

## Using Performance Data To Improve Learning: A Case Study Of The E-Monitoring Programme Of The Terengganu State Education Department

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### 1.0 The Introduction of School-Based Assessment in Malaysia

The innovative New Primary School Curriculum, introduced in 1983, also introduced the idea of formative school-based assessment with a view to improving learning during the course of the week, month and year by tracking mastery while teaching and learning were going on. It is to be noted that the New Primary School Curriculum of 1983 made a clear distinction between achievement tests that come at the end of an education programme that measure achievement and progress tests which are integrated into teaching-

learning and inform the teacher as to how well the child is progressing with the learning and whether mastery of particular outcomes have been attained.

Twenty years down the road, teachers have still not integrated classroom assessment as part of teaching.

Monthly tests are regularly administered, but they are not used as diagnostic tools. Information yielded from monthly tests is used crudely to determine who are good learners and who are not, but specific strengths and weaknesses of individual learners are not delineated. Classroom assessment to yield data and information on students' current performance especially with regards to the learning outcomes that have not been mastered has not been well established. This is an area of concern, because unless remedial action is taken to address shortfalls in achievement there is a risk that students will not achieve their true potential thus nullifying the goals of education in Malaysia.

## **2.0 Current Situation**

Most teachers and administrators understand the idea of achievement tests and make it an integral part of their teaching, but they are less clear about the concept of formative diagnostic progress tests, which are used to improve learning. In a developing country such as Malaysia, with a rapidly increasing population and competition for jobs, people look at educational outcomes in the form of certificates and grades. They are not that concerned about the micro processes of learning and the incremental steps towards mastery as much as the end-result. This is understandable as good examination results guarantee a place in a local university. To serious educationists, it would seem that an exam dominated system violates the ideals of student-centred, student-tailored learning. However, many make the claim that both parents and the public at large want it this way. And for all the evil it stands for, examination results remain a good indicator of overall cognitive ability and potential competence on the job.

One of the reasons why school-based assessment did not take off as it should is because of the tedium of record keeping. In the Malaysian school environment, this is not easy to do. Teachers have very little non-teaching

time, which they use to mark books and plan lessons or just to catch their breath, deal with student problems, mark the register, tally up marks and so forth. School-based assessment requires that teachers monitor the progress of individual students regularly. This, the average Malaysian teacher is hard pressed to do. In the Malaysian situation, forty minutes for a class of 45 works out to less than a minute share of the teacher's attention for each student. Time on task may be less than 40 minutes with the changeover and movement of teachers from one class to the next. In such a situation, it seems expedient to deal with the performance of student groups rather than individual learners. Progress is tracked using instruments that are easy to score in quick time for large groups i.e. the multiple-choice questions and treatment meted out through similar district-wide class remediation programmes, non-differentiated materials, etc.

### **3.0 Focus of this Paper**

The Curriculum Development Centre, wanted to find out about successful practice in the field that can provide input into strengthening the school-based assessment programme. A case study was made of the Terengganu State Education Department E-Pantau (e-monitoring) Programme.

### **4.0 Method of Data Collection**

#### **Site Visits**

- A visit was made by 3 officers of the Curriculum Development Centre of the Ministry of Education in June 2003.

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Data was collected in the following ways:

- i. Briefings by State Education Department Officers
- ii. Document Studies
- iii. Interviews and Discussions

### **5.0 The Terengganu State Education Department E-Monitoring Programme**

#### **5.1 Description of E-Pantau**

As the CDC was keen to look into the possibility of having a monitoring system that can be used along with school-based assessment

effectively, it was decided to study the Terengganu SED e-monitoring programme with a view to adopting aspects of it, if and where appropriate. The CDC knew and had heard briefings about the programme for the past two years, and decided that an on-site visit was necessary to see the programme in operation.

