



HotTOPIC

The Teacher and the Curriculum

When it comes to curriculum, the MOE syllabus is only the tip of the iceberg. Teachers are the ones who do most of the work in developing and planning a curriculum, and such work requires professionalism and deliberation—lots of it.

Dr Christina Lim-Ratnam recalls the time when she was with the Curriculum Planning Division at the Ministry of Education (MOE). She was part of the team that developed the Literature syllabus for secondary schools.

“Boy, did we deliberate!” she says. They deliberated about alternatives, how the examination format should be changed, and whether local literature should be included, among other things.

But teachers who use the syllabus are not involved in the planning of the curriculum, nor are they privy to these discussions. They merely enact the given syllabus.

This is where *school-based curriculum development* (SBCD) comes in, to help teachers make sense of what they’re teaching.

School-based Curriculum Development

So why do teachers need to develop the curriculum in their schools when MOE has already defined the syllabus?

“If we really own what we teach, we should engage in SBCD,” asserts Christina. It includes choosing the teaching materials you use and designing the units and lessons.

SBCD, also known as *school-based curriculum innovation* (SCI) in Singapore, is closely tied to “Teach Less, Learn More” (TLLM). As part of the TLLM initiative, MOE started the *Ignite!* project to provide professional development and funding support in SCI for participating schools.

Christina sees curriculum as larger than the syllabus, which is just the tip of the iceberg. The syllabus is just a reference for teachers to plan a curriculum that will encourage positive and useful learning experiences for their students.



A curriculum is also about your convictions, your beliefs, about the aims of education.

- Christina Lim-Ratnam,
*Curriculum, Teaching and Learning
Academic Group*

School-based Curriculum Development

- >> Why should teachers be involved in developing the curriculum?
- >> Teacher professionalism: Does it matter in curriculum planning?
- >> Will a structural change enhance pupils’ learning outcomes?
- >> How does a curriculum framework enrich the learning experience?
- >> How can teachers build on an existing problem-solving process?

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Tribute to Colin J. Marsh

Read about the late Professor Marsh's contributions to curriculum development and planning in Singapore in our online version.

References

- Eisner, E. W. (2002). *The educational imagination: On the design and evaluation of school programs* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Hargreaves, A., Earl, L., Moore, B., & Manning, S. (2001). *Learning to change: Teaching beyond subjects and standards*. San Francisco, CA: Jossey-Bass.
- Marsh, C. J. (2009). *Key concepts for understanding curriculum* (4th ed.). Oxon, UK: Routledge.
- Schwab, J. S. (1969). The practical: A language for curriculum. *The School Review*, 78(1), 1–23.
- Schwab, J. S. (1973). The practical 3: Translation into curriculum. *The School Review*, 81(4), 501–522.
- Thornton, S. J. (2001). Educating the educators: Rethinking subject matter and methods. *Theory and Practice*, 40(1), 72–78.

“A curriculum is also about your convictions, your beliefs, about the aims of education—it could even be as broad as that,” says Christina.

The late Professor Colin J. Marsh introduced SBCD to Singapore teachers in 2006, when he was invited to work with the TLLM prototype schools. His model of SBCD was a wide-ranging one, with variations in time commitment, type of activity, and the persons involved (Marsh, 2009).

“Even for the selection of materials, he may consider it as SBCD,” says Christina, who had worked with him. “That means, SBCD is basically the work of any professional teacher.”

Reclaiming Teacher Professionalism

Indeed, more than anything else, curriculum development calls forth the professionalism of teachers, or what Andy Hargreaves and colleagues (2001) call “professional discretion”. But first, they need to have autonomy.

“We need that autonomy to be able to say: ‘Hey, I planned my lesson myself and I’m carrying it out the way I want it to be.’”

This may seem unnecessary in a centralized education system like ours, where even the textbooks we use have been pre-approved by MOE. But that is precisely the mind-set that needs to change, says Christina.

In an article published in 1969, titled “The Practical: A Language for Curriculum”, Joseph Schwab sounded a rallying call for educators to reclaim the curriculum from theorists, back into the school. Curriculum needs to be grounded in reality.

Schwab says the stuff of theory is abstract, an idealized representation of real things. But a curriculum in action deals with “real things, real acts, real teachers, real children”—things that are far richer than their theoretical representations.

