Integrative Cognitive-Affective Learning in a Primary Science Lesson

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Abstract: The first category of Affective Domain objectives in Bloom's Taxonomy is about "Receiving". In it, the first subdivision listed is "Awareness" (Krathwohl, Bloom & Masia, 1964). Since these categories are intended to be hierarchical in ascending order of internalization, it is important that young learners be given ample opportunities in their learning experiences in class to be aware of positive values and effective life skills. This paper reports a feasibility study on the adoption of an integrative cognitive-affective learning approach in a primary school science lesson. 37 primary six students in a Singapore primary school were taught the concept of centre of gravity, including a hands-on activity to find the centre of gravity of an irregularly shaped cardboard by using a plumbline. After reviewing how a plumbline works, their teacher then led them into a discussion on the question "Who is the plumbline in your life?" a reference to identifying positive role models in their lives. From the transcript of the students' in-class sharing and their written responses to the question, it is clear that the integrative cognitive-affective learning approach did enable students to present their ideas and learning experiences in the affective domain quite readily. This conclusion provides a valuable lead to a follow-up project on whether students who are exposed to such integrative learning approaches will be more capable and more aware of identifying important positive social habits or values. If so, then the teaching of values in schools could take on a whole new dimension, that of borrowing students' learning energy in the cognitive domain to learn values and life skills in the affective domain.

Key words: Affective Learning; Attitude; Life Skills; Primary Science, Values

Introduction

Education is often cited as a key area responsible for developing both individuals and societies to what they are today (Organization for Economic Co-operation and Development, [OECD], 2012; Zimmer & Schunk, 2003). Much of the progress can be attributed to how we as individuals think, learn, apply and solve problems. As a community, people build on each other's knowledge and skills and hence create new knowledge and new skills that are supposed to improve the quality of our lives. Learning to create new information and skills has been described in three distinct but closely related domains based on the learning outcomes for that learning experience. These are the cognitive, affective and psychomotor domains described by Bloom (1956) and widely referred to in all areas of learning even till today (Buehl, 2009; Krathwohl, Bloom & Masia, 1964). Of these, the first and last domains are often dealt with effectively and efficiently in most educational systems. The affective domain, on the other hand, is not as easily handled by teachers in class because of the nature of affective learning outcomes (Krathwohl, Bloom & Masia, 1973; Martin & Briggs, 1986). There are also challenges in assessing these affective learning outcomes (Anderson & Bourke, 2000; Popham, 2010)

Cognitive and psychomotor learning outcomes can be specifically expressed as behavioural statements. Action words are used in cognitive and psychomotor learning outcomes, like "..students should be able to '*state*', '*explain*' or '*perform*' …". These outcomes are behavioural in nature and teachers can assess students' performances quite effectively by comparing to model answers or acceptable performance standards. Students are also able to celebrate progress and improvement as they can see and experience for themselves the achievements they have made.

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Affective learning outcomes are usually stated less concretely. Words like "appreciate", "aware" and "relate" are often used in describing what students should be able to experience. These words make assessment of affective learning outcomes more subjective and may require various modes of testing and judgments (Anderson & Bourke, 2000; Melton, 1997). This situation can lead to grey areas of assessment resulting in students' learning experiences in the affective domain being less impactful than in the other two domains.

Despite this comparison of learning experiences in the three learning domains, the importance of developing students' wisdom, and hence their mental maturity, in schools cannot be overlooked. Educational systems have an important role to play in the economic and technological progress but it can be disastrous if these same systems fail to develop people's attitudes and social behaviors at all or even positively. The Swiss National Centre for Competence in Research, (2012) noted that

> "…emotions and other affective phenomena play a central role in human behaviour, both in a positive way, optimizing performance and well-being, and in a negative sense, encouraging violence and fostering psychopathology."
>
> Swiss National Centre for Competence in Research, (2012)

Popham (2010) in his book, Everything school leaders need to know about assessment, advocates the need for more attention on assessing students' affective learning outcomes.

> "If educators care about students' future well-being, and few educators do not, then educators must be seriously attentive to students' current affect" (p.157).