The Terengganu State Education Department instituted the system of e-monitoring as a way of keeping tabs on student performance through periodic testing and monitoring of results coupled with interventionist measures to improve performance. Although the main focus of the programme is to improve state-wide performance in the Year Six National Achievement Test (UPSR) still, the effort to improve performance among the mainly rural student population is commendable, even if it is examination performance that is targeted at. How the programme works out is that after an initial assessment of a student's capability, performance targets are set for the student over and above her/his base-line performance which she/he will have to meet over the course of the year. Intervention measures take the form of practice and catch-up classes for each Year Six class and are the sole responsibility of the class teacher.

The Terengganu State Education Department has implemented the E-Monitoring programme since 2000 to improve performance among its students especially before they undertake the Year Six Achievement Test (UPSR) in September. The Terengganu programme was known to be very successful, as the state has been coming out top in the UPSR among the other 14 Malaysian states for a few years running ever since the programme was implemented.

The programme consists of target setting for each student by the school and target setting by the District Education Office (DEO) to improve schools' performance in each of the four subjects of the UPSR up one grade level. These subjects are Malay language, English, Science and Mathematics.

The programme uses Microsoft Access to create a data-base that can be tracked at district and state level by electronic communication through e-

mail as schools and the State Education Department (SED) are not LAN-networked as yet. If schools do not have Internet connection, they would send a soft-copy through dispatch. This is not a problem because there is no school that is more than 150 miles of the SED.

## **5.2 Data Gathered from Visit**

The plan was to collect statistics of student performance since the time the programme was instituted in 2000. Unfortunately, the SED was not able to produce past data, but only current data, i.e. the programme, as it exists in 2003. The reason they were not able to furnish past data was because data handling was manual and records were dispersed and difficult to retrieve.

For the purposes of this case study, focus will be on performance in English.

The CDC team visited two schools, one primary and one secondary and also visited the District Education Office. The primary school is the Kuala Ibai Primary School in Kuala Terengganu. The secondary school is the Lela Segara Secondary School also in Kuala Terengganu. As the secondary programme has only just been implemented, it was decided to report only on implementation at the primary level with a special focus on the Kuala Ibai Primary School. Briefings were given by the SED officers at the District Education Office as well as by the teachers and Head Teachers of the schools visited.

## **5.3 Implementation of E-Pantau**

A previous State Education Director, Dato' Rahim Tahir (now retired), in 1995 was the first to conceive of the idea of systematically tracking students' performance and instituting remedial programmes to assist students' to make incremental improvements in their test scores. Before 2003, data management was managed manually. A Mr. Yusof who was originally with the Terengganu State Education Department (SED) and was later transferred as a Head Teacher to a primary school in another town, Kemaman, 3 hours away from the Terengganu State Education Department (SED) which is located at the state capital, Kuala Terengganu, developed the

tracking system itself in 2002. In his new post he is able to run the programme that he had hitherto only managed centrally. The system is monitored by the State Education Department (SED) although all intervention work is executed by teachers at the school level.

The Terengganu State Education Department (SED) had been trying to implement a system of tracking schools' performance in the centralised Year 6 primary examination called *Ujian Pencapaian Sekolah Rendah* (UPSR) or Primary School Achievement Test. Terengganu was relatively undeveloped until oil was mined off-shore in the 1970s. A generous sum from oil revenue is given to an education fund, called *Wang Ehsan* or 'Benevolence Fund' which gives scholarships to needy students and funds various education projects initiated by the SED.

#### **5.4 The Structure and Processes of E-Pantau**

##### **School Level**

What is being monitored is the student's mark in a particular subject. The initial baseline data of the student in terms of an aggregate mark over several tests is taken as the baseline performance, and efforts are made to improve on that baseline performance. The steps in e-pantau are given below:

##### **Getting Started**

Determining baseline competence mark (Take-off Value)

Setting the Target Result (TR) mark to reach

Setting Targeted Increments (TI) marks for each of 5

Targeted increment tests

##### **Implementing the Programme**

Informing parents and students of baseline mark and targeted mark

Administering 5 targeted increment tests

Monitoring progress at school and state level

Instituting catch-up classes

Counselling and motivating students and advising parents

The system works in the following way.

