

LAPORAN EKSEKUTIF

BEST PRACTICES IN GENERAL STUDIES AND STEM

BIGS 2021



BAHAGIAN KURIKULUM

JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

LAPORAN EKSEKUTIF

BEST PRACTICES IN GENERAL STUDIES AND STEM

BIGS 2021

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BAHAGIAN KURIKULUM

JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI



KANDUNGAN

Kata Aluan

- Ketua Pengarah JPPKK
- Pengarah Bahagian Kurikulum JPPKK
- Pengenalan BiGS

Impak Bimbingan R.E.A.L Melalui Program Perkongsian Pintar (From Ex- Student To Junior)

Eco-Friendly Innovation Project Based Assessment To Develop The 4 C's Of 21st Century Skills In Communicative English Classrooms

Model Cdio Integrated Curriculum Untuk Program Pengajian Di Politeknik

Pembangunan Produk Popcorn Polimetro

Mengoptimum Penggunaan Cidos Sebagai Platform Utama Pdptd Bagi Subjek Thermofluids

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Kata Alu-Aluan

Assalamualaikum Warahmatullahi Wabarakatuh
dan Salam Sejahtera.



Terlebih dahulu saya merakamkan setinggi-tinggi kesyukuran ke hadrat Allah SWT di atas kesempatan yang diberikan kepada saya untuk memberikan kata-kata aluan di dalam Buku Laporan Eksekutif Best Practices In General Studies & STEM (BiGS 2021) ini. Saya mengucapkan tahniah dan syabas di atas kejayaan menganjurkan BiGS 2021 kerana ia mampu memberi impak yang sangat besar dan signifikan kepada warga politeknik dan kolej komuniti. Sehubungan dengan itu program ini berupaya meningkatkan amalan terbaik dalam pengajaran dan pembelajaran selari dengan visi politeknik dan kolej komuniti sebagai penyedia TVET unggul.

Perkongsian ilmu ini bertepatan dengan galakan dan seruan Firman Allah SWT datam surah al-Maidah ayat 2 yang bermaksud: "Dan hendaklah kamu bertolong-tolongan untuk membuat kebajikan dan bertaqwa, dan janganlah kamu bertolong-tolongan pada melakukan dosa (maksiat) dan pencerobohan. Dan bertaqwalah kepada Allah, kerana sesungguhnya Allah Maha Berat azab seksaNya (bagi sesiapa yang melanggar perintahNya)".,

Justeru itu, saya yakin dan percaya penganjuran BiGS 2021 ini akan menyerlahkan lagi bakat kreativiti para pensyarah dalam memudahkan dan melancarkan lagi proses pengajaran dan pembelajaran di institusi,

Akhir kata, besar harapan saya agar program ini dapat dijalankan secara berterusan untuk tahun-tahun yang mendatang seterusnya memberi impak yang lebih holistik khususnya dalam bidang pengajaran dan pembelajaran, terima kasih.

Sekian dan Wassalam,

TS ZAINAB BINTI AHMAD

KETUA PENGARAH
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ
KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI

Kata Alu-Aluan

Assalamualaikum Warahmatullahi Wabarakatuh
dan Salam Sejahtera.

Best Practices in General Studies & STEM (BiGS 2021) merupakan satu inisiatif Bahagian Kurikulum, JPPKK untuk mewujudkan satu budaya berkongsian amalan baik yang dilaksanakan di peringkat jabatan dan institusi. BiGS memberi pengiktirafan kecemerlangan kepada warga politeknik dan kolej komuniti untuk berkongsi pelaksanaan dalam pengajaran dan pembelajaran serta pengurusan sumber yang berimpak tinggi dan layak dijadikan model untuk warga pendidik dalam memantapkan peranan mereka di arena pendidikan.