It is therefore important for educators and policy makers to continue emphasizing the infusion of value education and the teaching of life skills in school. Given the growing concern on anti-social behaviours in societies and the frequent terrorist-related incidences globally, it is even more critical for teachers and governments to pay greater attention to school-based learning experiences in the affective domain. Presently it is common to help students pick up values and good social behaviours by relying on positive peer pressure or explicitly urging students to model well-known figures with good backgrounds. These may be good approaches but leaving students to learn values and social skills by chance or by telling them what they should do is just not an option. Today our students have too many distractions. For example, apart from preparing for examinations, high technology entertainment and communication gadgets will probably keep them very busy on a normal day. It will be difficult for them to focus their learning energy on the affective domain. Teachers, parents and educators will need to play a more active role to provide learning opportunities for their children to learn good social values and to develop positive learning attitudes and effective life skills. To do these in school, there are two possible approaches. We can implement programmes in schools that explicitly teach students how to be good and responsible lifelong learner-citizens, and we can also infuse affective learning opportunities into their cognitive and psychomotor learning experiences. There are already good efforts made with the first approach. This paper proposes a pedagogy using the second approach, to infuse affective learning activities into science lessons by teaching students science as usual in the classroom but lead them to surface positive values and social skills that can be illustrated by the concepts or skills they have just learnt or experienced.

The first category of Affective Domain objectives in Bloom's Taxonomy is about

"Receiving". In it, the first subdivision listed is "Awareness" (Krathwohl, Bloom & Masia, 1964). Since these categories are intended to be hierarchical, in ascending order of internalization, it is important that young learners be given opportunities in their learning experiences in class to be at least *aware* of positive values and effective life skills. Hopefully, the raised awareness will make a lasting impact on them as they enter adult learning lives.

The Singapore Primary Science Curriculum

Like most educational systems in Asia, the Singapore Education System is frequently referred to as a good model for developing and developed countries (Barber & Mourshed, 2007; Dornan, 2008; International Alliance of Leading Education Institutes, 2012). Despite these good reviews, the government and people of Singapore remain concerned about the intellectual, social and emotional well-being of the people and the survival of the nation.

The Primary Science Syllabus (Ministry of Education [MoE], 2012b) comprises five main themes, namely, Diversity, Cycles, Systems, Interaction, and Energy. Science is taught only from the third year in main stream primary schools and assessed through a high-stake national Primary Six Leaving Examination (PSLE) in the final year of primary school. As the students' PSLE performance has all along been very important for placement purposes at secondary schools, parents and students are understandably very concerned about school results. Thus the Singapore government is prompted to encourage schools to balance this concern with programmes and initiatives supporting learning in the affective domain. Some of these include the Character and Citizenship Education, Social Emotional Learning, Co-Curricular Activities and the 21st Century Competencies (MoE, 2012a,c).

The Integrative Cognitive-Affective Learning Approach

In 2006, the main author published a paper on the efforts of the Singapore Chemistry Educators in bridging the cognitive-affective divide in the subject of Chemistry (Tan, Goh & Chia, 2006). In 2009, the author proceeded to explore how schools in Singapore infused affective learning opportunities in science education and through several workshops and lesson observations, an integrative cognitive-affective learning approach was unveiled (Tan, 2009). This approach uses students' learning experiences in the cognitive domain to illustrate an everyday experience in the affective domain, like surfacing a positive social value, habit or life skill. Several trials were also successfully conducted in secondary school science lessons (Tan, Heng, Lin & Tan, 2010). In 2010, the co-author collaborated with the main author on the primary science front and this paper reports the feasibility study done by using the same integrative cognitive-affective learning approach in a primary science lesson. Findings from this study are intended to support a more in-depth research project currently being designed to study the impact of integrative cognitive-affective learning approaches on student-initiated identification of positive social values. This forthcoming project aims to find evidences to show that compared to students who are taught science through the usual cognitive approaches, students taught through the integrative cognitive-affective approach would be more capable of identifying positive social values and habits. Thus, the findings from this feasibility study would provide important clues on how the integrative cognitive-affective learning strategies can be designed for the follow-on study.

The main objective of the feasibility study is to observe how ready primary school science students are in responding to an affective learning task by using a newly learnt science

concept or acquired skill. For example, how a lesson on using a plumbline to determine the uprightness of a tall structure, like a building or flag pole may be used for students to reflect on the importance of positive role models, like a well-known scientist, a great man in history, or even a caring close relative or friend.

