

Supporting Partner:



PART I: Details of Your School

1. Name of your school: SEKOLAH BERASRAMA PENUH INTEGRASI RAWANG
(Rawang Integrated Fully Residential School)
2. Full address: BANDAR TASIK PUTERI, RAWANG, SELANGOR
3. Postcode: 48020
4. Country: MALAYSIA
5. School's telephone number (country code+city code+telephone number): +60360928192
6. School's fax number (country code+city code+fax number): +60360917309
7. School's email Address: bra7001@btpn.sel.edu.my
8. Name of the Head Master/ Principal/ School Director: Addenan bin Osman
9. Name of Teacher Coordinator: Shajaratudduur binti Hussin
10. Email address of the Coordinator: shaja@sbpirawang.com
11. School website (if available): www.sbpirawang.com
12. Educational level (Such as Kindergarten 1 to Grade/Year 9): Secondary level
13. Number of teachers in your school: 59 teachers
14. Number of teachers participated in this programme: 4 teachers
15. Number of students in your school: 640 students

PART II: Information about the School's Programme

The information of part II from no.1 to 13 should be no longer than nine (9) pages long of A4 in total. The information should be written in Times New Roman font, 11-12 point size.

1. Title of the school's programme

RESEARCH IN EDUCATION (RiE) – Research & Development (R&D) Chapter
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2. Summary of the programme (a half to one page A4)

Research in Education (RiE) is a programme aiming at increasing the higher order thinking skills of Rawang Fully Residential School students. RiE is in accordance with the Malaysia Education Development Plan 2013-2025 which outlines six characteristics for each student to compete at international level and be a global community. In relation to the plan, the school management developed a pilot RiE programme with the intention towards achieving and producing students with global features through the involvement of students in scientific studies to support teaching and learning in the classroom,

Consensus seminar between Ministry of Higher Education and the Ministry of Education on 28-29 July 2008 at the Universiti Putra Malaysia has established linkages for cluster of excellence schools with university institutes to boost the quality of education at school level. University Putra Malaysia is to act as mentor to the Rawang Integrated Residential School in assisting the school in terms of expertise and facilities and also in helping to develop and improve thinking skills among students, especially in terms of creativity and innovation of students through high levels science activities through the help and expertise of lecturers and facilities at the faculty of Chemical Engineering and Science faculty, University Putra Malaysia (UPM).

In RiE, proposal research preparation, the implementation of the study process, the evaluation of data research, writing and presentation of research findings enable students to take part in a variety of activities that enhance higher-order thinking skills. Assistance and interaction with lecturers from the University Putra Malaysia and the teachers of Rawang Integrated Residential School during the research activity is the process of enhancing students' creativity and innovation to produce quality research. The students research products were presented by the students involved, in exhibitions and competitions both nationally and internationally as the country education's showcase. As a high performance school, Rawang Integrated Residential School has showcase the success of education in several international exhibitions and competitions like Malaysia Young Inventors International Olympiad (MYIO), International Engineering Invention and Innovation Exhibition (I-ENVEX), European Exhibition of Creativity and Innovation (EUROINVENT), 2nd ASEAN+3 Junior Science Odyssey, Macau Communic & International Innovation & Invention Expo 2013 and the International Exhibition for Young Inventors (IEYI).

3. Background information or reasons why the school created this programme

Malaysia Education Development Plan 2013-2025 outlines six characteristics for each student to compete globally. The plan outlined six aspects for students to compete at international level. They are, aspects of knowledge, thinking skills, leadership skills, bilingual skills, ethics and spirituality, as well as national identity. Accordingly, Rawang Integrated Fully Residential School began a pilot Research in Education (RiE) programme to support teaching and learning in classroom. This programme aim to develop and enhance Higher Order Thinking Skills (HOTs) among students by exposing them to a wide range of experience and skills that are not in the daily lesson through three categories, i.e descriptive, humanity, and science innovation & technology. It also develop, especially in terms of creativity and innovation through high level science activities and through networking with other schools and linkages with higher institute of learning and government research bodies.

4. Objectives/goals of the programme

- To prepare and provide opportunity, services , different curriculum approach and resources also incentives for students to realize their potential to the maximum level.
- Applying thinking and analysing skills in a scientific and systematic method.
- To train analyzing skill of data researched and inventing an original and quality product that is beneficial to the public.
- Fostering the spirit of cooperation in team working, tolerant, respect others opinion and instill deeper self-discipline.
- Creating proactive, independent students with high level motivation and higher level thinking skills.