That’s why his series of articles was called “The Practical”—we have to come back to the practical aspect of teaching, he contends.

“We can still reclaim the curriculum if people would reclaim their professionalism, realize what it means to be professional, and act on it,” Christina affirms.

Gatekeepers of Curriculum

Stephen Thornton (2001) describes teachers as curriculum gatekeepers. You are the one who decides what to let in through the pearly gates of curriculum and what to exclude.

As gatekeepers, you have to prioritize, you need to know the purpose, and you must know when to say “no”. Christina urges teachers and heads of department to exercise their professionalism to think through, decide and own what is taught.

“That’s why *teach less*, so that they can *learn more*,” notes Christina. “What is the *less*? What do you leave out and what is retained so that they can learn more?”

The only way to arrive at these answers is to deliberate. Deliberation is at the heart of curriculum development. This explains why Christina and her colleagues deliberated their hearts out when planning the Literature syllabus.

Schwab described the deliberation as “complex and arduous” because teachers have to weigh the alternatives, costs and consequences.

And there will always be plenty to deliberate about. “You have to deliberate about the learner in your classroom. You have to deliberate about the teachers: how ready they are to deliver the curriculum,” says Christina.

“You have to deliberate the subject matter,” she continues. “There are a lot of assumptions and misconceptions out there, even about the subject matter.” (Read about developing a curriculum for character and citizenship education in “Educating Values-driven Citizens”, *SingTeach*, Issue 36.)

MOE’s syllabus is for the masses, Christina reminds us. They don’t know your school or your students. “You have to deliberate about even the milieu, that means the context, such as the type of parents, the type of background that students come from, and things like that.”

Christina Lim-Ratnam is the Guest Editor of this issue. She is a Senior Lecturer with NIE’s Curriculum, Teaching and Learning Academic Group. She teaches curriculum implementation, primary education, and teacher professional development and learning.

Teacher Professionalism in Action

When she was a School Staff Developer, Ms Dalina Abdullah had some pretty big questions on her mind about professional development of teachers and the work they do. How do they choose among different pedagogies? How should they plan the curriculum so students can learn better? These questions “plagued” her, so she decided to find answers for herself.

“The realization of any educational goal, end and purpose depends on the professionalism of teachers,” wrote Dalina, in the opening line of her Master’s thesis.

She believes that teacher professionalism must be studied from the teachers’ perspective. At the same time, she was keen to find out how teachers go about planning a curriculum.

Conceptualizing a Curriculum

As part of the research for her Master’s, she decided to observe two teams of teachers in a secondary school as they developed a curriculum for lower Secondary Humanities in History and Geography.

“I was trying to explore teachers’ experience and enactment of professionalism in terms of planning the curriculum,” explains Dalina, now Head of the English Language Department at Tanglin Secondary School.

She was also interested in the types of knowledge and beliefs they drew upon as they did so.

Using MOE’s 2013 Humanities syllabus as a basis, the teachers met often to conceptualize their curriculum. “I looked at how the teachers generated alternatives for the curriculum, and how they selected the details to include.”

Teacher Professionalism in Practice

The work that teachers do is closely tied to teacher professionalism. “It is critical to realizing educational goals,” says Dalina.

Teacher professionalism is often linked to teachers’ knowledge, responsibility and autonomy. “Very broadly, we are talking about the quality of teachers’ work, how they respond to educational issues and changes. We can also be talking about teachers’ public image.”

It is, however, an evolving concept. “In the newly emerging discourse, we also have collaboration, reflection and continuous learning.” The focus is increasingly process-oriented and includes the moral and social aspects of teachers’ work.

There are many descriptions of teacher professionalism in the literature, but what does it look like in practice?

Designing a Defensible Curriculum

Dalina found that curriculum planning is complex work. Many alternatives need to be considered before decisions can be made.

Broad knowledge base

In planning the curriculum, the Humanities teachers had to draw on their broad base of knowledge—a hallmark of professionalism.

They used their knowledge in many different areas, such as pedagogy, subject content, their students, and the milieu (the classroom, school environment, and even the national context).

They also tapped on external sources of knowledge, thus expanding their own. For example, when the Geography team was planning for fieldwork, they also referred to practices of teachers and learning communities outside their school. In this way, they could generate more alternatives.

