidikan Ekonomi Dan Sains Sosial*. Singapore. Thomson.
- Bhavani Sridharan & Kinshuk. (2003). Reusable Active Learning System For Improving the Knowledge Retention and Better Knowledge Management, Third IEE International Conference On Advanced Learning Technologies (ICALT'03), icalt, pp.72.

- Chua Yan Piaw (2006). *Kaedah Penyelidik*. Malaysia: McGraw Hill.
- Fachrah, L., Hasbullah, N. A., & Ab Rahman, A. (2017). Faktor-Faktor Yang Mempengaruhi Keberkesanan Amali Kerja Kayu dari Perspektif Pelajar Sekolah Menengah Vokasional di Provinsi Aceh. *Sains Humanika*, 9(1-5).
- Hafiz Muhammad Ali dan Zawiyah Mohammad Yusof (2002). Penilaian Teknologi Pengurusan Pengetahuan: Teknik Amalan Di Kalangan Sektor Perbankan Malaysia. *Jurnal of Knowledge Management (ICKM)*.1-7.
- Harun, M., & Nabila, Z. (2014). *Kompetensi Guru Dalam Pengajaran Amali Reka Bentuk Dan Teknologi Di Sekolah Rendah Daerah Batu Pahat*. Universiti Tun Hussein Onn Malaysia: Tesis Doktor Falsafah.
- Ibrahim, S. S., & Sani, M. (2012). *Standard kompetensi guru Malaysia*.
- Idris, N. (2010). *Penyelidikan Dalam Pendidikan*. Malaysia: Mcgrawhill Sdn. Bhd.
- Kamarudin, N. (2007). *Kesediaan Pensyarah Dari Segi Sikap, Kemahiran Dan Pengetahuan Terhadap Perlaksanaan Penerapan Kemahiran Insaniah Di Universiti Tun Hussien Onn Malaysia*. Universiti Tun Hussien Malaysia: Projek Sarjana.
- Kementerian Pendidikan Malaysia (2016). *Kurikulum Standard Kolej Vokasional*.
- Kementerian Pelajaran Malaysia (2012). *Pelan Pembangunan Pendidikan 2013-2025. Edisi Pelancaran Kuala Lumpur*.
- Krejcie, R.V. dan Morgan D.W. (1970). Determining Sample Size for Research Activities. *Educationl and Psychological Measurement*.30:607-610.
- Maizam Alias, W. A. (2012). *Statistic In Research MBE10204*. Terbitan UTHM Johor.
- Shafiee, A. (2003). *Kompetensi Pensyarah Dalam Pengajaran Mata Pelajaran Kejuruteraan Di Politeknik*.
- Siraj, S. (2012). *Standard Kompetensi Guru Malaysia. Pelan Pembangunan Pendidikan Kebangsaan*.
- Thai-Ngam, V. &. (2007). *The Competency Standard Project. The National Center For Higher Education Management Systems CHEA*.
- Tan, B.T. (2002). *Teknologi Binaan Bangunan*. Dewan Bahasa dan Pustaka, Kuala Lumpur..
- Zawawi, A., & Syahirah, S. (2011). *Transformasi PTV: Kesediaan Guru-guru Vokasional Terhadap Pelaksanaan Kolej Vokasional KPM dari Aspek Tahap kemahiran*.