BiGS memberi kelainan di mana amalan baik yang terpilih dan dibentangkan akan disiarkan secara langsung melalui portal rasmi serta rakamannya akan dikongsi supaya ilmu yang bermanfaat ini dapat disebar luas kepada komuniti pendidik di dalam dan luar Malaysia. Ini selari dengan peranan politeknik dan kolej komuniti sebagai institusi TVET yang disegani dan sentiasa responsif dengan aliran pendidikan masa kini. Kelestarian perkembangan ilmu merupakan salah satu agenda JPPKK sebagai institusi pendidikan dan BiGS adalah antara usaha dalam mendepani agenda ini.

Akhir kata, saya ingin merakamkan setinggi-tinggi tahniah kepada sidang editor yang bertungkus lumus menyiapkan Laporan Eksekutif BiGS ini. Saya berharap agar program ini akan diteruskan pada masa akan datang dan menjadi acara tahunan Bahagian Kurikulum JPPKK, terima kasih.

Sekian dan Waṣsalam,



DR. NORHAYATI BINTI ZAKARIA

PENGARAH
BAHAGIAN KURIKULUM
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ
KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI

PENGENALAN BiGS

DALAM TALIAN BiGS 2021

BEST PRACTICES IN GENERAL STUDIES & STEM

**11 NOV
2021**

Penghantaran Ringkasan
Eksekutif

**8-22 OKT
2021**

**5 NOV
2021**

Makluman Penyertaan
Terbaik

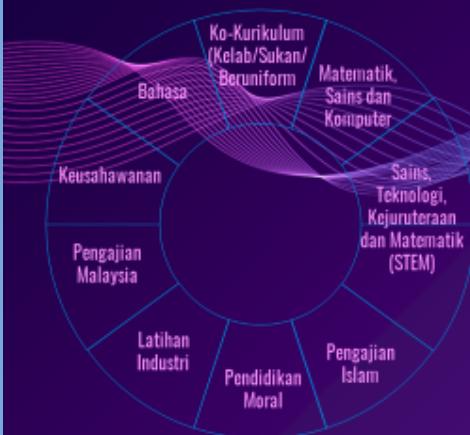
RASIONAL PENGANJURAN

Memberi peluang kepada para pensyarah di politeknik dan kolej komuniti untuk menyerlahkan kreativiti mereka dalam penyampaian kurikulum melalui amalan baik.

Pengamal TVET termasuk pensyarah, anggota pengurusan atau sesiapa sahaja yang terlibat dengan aktiviti akademik di politeknik dan kolej komuniti. Aktiviti tersebut termasuk pengajaran dan pembelajaran, perancangan program atau pengurusan projek.



BIDANG BERKAITAN



KENAPA PENGAJIAN AM & STEM ?

PENGAJIAN AM

- Kursus berstatus wajib untuk semua pelajar dan dirancang dengan hasil pembelajaran yang umum.
- Pembinaan modal insan secara holistik, patriotik dan mempunyai identiti Malaysia yang unggul.
- Mendasar dalam semua program TVET sebagai kursus yang melengkapkan disiplin teras.

STEM

- Asas program kejuruteraan dan teknologi yang memberi pengetahuan kepada pelajar tentang Sains, Teknologi, Kejuruteraan dan Matematik

ECO-FRIENDLY INNOVATION PROJECT BASED ASSESSMENT TO DEVELOP THE 4 C'S OF 21ST CENTURY SKILLS IN COMMUNICATIVE ENGLISH CLASSROOMS

S. THIVVIYAH SANMUGAM
POLITEKNIK BANTING SELANGOR
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1.0 LATAR BELAKANG / TUJUAN AMALAN BAIK

