Abbreviation

AYP	Adequate Yearly Progress
CPD	Continuous Professional Development
CVA	Contextual Value-Added
DCFS	Department for Children, School and Families
EDMP	Educational Development Master Plan
EPRD	Educational Planning and Policy Research Division
ESM	Effective School Movement
FFT	Fischer Family Trust
GCSC	General Certificate School
HT	Head teacher
IDACI	Income Deprivation Affecting Children Index
iNet	International Networking for Educational Transformation
ISV	In-school Variation
KS	Key stage
LCI	Low Confidence Interval
LEA	Local Education Authority
MoEM	Ministry of Education Malaysia
SER	School Effectiveness Research
SES	Socio Economic Status
SSAT	Specialist School and Academic Trust
UCI	Upper Confidence Interval
VA	Value-Added

Figures

Tables

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Potentials Of Contextual Value-Added Measures In Assisting Schools Become More Effective

Introduction

In a modern society, schools have become very important entities because they form social institutions which interest many people and involve the role of various interest groups and stakeholders in the society[1]. The community where a school resides and the parents of children of those who go to that school will be proud if their school is categorised as a good school. Conversely, they will blame the school management if it does not perform well in terms of pupils' attainment or if the school's achievement fell below the average of the national standards[2]. As such, parents tend to choose schools for their good achievement records for their children[3]. In other words, parents and stakeholders place high expectations on schools. Therefore, it is only natural that school leaders and education authorities as well as every classroom teacher whether in the UK or Malaysia, would want their schools to be more effective than other schools so as to fulfil the high expectations of everyone in the community.

Stakeholders' expectations among others, have been the key driving force for the growing interest among education researchers[4] in looking for answers to questions such as 'what is an effective school?', 'school effectiveness for whom? (Slee, et.al., 1998; Weindling, 1994), 'why do we need to have an effective school?', 'how to be an effective school?' and 'what is the accurate, appropriate, reliable and valid instrument to measure school effectiveness?" (see Sammons, et.al., 1997; Mortimore, 1991, 1998; Teddlie & Reynolds, 2000).

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1 The UK schooling system involves the role of Central Government, LEA, Governing Body and School Council, while in Malaysia schooling system involves MOE, SED, DEO, School Management and PTA.

2 The UK League Table was used to rank the school effectiveness and improvement based on CVA measures, see *Data Driven School Transformation: Education Outcome and Value Added by Specialist School and Academies, 2008 Analysis*.

3 UK policy practices parental choice in giving the opportunity to public to choose the best school for their children

4 In Malaysia most of the SER is conducted by Master and PhD students, University Researchers and EPRD, MOE.

Purpose

This study will analyse: **How far CVA measures can help schools become more effective and to what extent can CVA measures tell us anything significant about the performance of the school concerned?** This study was based on literature review which was carried out in Kings' College, London, interviews and observations conducted by the writer during a school placement program in London and the current Malaysian education policies, its practice and school context as the background. It is hoped that the analyses presented will provide better insight and contribute further to our understanding as to the utility of CVA measures in aiding Malaysian schools to become more effective while paying special reference to the policies and best practices in the UK schooling system.

SER: Issues and Policy Implementation

Issues relating to school effectiveness, academic achievement and educational equity have received the attention of researchers and policy-makers in developed as well as developing countries[5] (Siow et.al., 1999). SER in Malaysia focuses on the characteristic of effective schools and effective leadership which have been found to be key drivers in transforming under performing schools into effective ones (Sharifah, 2000; Beebout, 1972; Isahak, 1977; Hussein, 1989; Leong, 1990; Arif, 1995; Norasimah, 1995; Lan Poh Chin, 1998). In terms of methodology, a number of school effectiveness researches in Malaysia used the case study approach where excellent schools were studied in-depth to look for factors that contribute to students' achievement.

School effectiveness in Malaysia as a developing country Malaysia is largely dependent on the efficiency of its educational management simply because of the huge investment for education being allocated in the government's annual budget[6]. While school effectiveness research has been ongoing for the last two decades, education researchers have yet to agree on its concept and other underlying

[5] British studies by Rutter et.al. (1979), Youngman (1980), Clark (1985); Malaysian studies by Beebout (1972), Isahak (1977), Hussein (1979), Leong (1990)