Methodology

This study involves an observation of a science lesson conducted by the co-author, an experienced science teacher. The approach involves linking the cognitive and affective approaches used in the lesson. The cognitive approach refers to the delivery stage of the science concept of "centre of gravity" and also the hands-on activity stage (which may also be referred to as the cognitive-psychomotor approach). The affective approach refers to the two strategies employed by the teacher: (1) a short end-of-lesson discussion among students on a socially accepted value that can be illustrated by the science concept taught and, (2) a written task in the form of a worksheet provided to students to be completed at the end of the lesson. The socially accepted value for this lesson is that of positive role-modeling with students being asked to identify a positive role model in their life, someone whom they can compare their own attitudes and aspirations to.

In validating the method of observing a cognitive-affective science classroom for this study three phases were implemented over a period of a year (2010-2011). These phases support a similar classroom observation procedure developed at the University of Virginia which consists of three important aspects linking input and output of the observed teaching-learning system. The aspects considered are namely "(1) inputs/resources, (2) teachers' interactive competencies, and (3) outcomes, such as student learning (Stuhlman, Hamre, Downer, & Pinata, 2010, p.2)."

(1) Inputs/ Resources: Relevance and suitability of the teaching-learning resources

For this study the science concept taught was on "centre of gravity". Table 1 illustrates the three stages of the lesson.

Table 1

Three stages of the lesson on centre of gravity

Stage	What students need to do	Resources
1 (Cognitive approach, about 20 minutes)	a. Lesson on center of gravity b. Instructions on how to complete the activity on finding the centre of gravity of the irregularly shaped cardboard c. Demonstration on how to use the plumbline to find the centre of gravity of the irregularly shaped cardboard.	Presentation slides Cardboards Plumbline Pencil Ruler Plumbline Pin
2 (Cognitive-psychomotor approach, about 35 minutes)	a. Students working in small groups of three's or four's were given the materials. b. They were to work with a plumbline to find the centre of gravity of the cardboard. c. To validate their findings, they had to show the teacher that they could balance the cardboard by placing their fingertips below identified centre of gravity	
3 (Affective approach, about 5 minutes)	a. Teacher got students to reflect and discuss in class by asking them the following question "Who are the 'plumblines' in your life?" b. Students were to complete a worksheet on the concept including a section for them to reflect in writing the same question asked in class	Plumbline Worksheet

(2) Teachers' interactive competencies: Professional competency of Mrs Sam

The teacher, Mrs Santhanasamy (or Mrs Sam) the co-author of this paper, has more than 20 years of teaching experience in a primary school. She is currently the lead science teacher in her school. Her role is to guide and develop the younger and new science teachers. In 2010 she spent ten weeks at the National Institute of Education as part of her Professional Development Learning Experience, a Ministry of Education-sponsored programme for long-serving education service professionals like Mrs Sam. During those ten weeks, Mrs Sam and the main author examined the entire Singapore primary science curriculum in an effort to craft teaching-learning activities that could potentially integrate cognitive and affective learning opportunities for primary science students. After due process of consulting several experienced school educators and academics, including a primary science curricular specialist, several science topics were identified. Among these, the topic of "centre of gravity" was chosen for this feasibility study. The integrated strategy involves teaching students a science concept as usual. That is the teacher will use cognitive learning approaches like inquiry, problem solving and meaning making in designing the lesson activities. However, at the end of the lesson, the teacher would provide a task for the students to surface or identify a positive social value or habit that can be illustrated by the science concept taught. This strategy had also been successfully tried out by teacher collaborators teaching in secondary schools (Tan, Heng, Lin & Tan, 2010).

(3) Outcomes, such as student learning: Evaluation of student learning through an integration of cognitive and affective learning approaches

The one-hour lesson was taught to 37 Primary Six students (20 girls and 17 boys) at a government co-educational primary school located in northern Singapore. The lesson started off as a cognitive learning experience for the students. As the teacher taught the students on the use of a plumb line, the concepts of gravitational pull and centre of gravity, the main author observed the behavioral and verbal responses of the students. The students were also broken up into small groups, given an irregularly shaped cardboard and a plumbline to find its centre of gravity. Towards the end of the lesson, the last five minutes, the teacher brought the students' attention to that of "a real life situation". She asked the question "Who are the plumblines in your life?" The students' responses were then transcribed (Annex B) and analyzed together with their written responses (Annex C) in the worksheet (Annex A). The worksheet provided students an avenue to deepen their thoughts on their reflection about how the use of a plumbline may also illustrate the importance of having a positive role model in their lives.