5. Core competencies of students (e.g. knowledge and understanding, cognitive skills, non-cognitive skills and behavioural capacities) that the school aims for within the programme.

- Enhance Cognitive Skills among students to increase their ability in analysing data, synthesising ideas and methods and to prepare themselves for Research And Development (R&D) competition and to help them in their public and international examination
- Increasing their Non-cognitive skills such as interpersonal skills, persistence, communication skills and social skills
- Develop 'soft skills' that will be learned as the students go through the programme

6. Period of the time when the programme was or has been implemented

Research in Education (RiE) started since October 2013 involving all students from secondary one (form 1) to secondary 5 (form 5).

7. Activities (Actions and strategies of implementation)

Form	Activities
Form 1 & form 2	<ul style="list-style-type: none"> • Exploring activities include talk, demonstration, forum, debate, scientific excursion, scientific show and exhibition • Students form a group consist of 3 or 4 students • Brainstorming session to select a topic for mini Research & Development project and Innovation (advisable to select a topic related in achieving Band 6 in Science subject) • Group presentation or exhibition on chosen activities at the end of school year
Form 3 & form 4	<ul style="list-style-type: none"> • Research program after public examination in Form 3 • Hands-on 'one student one project' workshop at University Putra Malaysia • Research & Development and Innovation exposure

	workshop	<ul style="list-style-type: none"> • Project show case by the form 4 students
Form 5		<ul style="list-style-type: none"> • Produce original product that gives positive and useful impact on consumers or target group • Take part in local and international Research and Development (R&D) competition

8. Teaching and learning methodologies that the school applies for promoting the core competencies as identified in number 5

<ul style="list-style-type: none"> • Problem based learning <ul style="list-style-type: none"> – students identify ideas or scientific projects they want to develop - students identify what they need to know, how and where to access the information - teacher acts as facilitator • Laboratory work - students carry out laboratory experiment according to their R&D project • Group presentation by students using ICT , posters and other relevant methods • Taking part in local R&D competition • Talent Enrichment Fiesta – an event whereby students will presents their innovation and invention <p style="text-align: center;">In a competition at school level at the end of school year</p> <ul style="list-style-type: none"> • Organise benchmarking trip to outstanding institution
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9. Partnership, community participation and international connection (Details of partners, their roles and activities that they have involved)

PARTNERSHIP	ROLE	ACTIVITIES
University PUTRA Malaysia (UPM)	Mentoring from Science and Engineering Faculty and Faculty of Agriculture	<ul style="list-style-type: none"> • Discussing on the suitability of the project. • Using the facilities and equipments from the premises. • Helped from the laboratory staff and graduate students.
Forest Research Institute Malaysia(FRIM)	Mentoring from the Department of Natuaral Product	<ul style="list-style-type: none"> • Getting advices and consultation from the researchers.
University Malaysia Perlis(UniMAP)	Mentoring from the Science and Engineering Faculty and Faculty of Technologies.	<ul style="list-style-type: none"> • Organized courses and competitions within and outside

		<p>the country.</p> <ul style="list-style-type: none"> • E.g International Engineering and Innovation Exposition (I-Envex)
World Invention Intellectual Property Associations(WIIPA)	Improving the status of inventors at international levels, enhance mutual assistance and experience amongst inventors of the world, encourage creative thinking and the spirit of invention.	<p>Organize International Innovation and Invention competition involving:</p> <ul style="list-style-type: none"> • Macau • Croatia • Romania • Indonesia • Korea • Taiwan
International Center for Young Scientist(ICYS)	Development of talented young research leaders through unique research operations	International conferences - Serbia 2014
Association of South East Asia Nations (ASEAN) through ASEAN+3 Committee	Increase experimenting skills for lower secondary school students	Organize Junior Science Odyssey - South Korea 2013

10. Monitoring and evaluation mechanisms and summary of results

<p>Monitoring and evaluation mechanisms:</p> <p><u>Monitoring mechanisms:</u></p> <p>1. Quantitatively</p> <ul style="list-style-type: none"> • Type of competition – local and international • Number of local and international competition joined • Target Group – gender and age • Number of students involve • Target results – no of gold, silver , bronze awards received and special awards received • Number of scientific R&D projects • Budget used • Time frame <p>2. Qualitatively</p> <ul style="list-style-type: none"> • Performances of students in formative and summative evaluation • Performances of students in public and international examination • Performance of students in English language test and examinations– speaking, listening and writing • Soft skills learned by students- <ul style="list-style-type: none"> - confidence - creative thinking - team player - effective communication