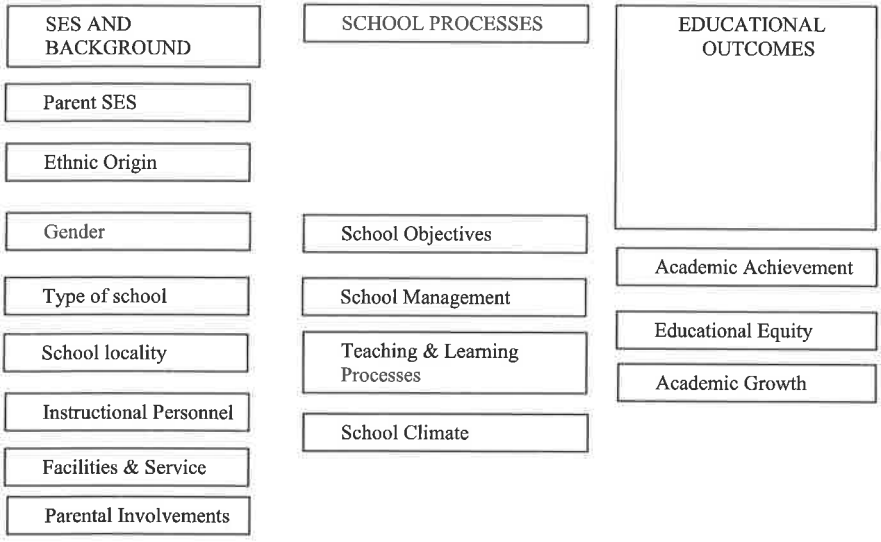
[6] The Malaysian government has allocated RM 32 billion in the Ninth Malaysia Plan 2006 – 2010 for educational development.

theories. Therefore, there is a great need to re-conceptualize school effectiveness so as to avoid over-emphasizing the non-potential factors of effective schools. West and Hopkins (1996) propose that a more comprehensive model for the effective school should focus on the following four domains:

- Student achievement and growth;
- Student experiences;
- Teacher and school development; and
- Community involvement.

The SER Model was developed using West and Hopkins (1996) model. Figure 1.1 on the following page shows the SER Model which provides a categorization of the important variables found in several school effectiveness studies in Malaysia as well as other developing countries.

Figure 1.1 School Effectiveness Framework: Categorization of Variables



(Based on West and Hopkins (1996) Model)

Based on the model showed in Figure 1.1 above, we need to determine which factors are dominant; i.e. whether SES or the school process contributes to pupils' educational outcome. In order to examine objectively the 'what' (context) and the 'how to' (process) factors that contribute to a school being effective, not only the schooling system needs to be investigated, but we also need to look into the desirable practices by using a practical method of assessment. The measurement tools should be able to show us what is being measured; for whom it is measured; how it is measured, and for what we are measuring. iNet (2008) in the UK showed that successful schools depend on the extent the school management uses available data effectively as a powerful basis for ongoing review and change. HMCI (2008) of OFSTED for instance also conclude that:

> "Data, if used intelligently can be an essential tool as we work together to raise (the) standard in schools, and so improve the lives of the children attending them."
>
> (Christine Gilbert, HMCI, 2008)

Perhaps most of us would agree that education is essentially a process with outcomes that are difficult to measure objectively. However, as an education researcher, it is important to determine an objective methodology to measure the progress of the activities, and programmes brought about by certain education policies. A major problem in identifying such a methodology is to determine what factors attributed to the school that is really making a difference in the learning of the students. Is it the homes from which the student came from[7], or the teachers, or the teaching? What about the curriculum, the time devoted to the learning, and the resources available to the school? Can we say for sure that maybe perhaps it is a complex combination of these different characteristics about the students, the instructions, the nature of what is taught to the children, or the way in which time is used, and even the resources of the school for that matter (Madaus, Airasian & Kellaghan, 1980). If we can agree to all of the above as factors that contribute to school effectiveness, we have another question, how can we measure it?

[7] See also Coleman, J.S, et.al., (1966) and Jencks, C.S., et.al., (1972) on school effectiveness

Value Added and Contextual Value Added Measures Concept

The concept of value added (VA) measures of student achievement or progress has emerged from research into school and teacher effectiveness (FitzGibbon & Yymms, 1993; Hill, 1995; Mortimore, Sammons, & Thomas, 1994; Nuttel, 1992; Scheeren & Bosker, 1997). According to Sammons (1997), VA score takes into consideration 'prior achievement of pupil on entry to school' (Thomas, Sammons, & Mortimore, 1995; Sammons, 1996). The concept of VA is of considerable value in focusing the minds of HTs and teachers on the contribution that the school makes towards the effective learning of individual students (Sammons, 1997). The VA approach emphasizes on evaluating student outcomes directly, or indirectly, via the quality of the teaching and learning process. In a broader perspective the definition of VA has the common aim of assessing the quality and the extent of a school's effectiveness in promoting student achievement (Sammons, 1997)

> 'For the purpose of clarity we define the term of value-added more precisely. It is an indication of the extent to which any given school has fostered the progress of all students in a range of subject during a particular time period'
>
> (Sammons, 1997)

Our respondents in two schools in London agreed that VA measures provide an indication of educational 'value' that the school 'add' to students' achievements over and above that which could be predicted given the backgrounds, abilities and prior achievement of their student intakes. A variety of VA measures can be constructed to indicate different aspects of educational effectiveness.