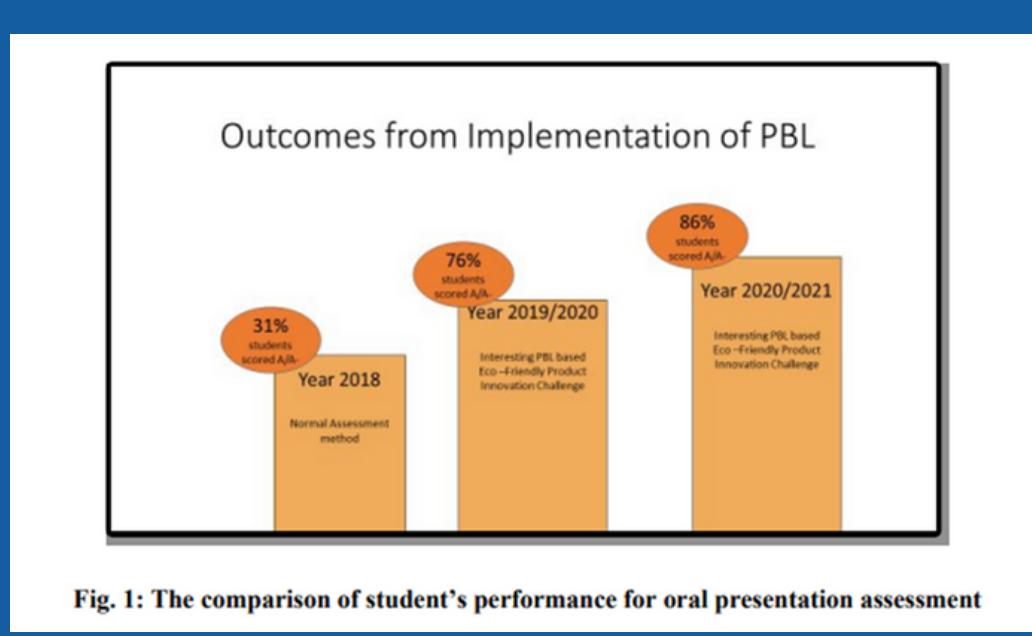
The growing importance placed on excellent 21st century skills by employers has been echoed internationally. Although knowledge and technical know-how are clearly important, but these requires to be presented with excellence. Professional 21st century skills reflect positive impression of the engineer. However, the lack of these crucial skills among engineering graduates has been widely reported in the literature. According to Wallwork (2015), among the wide range of 21st century skills, the 4Cs skills namely collaboration, creativity, critical thinking and communication skills are the most touted soft skills required of fresh graduates to be competitive and competent in securing and sustaining a job. However, the lack of these crucial skills among engineering graduates has been widely reported in the literature. Low proficiency in the English language and lack of soft skills including creativity, communication and critical thinking are among the reasons fresh graduates are not ready to enter the workforce (NST Education, June 19, 2019). Specifically, in the Malaysian polytechnic context, a plethora of studies had highlighted many debates evolved on poor soft skills namely; communication and English language proficiency level of the polytechnic students (Suhaili & Mohama, 2021; Isnin et. al, 2019; Ismail, Ahmad & Awang, 2017; Sanmugam, Shamsuddin & Gunadevi 2017).

The role of generating proficient graduates is unspokenly shouldered by the English lecturers (Abdullah & Majid, 2013). Therefore, English language educators need to take proactive measures to curb the issue. However, previous studies conducted in the polytechnic context found that traditional teaching methods are still prevalent in Malaysian polytechnics (Sanmugam, Shamsuddin & Gunadevi 2017; Puteh-Behak et.al, 2017)

In addition, the assessments for Communicative English modules which consists of test, written assignments and presentations are considered conventional. According to Siti Norida Wahab, Salini Devi & Yeap Swee Pin (2020) conventional assessments can be boring, unattractive to Generation Z and are unable to cultivate the practical and life-long learning skills. Similar issues were rampant when it comes to carrying out oral presentation assessments in Communicative English classroom. Students would usually resort to copy and paste culture and lacked the creativity when preparing for their presentation and usually would end up giving a poor and boring presentation. As a result, they would score very poorly for their oral presentation assessment.