**Step 1: Determining a Student’s Baseline Performance or ‘Take-Off Value’ (TOV)**

At the beginning of the year a class teacher (mandatory for Year 6 UPSR classes), will first determine the **take-off value (TOV)** of each individual student’s performance. This is done by taking 2 previous year’s test scores, 2 test scores from tests administered early in the year and one score from a teacher’s expert judgement. The tests used to determine the student’s take-off value are those listed below.

1. Mark obtained in Year 5 Mid-Year Test
2. Mark obtained in Year 5 End-of-Year Test
3. Mark obtained in Year 6 Forecast Test Number 1 (taken early in the year)
4. Mark obtained in Year 6 Forecast Test Number 2 (also taken early in the year)
5. Mark given based on teacher’s assessment of student’s ability

All 5 marks are aggregated and a **TOV** mark given.

**Example: English Language**

**Baharin bin Yahya Class 6 Siddiq**

Year 5 Mid-Year Test	72.7	
Year 5 End-of-Year Test	79.3	
Year 6 Forecast Test Number 1	78.5	
Year 6 Forecast Test Number 2	71.0	
Teacher’s Own Assessment	77.0	
<b>TOV Mark</b>	<b>76.1</b>	<b>- ‘B’ grade</b>

The **TOV** for the particular student is 76.1. The student is placed in Group **‘B’**.

Students are grouped into 4 groupings as shown below.

<b>Category</b>	<b>Score</b>
Group <b>A</b>	80 - 100
Group <b>B</b>	60 - 79
Group <b>C</b>	40 - 59
Group <b>D</b>	0 - 39

The idea is to bring students up one grade point, i.e. from **B** to **A**, **C** to **B** and **D** to **C**.

### Step 2: Setting a Student's 'Targeted Result' (TR) in the UPSR

Next, the teacher will have to determine what target the student is capable of reaching. This target is termed as **Targeted Result** or **TR**. To obtain the **TR**, the teacher is advised to add between 10 to 15 marks to the **TOV** score. 10 to 15 marks is considered a reasonable target as previous experience has shown that this is a target a student is capable of achieving. It is to be noted that the teachers and officers at the SED have had many years experience in students' performance and students' learning behaviours and can assess with a good deal of accuracy what a student is realistically capable of reaching with a little motivation and push from the teacher. The determination of the **TOV** is carried out in March 2003 and the **TR** is set just as soon as the **TOV** is determined.

At this point we have the following information on the student.

Name	Group	TOV	TR	Expected result	UPSR
Baharin bin Yahya	B	76.1	86	A	

(The **TR** is obtained by adding 10 marks to the **TOV**)

At this point the target result (**TR**) is programmed into the school's e-pantau data-base and will inform the teacher of whether the incremental gains to be made during the course of the year for the student are met. Five tests will be set and the student will have to demonstrate incremental gains of 2 marks over the previous test for each of the test.

### Step 3: Setting a Student's 'Targeted Increments' (TI)

The system distributes the incremental gains the student is expected to make equally over the course of the year. The student is told of the scores she/he is expected to get in the five tests she/he will be given throughout the year. Both the student and the parents are informed of the targeted increments.

Name	Ability Group	TOV	TR	Targeted Increments (TI) for the 5 tests in the year				
				1	2	3	4	5
Baharin bin Yahya	B	76.1	86	78	80	82	84	86

#### Step 4: Catch-Up Classes

Students are given extra classes to enable them to make these target increments (TI). The extra classes have been very effective in improving student scores.

These classes for four subjects (Malay language, English, Mathematics and Science) are carried out for one hour four days a week, between 12.30 p.m. to 1.40 p.m. and for 3 hours on Saturdays. In addition, students also come for night classes for 2 nights a week, for about two hours. Students are allotted RM5.00 a day for meals for the night and evening classes. The meals are a deciding factor in determining students' attendance. Parents are also happy about these extra classes their children are attending and they fully believe that the system will improve their children's score and do them good.