According to Ray (2006) there have been two main phases in the development of VA models, both of which are discussed in this writing: (1) simple VA scores based on prior attainment only; (2) more complex 'contextualised' VA or CVA scores based on a range of factors and calculated using multilevel models. In addition to school level scores, VA and pupils' progress information more generally has also been used and presented in graphs and tables.

According to Martimore et.al. (1997) while the role of VA as a mechanism to measure the attainment of pupils in comparison to pupils with similar prior attainment is useful, there are many other factors that are related to the progress that pupils make in a school, such as levels of deprivation or special educational needs.

Many studies have demonstrated that pupils' background is related systematically to measures of attainment by the age of seven years (Mortimore et.al., 1988; Tizard et.al., 1988; Sammons, West & Hind, 1997).

Compared with VA, CVA on the other hand tries to identify and take into account the other pupils' and schools' factors which impact significantly on outcomes. In this respect, CVA provides a more complete picture of the school performances and offers a more accurate measure for accountability and improvement purposes. It 'levels the playing field' between schools in different circumstances by taking into account these other factors when measuring the effectiveness of a school or the progress made by individual pupils. Based on 2006 UK SER models, the following attainment and contextual factors were included: **pupil's prior attainment, gender, SEN, first language, measures of pupil mobility, age, an 'In care' indicator, ethnicity, ESM, IDACI as well as average and range of prior attainment of the school (KS 2-3, KS 2-4 and KS 3-4 only).**

Therefore CVA provides important and comprehensive information about the effectiveness of a school. This is because, when comparing the performance of schools we must also recognise that pupils have different starting points. In this case CVA not only measures progress of prior attainment, but also accounts for the impact of external factors, which in turn have an impact on the progress of individual pupils. In other words, CVA gives a much fairer statistical measure of the effectiveness of a school and provides a solid basis for comparisons since it measures past performance over a given period of time and thus allows comparisons to be made.

Recent School Effective Research (SER) and the Significance of Contextual Value Added (CVA) Measures

According to iNet (2008), CVA measures include a range within the confidence intervals. The confidence interval is designed to accommodate the uncertainty of CVA score. In a school with a large number of students, the confidence interval is less broad as the calculation is considered more accurate. Conversely, schools which have a small KS4 cohort will see that this interval is broader. As a range, we can confidently say statistically that the values represent a judgment where 'true' school effectiveness will lie.

In terms of policy implementation, in the UK value added (VA) measures have been used in the achievement and attainment tables since 2002. VA measures the attainment of pupils in comparison to other pupils with similar prior attainment. This is much fairer than using raw outcomes since schools can have very different levels of attainment on entry. Currently in the UK, CVA modelling is used for the following purposes: (1) In Performance Tables to provide information to parents and hold schools accountable; (2) In systems for school improvement, where data is used for self-evaluation and target setting; (3) To inform school inspections, which are now tied into the school improvement processes; (4) To help select schools for particular initiatives; and (5) To provide information on the effectiveness of particular types of schools or policy initiatives.

Data Driven for School Transformation

Studies have showed that data is one of the most important tools in raising student achievement (Reid, 2008). Data of student achievement actually supports the concept of assessment for learning and more crucial assessment data to predict and improve student grades, and improve the teachers and departments estimation to every pupil.

iNet (2008) suggests that it is important to have and use CVA data at school department and individual student levels. The CVA data could indicate where students are performing better or worse than estimates based on prior achievement. According to iNet (2008), it is crucial to:

- have common understandings about data;
- analyze patterns and trends for individual groups throughout the school year; and
- have good data at pupil, subject and whole school level to permit comparisons.

Data analyses should focus on identifying ISV[8] at the level of individual departments or teachers, based on value-added scores (this generates benchmarks) and on comparing the value-added performance of students in different subjects.

[8] In school variation or ISV is a relatively new area of interest in education. Historically, it was often labeled 'within-school variation' (WSV) and used to apply to a wide range of issues: variation by student in their achievement associated with their background characteristics such as social class, gender, or ethnicity; variation by student in their achievement linked with the year of school they were in, and variation by students in different subjects within the same school in their achievement level (iNet, 2008)

Table 1.1: Interpreting the ISV Indicator

CVA Score	ISV Rating	Comments
Sig +	L	Progress consistently above average
Sig +	H	Unusual combination. Likely to be the case that most students are making good progress but some groups (a minority) are making very poor progress
Not sig	L	Most students make average progress
Not sig	H	Some group of students making good progress but others are making poor progress
Sig -	H	Whilst most groups of students make below average progress there are some where progress is above average
Sig -	L	Progress consistently below average

(Source: iNET (2008))

Table 1.2: ISV indicator[9]

H	School is in the 30% of schools with the highest amount of variation in pupils' progress from KS2 to KS4
L	School is in the 30% of schools with the lowest amount of variation in pupils' progress from KS2 to KS4
M	School is in the middle 40% of schools with respect to variation in pupils' progress

(Source: iNET (2008))

Table 1.3 shows a summary of the analyses made on 15 specialist schools during the school placement program using CVA. Specifically, the CVA was used to measure the performance of the schools based on their contexts to ensure that the assessments of their performances are fair and accurate.