Results

Information collected for this study include

1. Students' spontaneous oral responses to the teacher's question of "Who are the plumblines in your life?" The transcript of their responses (Annex B) was recorded by the main author, the observer.
2. Students' written responses (Annex C) to the same teacher's question of "Who are the plumblines in your life?"

This information was then analyzed, keeping the objective of the study in mind. That is, to observe how ready primary school science students are in responding to an affective learning task by using a newly learnt science concept or acquired skill.

Discussion

As a feasibility study, the results (Annexes B and C) showed clearly that primary school

science students are able to respond appropriately to an affective learning task by readily giving relevant examples from their everyday life experiences. The results also showed that it is possible to obtain from these young students a list of alternative ideas, a valuable reflective thinking skill known as "generating" (Fogarty, 2004) and when asked to explain, students can articulate their reasons for their choices of "role models" clearly and logically.

Moving on, the results from this study have also provided several alternatives to the affective learning lesson, especially for the topic of "centre of gravity". For instance, the use of the plumbline to check for *uprightness* of an object (pun intended) and to find the centre of gravity of an object where one can actually balance the object on the fingertip so as to understand the concept of *stability* (again, the pun is intended) are excellent opportunities for the teacher to help students surface awareness of the related positive social values. Thus, a plumbline is like being a person with an "upright" personality or being a good role model whom the student can look up to or aspire to be when she or he grows up. Habits of mind like being focused, or having a passion in life that will help us live life peacefully, can be illustrated by balancing the card's centre of gravity on a fingertip. Thus, teachers can use the concept of centre of gravity to explain to students that if they can find a passion or a valuable meaning in life, these can be their respective "centre of gravity". They will find their lives stable because their lives can be "balanced" on that passion or meaning in life.

CONCLUSION

The integrative cognitive-affective learning approach in a science lesson has indeed been effective in raising primary school students' awareness of a positive social habit or value by reflecting on a newly learnt science concept or acquired skill. This feasibility study has thus provided this valuable lead to a follow-up project on whether students who are exposed to such integrative learning approaches will be more capable and more aware of identifying important positive social habits or values. If this so, then the teaching of values in schools could take on a whole new dimension, that of borrowing students' learning energy in the cognitive domain to learn values and life skills in the affective domain.

This integrative cognitive-affective lesson was an hour long but impressions from the learning experiences, both of the students and the teacher (including those of the observers), are very likely to be lifelong. If students find the science concepts important (hopefully not just for passing and doing well in examinations) they are likely to also remember the affective messages mentioned in the lesson. With more such exposures, the impact of learning in the affective domain over the twelve years a student is in school should be comparable to those in the other two domains.

REFERENCES

Anderson, L.W & Bourke, S.F. (2000). *Assessing affective characteristics in schools*. Mahwah, N.J.: Lawrence Erlbaum Associates, Inc.

Barber, M., & Mourshed, M. (2007). *How the world's best-performing school systems come out on top*. London: McKinsey & Co. Retrieved July 24, 2012, from http://www.mckinsey.com/App_Media/Reports/SSO/Worlds_School_Systems_Final.pdf

Bloom B. S. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay Co Inc.

Buehl , D. (2009). *Classroom strategies for interactive learning*. International Reading Association, Inc.

Department of Statistics, Singapore (2011). *Monthly digest of statistics of Singapore. July*

2011. Singapore: Department of Statistics.

Dornan, J. (2008). *Learning from Singapore: The findings of a delegation of North Carolinians that examined education and the economy*. Raleigh, NC: Center for International Understanding, the University of North Carolina.

Fogarty, R. (1994). *Teach for metacognitive reflection*. Glenview, Illinois: Pearson, Skylight.

International Alliance of Leading Education Institutes. (2012). *Teacher Education*. Retrieved July 24, 2012, from http://www.intlalliance.org/ialeimagazine/teachereducation/

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). *Taxonomy of Educational Objectives, the Classification of Educational Goals. Handbook II: Affective Domain*. New York: David McKay Co., Inc.

Martin, B.L. & Briggs, L.J. (1986). *The affective and cognitive domains: integration for instruction and research*. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc.

Melton, R. (1997). *Objectives, competences and learning outcomes: developing instructional*. London: Kogan Page Ltd.