Thus, in order to address the issues related to students' lack of vital soft skills for future workplace and issues related to conventional teaching methods and assessments, an interesting project-based learning assessment learning in the form of an eco-friendly innovation challenge project was carried out to replace the conventional oral presentation assessment. The new assessment was devised based on the Project based learning (PBL) approach. PBL seems to match the needs and expectations of the future workplace as it is different from traditional instruction because it emphasizes learning through student-centered, interdisciplinary, and integrated activities in real world situations. Bell (2010, p. 39) argues project based learning is a teaching and learning approach that gives important strategies for students to success in the 21st century while Sumarni (2015, p. 480) states that PBL can improve students' collaboration, communication, creativity, and problem solving skills. Thus, the aim of the current study is to investigate engineering students' performance and opinions upon the implementation of the new interesting project-based learning in the form of an eco-friendly innovation project presentation.

In order to motivate and challenge her students, the English language lecturer incorporated the eco-friendly product innovation challenge as one of the competitions compulsory for all semester 3 students to participate during the English Carnival programme. The English language lecturer further invited lecturers from the engineering department to co-assess and provide feedback in terms of the technical aspects of the product students presented. Thus, while the students took part in exhibiting and presenting their innovative product during the English Carnival programme, they were also assessed concurrently by both their English language lecturer and main department engineering lecturer. In this way, they would be able to obtain conclusive feedback pertaining to both the language/communicative and the technical aspects of the product. However, due to COVID-19, online teaching and learning session was carried out beginning December 2020 session. A slight modification had been done whereby students are required to submit a pitching video of their eco-friendly innovation product for their oral presentation assessment. Submission of Digital poster for their assignment continued. Teams submitting excellent eco-friendly innovation project videos are then selected and trained further for national and international innovation competitions.



3.0 METODOLOGI/ KAEDEH PELAKSANAAN

The students involved in this study were third semester mechanical and aircraft engineering students enrolled in Communicative English course at a Malaysian polytechnic beginning from December 2019 session. They were young adults with an average age of 19. The course Communicative English 2 is a 45-hour English course designed for semester 3 Malaysian polytechnic students. The main objective of the course is to have students practice skills needed to describe products and services as well as processes and procedures. Students are required to complete 4 continuous-assessments for the paper throughout the semester in forms of test, assignment, and presentations. As a requirement of the course, students had to fulfil the oral presentation assessment for the topic of product and services and submit an assignment for the topic of processes and procedures.

The author who is also the English language lecturer implemented a new project based assessment in the form of an eco-friendly innovation challenge to replace the common oral presentation assessment in which students would usually end up searching and presenting about existing products taken from the internet. Students would be presenting information that are copied and pasted into their slides and it lacked creativity. In the new eco friendly innovation project challenge, students are required to work collaboratively to come up with an innovative product/project using recycled materials. They were given themes related to Sustainable Development Goals (SDG's) such as environmental sustainability, renewable energy and green technology. Besides that, students were asked to come up with attractive digital poster for their assignment. The digital poster replaced the conventional assignment students need to submit for the topic of processes and procedures. In this digital poster student would outline the process and procedures in developing the eco-friendly innovation product that was carried out for their oral presentation. Therefore, this eco-friendly innovation project is able to cover two different assessments students need to fulfil for the Communicative English 2 course.

5.0 IMPAK / KEBERKESANAN AMALAN BAIK KEPADA PELAJAR DAN INSTITUSI

Students Feedback

At the end of the eco-friendly innovation project assessment, students are required to write their reflection pertaining to their experiences. The following some of the feedbacks given by the students;

“This challenge developed our creativity, communication skills and team work to win the challenge.”

“The project has challenged and made us think out of the box and enhanced our creativity and interests in innovation challenges!”

“The innovation challenge has enhanced our oral presentation skills, team work, innovative and creativity skills in terms of product development. We managed to come up with our own product!”

“The eco-friendly product challenge was different, interesting and a fun assessment. We learned and enjoyed at the same time.”

“We enjoyed participating in the challenge and would want this kind of interesting assessment to be continued”.

Improved Results in Communicative English 2 paper

A comparison of student's Communicative English 2 paper results was carried out. Figure 1 presents the bar graph depicting the comparison.