[9] This indicator should not be used alone; however, it needs to be interpreted alongside other indicators, particularly the overall value-added score.

Table 1.3: Value-Added and Educational Outcomes: 15 Specialist Schools, London (ANNEX)

School	LEA	Specialism	KS4 pupils	2003 avg KS2 points	Gender	**2008 ISV category**	**2008 CVA KS2 to KS4 LCI**	**2008 CVA KS2 to KS4 SIG**	**2008 CVA KS2 to KS4 UCI**	2008 Actual % 5A-C	2008 Jesson est. % 5 A-C	2008 JVA 5 A-C	2008 Actual % 5A-C EM KS	2008 Jesson est.% 5A-c EM	2008 JVA 5 A-C
Anglo European School	Essex	Language	195	28.5	mix	**H**	**978.2**	**Be**	**995.9**	73	76	-3	63	60	3
Crown Woods School	Greenwich	Humanities	308	25.5	mix	**L**	**1005.6**	**Ab**	**1019.6**	58	53	5	31	35	-4
Davennant Foundation School	Essex	Sports	168	28.9	mix	**H**	**1010.1**	**Ab**	**1028.2**	88	79	9	85	63	22
Greensward College	Essex	Technology	271	27.2	mix	**H**	**1007.3**	**Ab**	**1021.8**	87	66	21	60	48	12
Highdown School & Sixth Form Centre	Reading	Maths & Com	183	27.1	mix	**M**	**997.8**	**Av**	**1016.2**	54	65	-11	51	47	4
Newstead Wood School for Girls	Bradford	Humanities	178	24.4	mix	L	**989.2**	**Av**	**1007.3**	47	44	3	24	29	-5
Oakland School	Tower Hamlets	Science	112	26.8	mix	M	**1031.1**	**Ab**	**1053.3**	75	62	13	51	48	3
Oakmead School – Technology College	Bournemount	Technology	224	25.3	mix	L	**993.9**	**Av**	**1010.1**	53	51	2	28	34	-6

School	LEA	Specialism	KS4 pupils	2003 avg KS2 points	Gender	2008 ISV category	2008 CVA KS2 to KS4 LCI	2008 CVA KS2 to KS4 SIG	2008 CVA KS2 to KS4 UCI	2008 Actual % 5A-C	2008 Jesson est. % 5 A-C	2008 JVA 5 A-C	2008 Actual % 5A-C EM KS	2008 Jesson est.% 5A-c EM	2008 JVA 5 A-C
Queensbury Upper School	Bedfordshire	Technology	293	27.8	mix	M	977.1	Be	991.1	63	70	-7	54	51	3
Riddlesdown High School	Croydon	Science	289	28.2	mix	H	980.9	Be	995.1	68	73	-5	59	56	3
Sheffield High School	Essex	Bus & Enterprise	245	28.8	mix	M	965.9	Be	981.1	65	78	-13	58	63	-5
The Archbishop Lanfranc School (Foundation)	Croydon	Sports	197	25.7	mix	M	994.2	Av	1011.7	47	54	-7	32	36	-4
The Cardinal Vaughan Memorial School	Kensington & Chelsea	Maths & Computing	114	30.5	Boys	H	1015.9	Ab	1037.7	90	89	1	90	75	15
The Compton School	Barnet	Technology	153	26.9	mix	M	1015.3	Ab	1034.4	70	63	7	54	45	9
Trinity School	West Berkshire	Arts	188	25.3	mix	L	979.9	Be	997.3	43	51	-8	27	33	-6

Source: iNET (2008)

Table 1.3 above provides an overview of the performance of fifteen[10] schools operating as specialist schools in the summer of 2008. Table 1.4 below summarises the indicators associated with performance of the fifteen schools in table 1.3.

Table 1.4: Contextual Value Added

Judgement indicator from DCSF	**Confidence intervals**	**Expressed in the directory as:**
Below expected	Upper confidence interval (UCI) is less than 1000	Be
As expected	Upper confidence interval (UCI) is greater than 1000 and the lower confidence interval (LCI) is less than 1000	Av
Above expected	Lower confidence interval (LCI) is greater than 1000	Ab

Source: iNET (2008)

The table 1.4 above shows us some interesting information on the utility of CVA as an indicator of school performance. The data also indicated the 'key drivers' for the schools' transformation, being in line with what Professor Alma Harris has claimed:

> "Data and self-evaluation are at the heart of sustaining transformation; the use of data provides a powerful basis for ongoing review and change".