Evaluation mechanisms:

1. Performances indicators – Test and Examinations results
 - Achievements / success stories in local and international R&D competition
2. Return of Investment (ROI) – Impact Evaluation
 - Expenditure tracking
 - Cost benefits
 - Cost effective
3. Evaluators – Internal – school management committee
 - External – Ministry of Education – Fully Residential and Excellence Schools Management Division
4. Suggestions for improvement

Summary of results:

1. Performances in formative and summative evaluation increased towards the end of the year
2. Better performances in public and international test and examination
3. More students are interested to join in the programme
4. Two groups of female students took part in 2014 competition
5. More projects produced by students in 2014 with more winnings compared to 2013
6. Expenditure were slightly over the stipulated budget

11. Resources used for programme implementation

- Ministry of Education Malaysia (MOE) – funds and grants
- Fully Residential School under the MOE – funds and grants
- Alumni – monetary funds
- Individual – monetary funds
- Contribution from Parent & Teacher Association – funds and ICT equipments

12. Benefits/Impacts/ positive outcomes of the programme to students, school and community

Students:

- Increase the students enthusiasm to join the competition
- Increase self-esteem and self confidence of the students in delivering their presentation
- Increase the students ability to deliver in English
- Increase the social skills of the students
- Increase the students achievement in test and examination
- Make the appearance of the students more presentable and versatile

Community :

- Produce students that have high level of creativity and innovative

- Produce students that have identity and high self-esteem
- Produce students that will create new career opportunities
- Produce students that have wide knowledge across the geographical boundaries

13. Plan for sustainability and plan for the future

Plan for sustainability:

1. Involvement of more students in the R&D activities
2. Increase Coordination and cooperation between science teachers
3. Training of new teachers and students in R&D activities
4. Increase number of linkages and networkings
5. Incentives and recognition for teachers and students involve in R&D activities

Plan for the future:

1. Increase the involvement of the students in producing more innovation and invention
2. Diversify the activities to stimulate interest in R&D among students
3. Raise additional fundings

14. List of attachments such as a copy of the school operational plan, learning/ teaching materials, samples of student worksheet, manual, etc. If the attached materials are in the local language, please provide a brief description in English language.

Attachment 1) BROCHURE – flyers of students R&D project

Attachment 2) List of achievements in co-curriculum activities 2013

Attachment 3) Research in Education (RiE) Concept Paper to develop High Order Thinking Skills
- Introduction – in accord with Malaysia Education Development Plan, planning of programmes and achievements

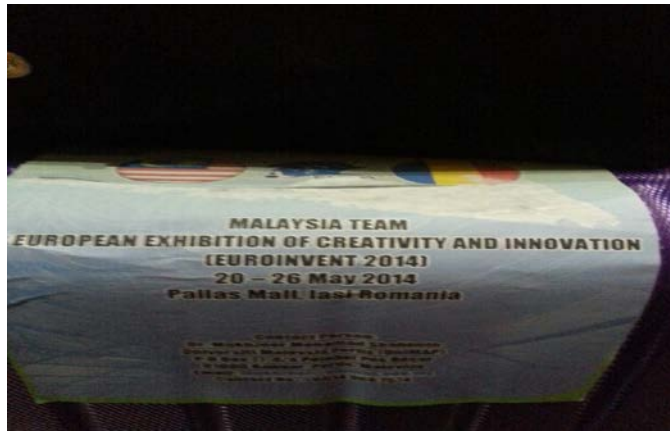
15. Photos related to the activity/programme (Maximum of 6 photos with captions in English)

Photo1



38th International Invention Show INOVA 2013
Zagreb, Croatia

Photo 2



European Exhibition of Creativity and Innovation (EUROINVENT)
Iasi, Romania

Photo 3



International Youth Invention Award
Jakarta, Indonesia

Photo 4



Green Technology Summit organized by local university

Photo 5



Linkage with University Putra Malaysia – Using their laboratory equipment

Photo 6



ASEAN+3 Junior Science Odyssey-South Korea