Catatan RAPPOREUR

Nama Pembentang : Puan Thivviyah Sanmugam

**Tajuk Pembentangan : Eco-Friendly Innovation Project Based Assessment
to Develop the 4C's of 21st Century Skills
in Communicative English Classrooms.**

Masa Mula : 10.52

Masa Tamat : 11.02

Nama Pencatat : Thilagavathi a/p Malayandy

Ringkasan pembentangan:

1. Latar Belakang

- i. Eco-Friendly Innovation Project Based Assessment merupakan satu penilaian alternatif yang dijalankan bagi menggantikan pembentangan secara lisan bagi kursus Communicative English 2.
- ii. Projek ini memerlukan pelajar bekerja dalam kumpulan bagi menghasilkan satu produk atau projek yang inovatif dengan menggunakan bahan kitar semula.
- iii. Pelajar kemudianya akan membuat satu pembentangan bagi menerangkan produk tersebut serta membuat satu poster digital bagi menerangkan proses penghasilan produk tersebut. Pembentangan dan poster digital ini diambilkira sebagai kerja kursus bagi subjek Communicative English 2.

2. Objektif

- i. Inovasi ini dibangunkan bagi menerapkan kemahiran 4C, iaitu collaboration, creativity, critical thinking, dan communication skills di kalangan pelajar.
- ii. Inovasi ini juga bertujuan untuk mengelakkan pelajar daripada membentangkan maklumat yang ditiru dari internet semata-mata sewaktu pembentangan.

3. Impak

- i. Keputusan penilaian bagi kursus Communicative English 2 menunjukkan peningkatan yang memberangsangkan berbanding semester terdahulu di mana peratus pelajar yang memperoleh A atau A- meningkat hingga 86%.
- ii. Projek ini juga dapat meningkatkan kemahiran 4C dan kemahiran insaniah lain seperti kemahiran kepimpinan, semangat kerja berpasukan dan juga kemahiran teknologi digital.
- iii. Projek ini juga memupuk kaedah pembelajaran berpusatkan pelajar dan pembelajaran autonomi.
- iv. Selain itu, pengalaman yang diperoleh sewaktu menyelesaikan projek ini membantu pelajar untuk menyertai pelbagai pertandingan inovasi di peringkat kebangsaan dan antarabangsa.

4. Pembuktian

- i. Pembentang telah menunjukkan tangkapan skrin yang menunjukkan maklumbalas positif daripada pelajar yang menyertai projek ini.
- ii. Salah satu pasukan pelajar ini juga telah memenangi tempat ketiga dalam pertandingan Virtual Camp 2021: Design Thinking yang dianjurkan oleh Politeknik Ibrahim Sultan dengan inovasi yang dinamakan Smart Solar Faceshield.

5. Soalan daripada hadirin

Tiada

SINOPSIS

Laporan Eksekutif Best Practices In General Studies & STEM (BiGS) diterbitkan sebagai kesinambungan kepada penganjuran program BiGS 2021 pada 11 November 2021 secara dalam talian. Buku ini memaparkan ringkasan eksekutif 15 amalan terbaik yang dipilih daripada 52 penyertaan pensyarah politeknik dan kolej komuniti seluruh Malaysia.

Amalan Terbaik merujuk kepada pelbagai aktiviti, dasar, dan pendekatan pragmatik yang dijalankan oleh pendidik atau pensyarah untuk mencapai perubahan positif dalam sikap pelajar atau tingkah laku akademik. Perubahan positif yang dicapai melalui bukti dan eviden daripada pelajar dan institusi wajar dan patut disebarluas, dikongsi dan dicontohi oleh warga pendidik yang lain.

Ringkasan eksekutif yang dipaparkan meliputi latar belakang amalan terbaik, rasional, metodologi pelaksanaan serta impaknya terhadap pelajar dan institusi. Selain itu, laporan eksekutif ini juga disertakan dengan "Catatan Rapporteur" yang memaparkan coretan yang dicatatkan sepanjang pembentangan serta sesi soal jawab yang dijalankan. Laporan soal selidik peserta juga diterbitkan agar menjadi input kepada penambahbaikan penganjuran program ini pada masa hadapan.

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