The information shown in Table 1.3 above will become meaningless if it is only used for the purpose of grading schools. Conversely, it can become more valuable when used as an input during drawing up the schools' development plan, especially in measuring whether the schools have performed 'below the expected'[11], 'as expected'[12] or 'well above expected'[13].

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[10] These schools were selected by KCL and were involved with the Cohort 4 School Placement Program between KCL and Malaysia MOE

[11] UCI is less than 1000.

[12] UCI is greater than 1000 and LCI is less than 1000.

[13] LCI is greater than 1000.

To get a clearer picture of how the CVA works, a simple survey was conducted as an input in our analyses on the role of CVA. The samples were made up of a large number of senior teachers from two schools in Essex County, London during the school placement program. The survey tries to answer the question: How far does CVA help schools become more effective? The results are shown in Table 1.5 below.

Table 1.5: How far does CVA measures help schools become more effective: Senior Teachers' Perspective[14]

CVA measures *help us:*	**Agree (%) N = 30**	**Disagree (%) N = 30**
to measure our pupils' performance	75	25
to monitor pupils' progress	60	40
to identify our teachers' performance	55	45
to know the ranking of our school at national level	90	10
to plan programmes for pupils not achieving expected target	85	15
to share information about pupils' performances among the teachers	90	10
to know the sense of urgency among teachers	60	40
to focus on students' learning	75	25
to increase collaboration among teachers	60	40
to identify pupils' specific needs in education	90	40
to do strategic plan for our school	75	25
to achieve our school's goals	55	45
CVA measures *provide us:*	**Agree (%)**	**Disagree (%)**
a good method for Assessment of Achievement Programme (AAP)	70	30
an idea of the factors that influence pupils' progress	45	55
the correlated factors of students' achievement	55	45
reliable information about our pupils' progress	60	40

14 The data was aggregated from 4 point Likert scale (strongly agree, agree, disagree and strongly disagree) to 2 point scale which is 'agree' and 'disagree'.

CVA measures *provide us:*	**Agree (%)**	**Disagree (%)**
valuable data to enhance school's performance	75	25
information on how to help disadvantage pupils	85	15
information on how to sustain continuous growth among the excellent pupils	70	30
CVA measures are *beneficial to:*	**Agree (%)**	**Disagree (%)**
our school's operation	60	40
fulfill school governance expectations	55	45
ensure our schooling system is effective	85	15
CVA is a good measurement *for:*		
comprehensive schools only	/	
all types of school	/	
under performing schools	/	
excellent schools	/	

The significance of CVA measures for the Malaysian School System

In my view the CVA measures are comprehensive, accurate, appropriate, reliable and fair to measure schools' performance, pupils' attainment as well as teachers' performance[15]. However the integrity of CVA measures strongly depends on the integrity of the data. This means that the data collection must be purposeful, time related, complete (not missing), and clean from any ambiguities and prejudices.

Based on our understanding about the CVA concept, we can conclude that CVA measures help us to know more about the degree of achievement of our students at every level of the schooling system, i.e. the national level, state level or district levels. Besides, it also takes into account students' demographic differences.

In Malaysia, I strongly believe that CVA can help our schools to become more effective. For instance, the data at the national level (using national level assessment) will provide us an overall view of the schooling system. Further analyses at the state level can help us identify which states have achieved the top rank and conversely those states which have not achieved the national target. This information can then be used to identify the issues and problems faced by that particular state.

[15] CVA is an integrated as well as comprehensive strategy because it involves multilevel analysis. In this case CVA plays the crucial role as a tool to provide accurate and reliable data as well as comprehensive information in terms of pupils and school as a unit analysis.

Similarly, the state level information can be cascaded down to the district level and school level. Finally, the performances of every student in a particular school could be identified via CVA measures. Thus, the study has strongly supported that CVA as an important source of reliable and valid information for education authorities at every level for any decision-making and planning purposes. In other words, by utilizing the information given by the CVA measures, the practice of data-driven decision making could be fully embraced.

In addition to CVA as an important resource in decision-making, the school level CVA can also be an indicator of the school's effectiveness. If all schools were to use the same examination and assessment, this would allow the government to compare the performance of one school against the others. However, this may not be accurate in most conditions unless contextual factors which are out of our control are taken into consideration. Therefore, CVA measures, taking into account these contextual factors can be appropriately used as school effectiveness indicators, but with a measure of reservation which can be treated as trivial in most cases. For example, one of the respondents had mentioned,

> "the CVA data cannot take into account the immediate problems faced by the exam candidate before he or she sits for the test. For instance, involvement in activities, parental problems, social problems and emotional problems."
>
> (Team Leader, Essex County, 2009)

However, the respondent strongly agreed that CVA could be useful as a tool or an instrument to identify student's attainment as well as the school's performance. CVA according to many respondents is a very reliable measure if the information were specifically used in drawing up the school development plans and strategies to enhance school management. Several of them argued that the CVA is not so beneficial for schools which receive pupils from the good SES since it is difficult to realize the extent to which CVA measures actually help schools to become more effective.