#### Step 5: Administration of Five Targeted Increment Tests

Five tests are centrally developed by a team of expert teachers. This team is called AKRAM and has a strength of about 150 people. At the time of visit of the CDC team, in June 2003, only two TI tests had been administered. Actual marks (AI) are entered into the data-base and the programme informs the teacher whether the target has been met or otherwise and this is recorded in the **Variance** column.

#### Student's Actual Performance in Two of the Five TI

##### Baharin bin Yahya

Targeted Increment (TI)					Actual Increment (AI)					Variance (+/-) between Target Score and Actual Result				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
78	80	82	84	86	84	82				+6	+2			

(only 2 tests were given as of June 2003)

In the case of Bahrin Yahya above, it can be seen that he is meeting his targets at two of the five tests. Bahrin is well on his way to achieve targeted results in English. The variances are in his favour. Of course the same targets are set for Malay, Science and Mathematics.

### Step 6: Aggregating Results at State Level

The SED is not so much occupied with individual results but aggregated results at the school and at district level for all schools in the district. The state will set targets as to the number of students expected to obtain **As, Bs, Cs, Ds** or **Es**. The analysis and tracking will be by number of persons rather than mean scores. At the beginning of the year, when the **TOVs** and **TRs** are decided at school level, the SED will set its targets too. The target set for English for 2003 is given below.

#### English Language (by head count)

The SED will set targets for number of students getting Grade A until E as the following table shows. For grades A, B and C the numbers are in ascending order, but for D and E grades, the numbers are in descending order.

POTENTIAL GRADES	TOV	TR	Targeted Increment (TI)				
			1	2	3	4	5
<b>A</b>	364	2383	447	554	720	1068	2383
<b>B</b>	3020	4976	3927	4168	4494	4724	4976
<b>C</b>	6997	9782	7173	7717	8022	8921	9782
<b>D</b>	10746	7062	10178	9981	9737	9395	7062
<b>E</b>	3979	903	3381	2686	2133	998	903
<b>TOTAL</b>	25106	25106	25106	25106	25106	25106	25106

The SED monitors results for the state. School will send their results with each targeted increment test. From this the SED will predict what the percentage pass will be, what the percentage pass would be for each of the four subjects and how many students will get full As. A student is capable of getting 5As for 4 subjects as Malay is made up of two papers.

The following table shows performance as of June 2003. Targets are set for the number of students getting an **A, B, C, D** or **E**.

**English Language** (by head count)

POTENTIAL GRADES	TOV	TR	Targeted Increment (TI)					Actual Increment (AI)					Variance (+/-) between Target Score and Actual Result				
			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
A	364	2383	447	554	720	1068	2383	502	1040	0	0	0	129	534	0	0	0
B	3020	4976	3927	4168	4494	4724	4976	2172	2823	0	0	0	-555	-545	0	0	0
C	6997	9782	7173	7717	8022	8921	9782	6532	936	0	0	0	32	-1059	0	0	0
D	1074 6	7062	1017 8	9981	9737	9395	7062	1015 4	1630	0	0	0	-24	597	0	0	0
E	3979	903	3381	2686	2133	998	903	4758	704	0	0	0	227 7	2483	0	0	0
<b>TOTAL</b>	2510 6	2510 6	2510 6	2510 6	2510 6	2510 6	2510 6	2411 8 *	2426 8 *	0	0	0	-	-	-	-	-

\* (discrepancy due to absenteeism)

Potential Grades	Targeted Increment		Actual Increment		Variance		Goals Met?
	1	2	1	2	1	2	
A	447	554	502	1040	129	534	Met for both TI Test 1 and 2
B	3927	4168	2172	2823	-555	-545	Not met for both TI Test 1 and 2
C	7173	7717	6532	936	32	-1059	Met for TI Test 1; not met for TI 2
D	10178	9981	10154	9630	-24	-524	Met for TI Test 1 and for TI 2
E	3381	2686	4758	704	2277	984	Since the aim is for reduction here, the target has not been met for TI Test 1 but met for TI Test 2
<b>TOTAL</b>	25106	25106	24118*	24268*	-	-	

\* (discrepancy due to absenteeism)

It can be seen that the state is achieving its targets for the **A** and **C** grades. The state is not doing well for grade E as the number of students getting E has increased rather than decreased for the first TI Test. At this point, the situation seems rather bleak, so the schools will have to double their intervention measures to ensure that the goals are met.