Ministry of Education [MOE], (2012a). *Ministry of Education Homepage*. Retrieved July 24, 2012, from http://www.moe.edu.sg

Ministry of Education [MOE], (2012b). *Primary science syllabus*, 2008. Retrieved July 24, 2012, from http://www.moe.gov.sg/education/syllabuses/sciences/files/science-primary-2008.pdf

Ministry of Education [MoE], (2012c). *Nurturing our young for the future. Competencies for the 21st Century*. Retrieved July 24, 2012, from http://www.moe.gov.sg/committee-of-supply-debate/files/nurturing-our-young.pdf

Organisation for Economic Co-operation and Development [OECD], (2012). *Education, economy and society*. Retrieved July 24, 2012, from http://www.oecd.org/topic/0,3699,en_2649_39263294_1_1_1_1_37455,00.html

Popham, W.J. (2010). *Everything school leaders need to know about assessment*. London: Sage Ltd.

Stuhlman, M.W., Hamre, B.K., Downer, J.T. & Pianta, R.C. (2010). *A practitioner's guide to conducting classroom observations. Part 1. Why should we use classroom observation*. Virginia, VA: University of Virginia, Center for Advanced Study of Teaching and Learning (CASTL)

Swiss National Centre for Competence in Research, (2012). *Affective sciences: Potential applications*. Retrieved July 24, 2012, from http://www.affective-sciences.org/areas-applications-overview

Tan, K.S. (2009, June). *Projects on Learning Engagements in Affective Science Education (PLEASE)*. Paper presented at Redesigning Pedagogy International Conference 2009, Singapore.

Tan, K.S., Goh, N.K. & Chia, L.S. (2006). Bridging the cognitive-affective gap: Teaching chemistry while advancing affective objectives: The Singapore curricular experience. *Journal of Chemical Education*, 83,(1), 59-63.

Tan, K.S., Heng, C.Y., Lin, Z.K., & Tan, S.H. (2010, December). *Teaching school science within the cognitive and affective domains*. Paper presented at the Global Chinese Conference on Science Education, Hong Kong.

Zimmerman, B.J. & Shunk, D.H. (2003). *Educational psychology: a century of contributions*. New Jersey: Lawrence Erlbaum Associates,Inc.

Annex A: Lesson Worksheet

Title of Activity: "KEEPING THINGS UPRIGHT"

Background Information:

Definition: The Centre of gravity of an object is the point through which the total weight of the body can be considered to act.

Group activity in class

In your group, use the plumb line to find the centre of gravity for your aircraft (a cardboard cut out).

(1) Punch 3 holes with the pin anywhere around the exterior parts of the planes.
(2) Loosen the holes slightly with the pin so that the plane can hang loosely and freely.
(3) Suspend the object to swing freely on the pin through one of the holes created.
(4) Attach a plumb line to the pin (keep holding the plump line with your finger) and draw the line on the plane using a ruler and pencil.
(5) Repeat the same steps for the 2nd and 3rd hole.
(6) Take turns doing the various steps.
(7) Where the lines intersect, is the centre of gravity.

For class discussion: *Responses (Cognitive Domain)*

(1) What force is acting on the plumb bob? Which direction is this force acting?

(2) Were you able to find the centre of gravity for your plane? What precautions did you take to ensure good results?

(3) Explain the reason/s for the following situations in relation to the centre of gravity.
  (a) Manufacturers often try to make their products with the centre of gravity as low as possible. They do this by making the products heavy at the bottom and giving them a broad base. Why? Give 2 examples of such products.
  (b) A tight rope walker often carries a weighted pole or an umbrella. Why?
  (c) It helps in the designing of vehicles such as cars and buses by keeping their centre of gravity very low. This is done by placing the engine very low in the car. Why?
  (d) It is dangerous for passengers of small boats to stand up in order to change seats. Why?

For class discussion and written homework: *Responses (Affective Domain)*

(4) A plumb line is able to help us tell if a structure like a building is upright or not and to find the centre of gravity of things.
  (a) What are some 'Plumb lines' in your life that direct you to do right things?
  (b) In what way/s is a plumb line like a model student who sets good examples of conduct and behaviours to others?

[For responses to (4) (a) and (b), see Annex C.]

Annex B: Partial transcript of the last five minutes of the affective learning-infused science lesson.

T: 00:00[1] …the last portion of your worksheet…it is actually about the ending of our lesson today. We've learnt about the plumbline and how they were able to use the plumbline to find the centre of gravity…

Manufacturers produce products with a broader base at the bottom. Why should they do that?

A tight rope walker walking on a tight rope, why does he hold a pole or an umbrella?