Another perspective from the respondents is that ranking schools based on assessment results are meaningless unless the CVA is used during the beginning or the middle of the school term. In this way, more intervention can be carried out to

help the states, the districts, the schools or the students who have not reached the designated standards. Another view states that CVA's usefulness is limited because it is more or less historical data, and therefore cannot be used as information to plan for the future progress for that particular cohort. Specifically this respondent said:
"In the current situation CVA is a historical data, we do not use the CVA data as an input for future planning"
(Team Leaders of an Autonomous School, 2009)

How CVA measures can help schools to become more effective?

According to Hopkins (1996) students' performance on assessments can be measured in two very different ways, both of which are important. The first is *achievement.* It describes the absolute levels attained by students in their end-of-year tests. Second is *growth,* which in contrast, describes the progress in test scores made over the school year.

In the past, students and schools have been ranked solely according to student achievement. The problem with this method is that achievement is highly linked to the student's socio-economic status or family background. For example, according to Educational Testing Service, SAT scores rise with every $10,000 of family income. This should not be surprising since all the variables that contribute to high-test scores correlate strongly with family income: good jobs, years of schooling, positive attitudes about education, and the capacity to expose one's children to books and travel, and the development of considerable social and intellectual capital that wealthy students bring with them when they enter school.

In contrast, VA assessment measures growth and answers the question: how much value did the school staff add to the students who live in its community? How, in effect, did they do with the hand society dealt them? If schools are to be judged fairly, it is important to understand this significant difference.

Goldstein (1987, 1995) has emphasized on the importance of using multilevel techniques and detailed out the student level data about individual pupils in calculating VA measures. The school can use the model below to know the effectiveness of the school improvement, based on the student attainment. The school can be categorized into four groups of pupils as shown below.

Figure1.2: Matrix

High	**Group 2** High Achievement Low Growth	**Group 4** High Achievement High Growth
Achievement	**Group 1** Low Achievement Low Growth	**Group 3** High Growth Low Achievement
Low		High

Growth

(Source: Hearberg, 2004)

Based on the literature review of the developing countries, group 1 and group 3 represent pupils who came from deprived and disadvantage background (Teddlie, 2000). Therefore it is crucial to explain that CVA helps teachers to identify the strategies on how to assist all groups of pupils based on the CVA added data such as:

i) Special programmes for group 1 which has low achievement as well as low growth
ii) Find what factors influence group 2 students who are high achievers but with low growth
iii) Identify special programmes to ensure group 3 students can sustain their continuous growth; and
iv) Maintain the good performance for group 4 students.

Based on the varied views, approaches, and methodologies in the SER, two models of SER are proposed. The first is based on the school as a unit analysis and involves various factors. In this model, through regressional analysis, it is hoped to reveal a correlation between the school context and the school programme to students' attainment in the assessment as well as determine which factors dominantly contributes to the student attainment.

Figure 1.3: The Model of SER: School as Unit of Analysis

Independent Variable/School Context	Intervening Variable/ School Program	Dependent Variable	Method of Analysis	Result
School Location	Teacher Quality	London Reading	Descriptive	Significant
Type of School	Contact Hours	Test (UK)	Correlation	Not significant
School Size	Teaching Method	GCSE Result (UK)	Regression	
Ethnic Majority	Remedial program	SPM Trial Result (M'sia)		
Parent SES	Intervention Program	SPM Result (M'sia)		
First Language	Extra Class			
Per cent Free School Meal	Professional Learning Community			
Gender				
IDACI				

The second model that is proposed uses pupils as a unit of analysis which involves factors closely related with the pupils' background, such as behavior, ability, aptitude and attitude.

Table 1.6: The Model of SER: Pupils' as Unit of Analysis

Pupil Characteristics	School Characteristics	Score Prior Attainment %	Score Predicted Result %	Actual Result %	Value-Added Point
SEN	Learning Environment	50	55	70	15
EAL	School Department	60	65	75	10
Ethnicity	Teacher Quality	65	70	70	-
FSM	Learning Support	40	45	50	5
Gender	Teaching Style	40	45	55	10
Age	Professional Learning Community	50	55	75	20
Mobility		60	65	70	5
Behaviour		70	75	75	-
Ability		40	45	50	5
Attitude		40	45	55	10
Aptitude		50	55	75	20
Learning style		60	65	70	5

The first model is congruent to some of the respondents' views that every school is different. In contrast, the second model takes into account findings from SER in Malaysia where different styles of learning between boys and girls, and teaching practice employed by male and female teachers does exist. Therefore the second model which has the pupils as unit of analysis has the potential to reveal the correlation between factors of schools effectiveness and factors associated with pupil's attainment.