## **5.5 The Strengths of E-Pantau**

### **5.5.1 Systematic Tracking and Supervision**

One may very well point to the fact that the system smacks of examination orientation, and is lacking in humanism. But, there is a lot to be said for e-pantau. State Education Departments have been conscientious from the start to get the best results for their state, and the heavy hand of the SED can always be felt in schools, especially in connection with classes taking centralised examinations. Monitoring of school's performance always occurs and schools advised and given help to improve performance.

Having said that, we find for the first time, a programme to improve examination results that is done systematically. Certainly, any structured and supervised programme is better than no programme at all or letting the student cope on his or her own to get through the examinations. Teacher guidance as students try to meet their goals is important. In the urban areas students are supported by out-of-school tuition that parents can afford to pay for. Terengganu is largely rural and the majority of parents cannot afford to pay for tuition. Hence, the state programme is acceptable and credible to teachers, parents and the community. The community believes in hard work and examination preparations and values scholastic standing. This is something parents and the community believe in strongly because there has not been any process-oriented system to prove otherwise. So, unless it can be replaced with a better system that the public is committed to, it is better to let the system stay and do what it does best which is to improve performance in the examinations.

### **5.5.2 Performance Data to Predict Outcomes of Terminal Examinations : a Partial Solution**

What we have in effect is a partial solution. For performance data from progress tests to be effective, we have to include qualitative data as well, especially for descriptions of language competency. The curriculum documents undeniably contain listings of learning outcomes, which are couched both quantitatively and qualitatively, which can guide the teacher to describe a particular level of proficiency. However, an individual learner's learning is unique to herself/himself that no listing of skills can adequately describe her/his abilities at any given point of time.

## **6.0 Future Directions**

### **6.1 Devising goals for continuous formative school-based assessment**

The e-monitoring programme provides a working procedure and a template for teachers to use; all a teacher needs to do is to key in the results. The results are analysed by the programme and the teacher is informed if targets have been met or a shortfall has occurred which needs to be addressed. If test papers are well structured, then the teacher will be able to distinguish between student's development in the most critical areas such as vocabulary, sentence structure, phonics and pronunciation, tenses, articles, pronouns, possessives and others. The teacher can do group remediation or individual remediation depending on what the analyses of class performance inform the teacher.

One criticism that can be said about the programme is the practice given to students during the tutorial catch-up classes. The practice given is on mock examination questions. It is not clear how much individual attention is given, as extra classes are held in big groups. It is very likely that some revision is done through explanations, after which the students are asked to complete a certain number of exercises. It is this practice and the feedback obtained as to which answers are right and which are wrong that constitutes the bulk of the remedial work.

Even though the programme is carried out at all levels, the atmosphere is intense where the exam classes of Year 6 are concerned. The other levels tend to take a laid-back attitude towards it.

### **6.2 Qualitative Descriptions of Performance**

A better practice would be to combine school-based assessment of the more developmental kind with the close monitoring system of the e-monitoring. However the targets set should be couched in more qualitative terms, such as that below:

Baseline Competence	Targeted Increment 1	Targeted Increment 2	Targeted Increment 3	Targeted Increment 4	Targeted Increment 5
Has some limited vocabulary and understands the use of pronouns. Writes without a clear sentence structure, wrong use of words, grammar and spelling errors. Cannot differentiate between present and past tense of verbs, and between singular and plural verbs.	Able to write a few sentences with some semblance of structure. Spelling weak.	Able to write simple sentences with no grammatical errors. Limited vocabulary.	Able to write a short paragraph with minor grammatical mistakes. Has acquired some new vocabulary and is reflected in the writing. Some spelling mistakes.	Understands and can use present and past tense forms in writing with the occasional mistake.	Able to write between one paragraph in present and past tense with some minor inaccuracies. Needs to expand vocabulary. Spelling has improved with only occasional mistakes.