When you are on a boat, and you want to change place. You stand up and the boat will start to rock.

All these things have a connection to the centre of gravity.

T: 01:05 Now we are going to move into something to do with the heart. What we have been doing (so far) has got to do with the head, the cognitive side, we called it. The affective side has to do with the heart. Plumbline is use to find out if something is upright. So if you look at the question (in the worksheet), the next one, page 3. "What are some plumblines in your life that direct you to do the right things?"

Are we talking about the actual plumbline? We are connecting this to a lesson of the heart. Anybody wants to give an answer? What you think are some plumblines? What the reasons for (us to have) some plumblines?

S1: To balance all your kindness.

T: 02:04 Ok, what do you mean by that? Do you have plumblines to help you do the right things? What are some of the plumblines in your life?

S2: Your conscience.

S3: people around you.

T: 02:22 Yes, people around you. Can you explain further what you mean by people around you?

S3: Teachers, parents.

T: OK, teachers, parents. Why do you say they are your plumblines?

S2: Teach you to do the right things.

[1]Note: Timing refers to the last five minutes of the one-hour lesson.

T: 02:43 What other plumblines to you have in your life? "Name of Student 4"..I heard something…

S4: "Name of Student 5" is my plumbline.

T: "Name of Student 5" is your plumbline. Can you explain further why he is your plumbline?

S4: ….(inaudible comment)

T: (repeating comment)..he always scold you when you do the wrong thing.

S4: Yah…

T: 03:17 So if "Name of Student 5" is your plumbline then he is a model student, right?
Ok, let us go on to the next question. I want you to think about in what way is the plumbline like a model student who set good examples of conduct and behaviour? [Note: teacher meant how a model student is like a plumbline?]

S6: To help us to learn from them.

T: 03:46 To help us to learn from them right. Any other ways? Try to connect it with what you did today about the plumbline. [04:05: Bell rang to signal ending of lesson.] Yes "Name of Student 5".

S5: ….(inaudible comment)

T: 04:10 Very good, I like his answer. [Teacher help student to stand up and face the class.] Ok but you were not listening and he is going to tell you loudly.

S5: [Standing and facing the class.] Plumbline in your life is like our graciousness, our inner self. Someone who is a plumbline in your life will help you attain a higher position.

T: 04:51 Very good. [S5 returned to seat amidst clapping among classmates.]
So I want you to go back home to think about what you have been doing today…in science, and to relate it to your life.

Science is about real life situations. It is about connecting things.

So think about it and write down your responses and I will get it from you on Monday.

[05:14 Lesson ended.]

Annex C: Selected students' responses to affective learning task in worksheet

Title : "Keeping things Upright" (Plumb line & Centre of gravity Lesson)

(4) (a) What are some 'Plumb lines' in your life that direct you to do right things?

- Teachers, parents, relatives and good friends
- Elderly
- Our feelings and emotions
- My conscience
- Parents, teachers, friends and prefects help me in my life to direct me to do right things such as behaving myself in class, handing in homework punctually and making right decisions.
- Some good books that I have read
- Parents and teachers. They guide us almost half of our lives and bring us to the right path, leading to a bright future.
- Parents, friends and teachers. Whenever I do something wrong, they ask me to re-think if what I am doing is right and will benefit myself and others.
- Classmates
- My conscience and the good people around me keep me on the avenue of good and not on the streets of evil.

(4) (b) In what way/s is a plumb line like a model student who sets good examples of conduct and behaviours to others?

- The model students can make the bad students turn good and they will strive to achieve great things.
- A model student sets good examples which help to lead others to the right direction and not be influenced by wrong things.
- It is to balance our inner self, graciousness and kindness so that we make improvements to ourselves and the place around us.
- A role model for good conduct.
- To learn from these model students, correct myself when I am wrong.
- Influencing others to perform well.
- A model student will influence and be an impact to others.
- A model student teaches us self discipline as we try to follow good examples.
- A model student is not totally perfect but he is better in conduct and behaviour than others. A plumb line helps us tell if a structure is upright. Similarly, a model student helps other students by showing good examples to follow. My aspirations in life also act like the plumb line by showing that one can achieve anything in life if he believes in himself.
- A model student is a guide for others to follow.
- A model student shows the right way and a plumb line will help people measure things that are upright.

Note: Some of the selected examples above had been corrected for grammatical mistakes and sentence structures.