Our entire respondents agreed that CVA can provide valuable information to enable the schools to develop SDP effectively. It works out in this way: CVA gives teachers in the classroom and the education authorities' information about the characteristics for every child group in the schools. Based on the information HT can then plan programmes which are relevant with the current conditions of the pupils of the particular school. This kind of measurement helps us to ensure that all of our pupils have access and equal opportunity to quality education as required by the educational policies.

Based on the input from the interviews among 20 respondents at Ingatestone and Shenfield which practice VA as an instrument the researcher could conclude that VA measures can be used:

- as a tool for school improvement;
- as a tool for accountability;
- to inform policy-making; and
- for reporting purposes to parents and community.

When asked for more details about the concept and benefits of VA, all the respondents agreed that value added is not a test or assessment for gradings, but as an instrument to measure the effectiveness of teachers to student learning. This point correlates with Hershberg (2005) who is convinced that VA is not a test, but a new way of looking at the results that come from tests so that we can determine whether the students in a classroom, school or district are making sufficient academic growth each year (Hershberg, 2005).

To what extent CVA can help schools become more effective?

VA makes it possible to provide educators with data that allows them to determine the focus of their instructions[16] and their instructional impact[17]. Through this information, teachers, principals, district administrators, and school board leaders can learn whether previously high achievers, middle achievers, or low-achievers are making the most progress, and the extent to which schools and classroom teachers are effective in raising performances (Hershberg, 2005).

Based on Hershberg (2005), a model of assessment was designed. This model consists of several independent variables which are: the context using the mean score for take-off reading as the indicator while the intervening variable is a treatment programme by using the mean score after six months of treatment as an indicator. For instance, every student is required to sit for a test when he or she registers for a new stage[18]. The result of the tests will show the current student's attainment. After six months, the same student is given the same set of questions after he or she has been taught in the classroom. The results of the second test can then show to what

[16] As a tool in identifying which students have benefited the most.

[17] How effective it has been in providing students with a year's worth of growth from where they began the year.

[18] In the UK, most of the schools use CAT as an instrument to measure pupil ability at the beginning of KS 2.

extent the classroom teaching and learning has been effective. Perhaps we might say, there is no significant difference between prior results with the second test as a null hypothesis. If there is a significant difference between the prior results and the results from the second test, we can reject the null hypothesis and accept that there are significant differences between prior results compared with the second test. In this case, we can say that the teaching and learning in classroom for the six months had increased students' achievement in that particular topic. This is summarized in the following table.

Table 1.7: The Model of SER: How Value Added Work

Pupils as Unit of Analysis

Independent Variable	Sit Take off Reading Test and get the mean score	Intervening Variable	Sit Test After 6 Month SIP And Get mean score	Method of Analysis	Result
Age Gender Number of siblings Number of years in kindergarten Parent SES Parent level of knowledge	50	Special Intervention Programme (early intervention in reading and numeracy) Contact Hours between pupils and teacher Teaching Method Remedial program Extra Class Teacher Quality	80	Descriptive Correlation Regression	Significant Not significant

We were also able to categorise the students using the data from the two schools in the study and the CVA measures. The teachers in the school were convinced that the CVA measures could help to identify factors which have the greatest influence on the students' achievement.

> "Futhemore, we could identify the dominant factors that contribute to students' achievement and the factors with less influence. Basically the information that we had obtained was about the teaching styles of teachers, and ensured that pupils' inclinations are compatible with the methods of teaching practised by the teachers."
>
> (Teacher, Essex County, 2009)

VA as a Diagnostic Tool

Almost all the respondents in the school placement programme suggest that VA is supposed to be an indicator that makes it possible to provide educators with data that allows them to determine the *focus* of their instructions (identifying which students have benefited the most) and their instructional *impact* (how effective it has been in providing students with a year's worth of growth from where they began the year). This view supports the Hersberg theory in the discussion earlier.

According to one of the HT, through this information, teachers, principals, district administrators, and school board leaders can learn whether previously high achievers, middle achievers, or low-achievers are making the most progress, and the extent to which schools and classroom teachers are effective in raising performances.

According to Gilchrist et.al. (2004), VA data is most useful for helping individual schools to pinpoint areas of good practices and aspects of school practices that need improvement. Therefore, VA should be used as screening instruments to identify individual pupils whose 'predicted' or 'expected' level of attainment is very different from those observed. More importantly this technique enables a school to take into account factors that may have an impact on the pupil's outcomes such as prior attainment, SES, gender and ethnicity.

As a diagnostic tool, the VA calculation is concerned not with the scores

on an achievement test by itself, but with the difference between this actual score and the projected score. Because the key measurement is between these two rather than on the absolute score alone, it does not matter what the mix of students is in a teacher's classroom or in the school or district as a whole. In this sense, VA levels the playing field across schools of very different socioeconomic status (Hersberg 2004)[19]:

It was argued that, in the current practice the CVA data is a historical data. Because of that, we cannot use prior data to be an input for school development plans specifically for a particular cohort of pupils. In other words, CVA in this particular case is simply an instrument to assess learning.