This is certainly something that the CDC is exploring currently. It is hoped that with more systematic guidance for teachers, student's proficiency in the language will improve significantly.

However, for this to work well, teachers must be able to plan at macro level and know the TESL/TEFL field well. Otherwise teachers will not be sensitive to what students problems are much less be able to solve these problems.

### 6.3 Need for Classroom Tests to Put Emphasis on the Process of Improving Learning

At the moment teachers feel that their worth is judged on how well their students perform in examinations. Teachers need to be shown that continuous formative school-based assessment is more effective in the long run to improve learning. Focusing on terminal outcomes without paying equal attention to the intervening processes will prove counterproductive in the long run. Exam preparation makes a child proficient in exams. Cognitive growth, like any growth, needs to focus on what the child is becoming, rather than on what she/he has not become. Assessments with a view to exam performance are what makes a teacher issue pronouncements such as 'weak', 'failed', etc.

With a good management system, perhaps much of the tedious record keeping and paperwork can be resolved. The strength of e-pantau is its management system that enables data to be keyed in easily. But, before formative assessment can take off, parents need to be educated as to the merits of school-based assessment. At present, parents rely heavily on

examination results to be informed of their children's achievement in the absence of other information. If school-based assessment can yield good data with which parents are informed and can take action when needed, there is not reason why they would not be equally excited by it.

#### **6.4 Integrating assessment into a teacher's daily practice**

What is not happening with current practice is to see how well a particular student has performed and devise ways to ensure that the student does better. As is happening, the teacher is the one put under a microscope and the student is held to be less accountable, even when the results actually lie in his/her hands. The good thing to be said about e-pantau is that each student's performance is analysed and it is recognised that it is the student who has to put in the effort to make the grade.

The most expedient measure in light of the culture of examination domination is to integrate examination requirements into classroom tests without losing their diagnostic flavour. Students must know that what teachers teach are important and will be tested. Students should be told what outcomes will be tested on in a test. Learning is seen to be wasteful if what is learnt is not tested; therefore, for teaching-learning to be efficient and optimum in the use of class-time, then learning must be made worthwhile by testing what is learnt and for examinations to follow suit. Tests should not spring surprises on the student, but must be completely predictable and give students an opportunity to demonstrate that learning has taken place.

But, most importantly, it is to bring the students as an active partner by continuously giving information about her/his state of development, and what she/he he must do to improve. In short, for school-based assessment to work, students must come to it as informed parties and active decision-makers. Students need also to be aware that a particular assessment will be followed by corrective action on both their part and the teacher's part. The results of tests are not to be thrown aside or chucked in a drawer.

#### **6.5 Recording: Consider Main Milestones and Specific Difficulties**

If recording is to follow the syllabus specifications strictly, then the task becomes onerous. Therefore, it is suggested that recording should take

account of main milestones reached by the students as well as specific areas of difficulty. This will make recording not only meaningful, but more manageable. The curriculum specifications are made up of a myriad of skills that the teacher has to account for. This in itself makes recording extremely daunting. What needs to be done is for teachers to concentrate on major skills only and to frame overarching goals in a way that is workable and the teacher is comfortable with.

## **7.0 Conclusion**

School-based assessment that was introduced with the New Primary School Curriculum in 1983 did not take off, as it should. Logistical constraints notwithstanding, a closely monitored and managed school-based assessment system along the lines of the Terengganu SED e-monitoring programme may be just what is needed for school-based assessment or 'assessment for learning' to take off. School-based assessment managed by a central geographically distant authority must also provide firm guidelines and be supervised closely. Teachers need directions and close assistance in carrying out a programme; otherwise it is all too easy to put something aside when there are other demands on a teacher's time. Indeed, e-monitoring of school-based assessment is one way to tap the potential of ICT in lightening the English teacher's load.