However, as an education researcher, I strongly believe that CVA data can be used as inputs for future planning. For instance the SPM trial exam results (equivalent to the GCSC in the UK) can become the baseline data for teachers to do some intervention so that the expected targets can be achieved. In this situation, it can be concluded that CVA is a mechanism of assessment for learning because we use the entire results to plan a program that focuses on areas that our pupils are weak in or are at risk for not reaching the expected targets.

[19] Value-Added Assessment: Powerful Diagnostics Test to Improve Instructional and Promote Student Achievement: American Association Administrator; Women Administrators Conference 2004 Monograph. In its focus on growth rather than solely on levels of absolute achievement, value-added broadens our understanding of the contribution to instructions make to student learning. (Ted Hershberg, 2005)

Figure1.4: The 'VA Grid' giving Descriptions for Different Combinations of Prior and Concurrent VA

		Value-added Grid		
Concurrent Value-added	+or ++	This child is doing better than expected, however they are no longer as far ahead as they used to be.	This child is doing better than expected and this may have been a consistent characteristic over time.	This child was probably on track before. They have made excellent progress and have moved further ahead.
	0	This child is doing as well as expected. However, they have moved from a position where they were ahead of similar children.	This child is on track and this is probably a consistent characteristic over time.	This child was probably underachieving before, however they have made excellent progress and are now on track
	-or--	This child was probably on track before but has fallen behind and now underachieving.	This child is underachieving and this may have been a consistent characteristic over time.	This child was probably underachieving before. They have made good progress, but they still have some catching up to do.
		-or--	0	+or++
		Prior Value-added		

(Peter Tymms & Stephen Albone, 2002)

A DHT in the study commanded that the VA measure is a way of determining pupils' attainment by measuring the progress made between key stages against the national average. This is seen to be the best guide to a pupil's ultimate performance. According to another respondent, an AHT who is an expert in assessment for learning under SIP, VA assessment is not just a tool with which to measure progress, however, according to him:

> "VA as a tool can certainly be useful to people working to raise student achievement. So think of it as a stopwatch - it doesn't make people run any faster, but you can use it to time members of the track team, in order to decide how to maximize the strengths of each runner - determining who should run the anchor leg of the relay, how fast a miler should run the first lap, and what training regiments to implement - to achieve the team's overall goals."
>
> (Assistant HT, Essex County School, 2009)

Conclusion and Recommendation

Taking account of the Coleman et.al. (1966) and Jencks et.al. (1972) reports as a challenge to school effectiveness researchers, we need to review and examine what, and how schools can give equity and social justice to the disadvantaged group of students who are solely dependent on schools, because the primary purpose of schools is teaching and learning (Sammons, 1999). School effectiveness is also obviously dependent on effective classroom teaching (Cohan, 1983; Scheeren, 1992; Mortimore, 1993; Creemers,1994). Meanwhile Sammons (1999) also suggests that there are correlations between the focus on teaching and learning in school and teacher effectiveness.

Having said that, every school should have planned and structured CPD to increase teachers' competencies and motivation to teaching. Every classroom teacher should be competent in curriculum, pedagogy and assessment. These are the generic knowledge for teachers and are in constant dynamic change. The question is to what extent the HT, DHT and AHT as well as the classroom teachers have the competencies to measure the performance of pupils and schools objectively. As instructional leaders, one must have clear reasons to explain our successes and the factors that contribute to the successful school.

According to Reid (2008) most successful schools in the UK are clear about the reasons of their successes. These particular schools have the ability to use and analyze data in order to act and to maximize every student's attainment. The study shows that data is one of the most important tools in raising student achievement (Reid, 2008)[20]. So we can derive to a conclusion that the successful schools use data effectively.

In line with this, it is highly recommended that CVA measures be used by all schools in Malaysia to ensure that every pupil have access to quality education. In addition, by using information from CVA for policy making, we can ensure that these activities are based on appropriate data and information which is fair and reliable. SER ought to be given a high priority in school improvement programmes as it can contribute to change and innovation in school practices.

Researchers in SER should thus use both qualitative and quantitative approaches. In doing so, answers to questions of what is, why and how school effectiveness can be achieved can be consolidated for the benefit of education. In addition, research results should be disseminated nationwide to initiate policy debates, consideration of alternatives and planned action on sustaining success or mitigate low performances of schools. Southworth, 1994 claimed that developing effective schools can be approached in a number of different ways, however, approaches should be integrated to provide a comprehensive strategy. CVA measures and its analyses is the best way to gather school-specific information, and proven strategies to create comprehensive strategies such as those suggested by Southworth (1994).

[20] Elizabeth Reid is the chief executive of the International Networking for Educational Transformation, in foreword; Data driven school transformation; educational outcome and value added by specialist school and academies

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