Article highlights

- What is teacher professionalism?
- How does it relate to curriculum planning and development?
- Why are knowledge and deliberation important in curriculum planning?



We want teachers to see the broader goals and nature of the curriculum problems they are trying to resolve.

*- Ms Dalina Abdullah,
Tanglin Secondary School*

We must look at curriculum planning and development as a process.

- Dalina on curriculum work

Reference

Abdullah, D. (2012). *Exploring teacher professionalism: A case study of teachers' work in curriculum planning and development* (Master's thesis). Retrieved from NIE Digital Repository <http://repository.nie.edu.sg/jspui/handle/10497/4724>

"In generating and selecting those alternatives, they will be able to see the impact of one choice when weighed against the other," explains Dalina.

Deliberation and decision-making

When there are so many factors and alternatives to consider, some can be easily overlooked. That's why teachers deliberate a lot in curriculum planning.

Very often, they need to go deeper in their deliberations to come up with a defensible curriculum. A strong facilitator or leader can direct them to consider what they had not thought of before.

There are so many curriculum frameworks teachers can pick and choose from. But the frameworks shouldn't be used as ready-made templates.

"We do not want the teachers' ability to see the goals of the curriculum to be limited by the frameworks," cautions Dalina. "We need to think about how best to use them."

"We want teachers to see the broader goals and nature of the curriculum problems they are trying to resolve. We want them to generate sufficient ideas and go through the process of deliberation."

A Process of Learning

"We must look at curriculum planning and development as a process," stresses Dalina. It's a long one that requires time and effort. Should our already busy teachers be doing it then?

The effort that teachers put into curriculum work should not be seen as separate from their daily work of teaching, says Dalina. It is part and parcel of the profession.

One teacher shared that curriculum work helped her to teach with greater clarity because she now understood it better. Another said she now knows what objectives to achieve in the classroom.

"The process is ongoing, and it will take the teachers time and effort," says Dalina. But the gains from this kind of work make it worthwhile.

LanguageED

Conversing about Curriculum

With the introduction of "Teach Less, Learn More" (TLLM) in 2005, many schools became interested in ground-up initiatives. As a TLLM prototype school, Tampines Primary School was at the frontier of this uncharted territory of school-based curriculum innovations. English teacher Donna Lim found herself in the thick of the action.

In 2005, then Principal Mrs Wong Bin Eng initiated a process that would enhance the way teaching and learning were carried out in Tampines Primary.

"She wanted to raise the level of teaching, so she identified teachers she felt would be good pillars of support for others," recalls Donna, who was then Level Head for English and juggling a part-time Master's.

Mrs Wong gathered a small group, comprising then Vice-Principal Mrs Sharon Siew and three teachers—including Donna—who were appointed "TLLM Activists". The goal was to enable effective teaching and engaged learning.

Effecting a Structural Change

The team quickly got down to thinking about what makes for effective teaching. They looked at the way classroom teaching was organized, across the whole school, and practices that engaged students in learning.

Working with fellow English teachers, Donna realized that many of them found it a challenge to teach writing. After some months of planning, they decided to try out parallel teaching.

This involved two teachers teaching the same class. Donna took over the lessons on writing while the regular English teacher reinforced these skills in their other lessons.

Article highlights

- Why should schools consider restructuring the curriculum?
- How can a lesson observation rubric enhance teaching?
- What factors are needed for a structural change to succeed?

It was also an opportunity to learn from each other as the teacher observed how Donna taught, and then provided feedback to her for improvement. In this way, both teachers were engaged in continual learning.

“It was really a big structural change for us,” says Donna. “Where teachers used to progress in silos within the confines of their own classrooms, learning now extended beyond the immediate classroom.”

Designing the Rubric

Central to the structural change was the use of PoETEL—Practices of Effective Teaching and Engaged Learning—an instrument developed by the school. This rubric was the result of a painstaking process of classroom observations.

They video-recorded, transcribed, analysed and reflected on the lessons, looking for practices that cut across all classes and subjects. This process sparked many discussions about what effective teaching and engaged learning look like.

“There were a lot of conversations,” recalls Donna. They talked with school leaders, fellow colleagues, and even with external partners such as consultant Professor Colin Marsh and specialists from MOE’s Curriculum Planning and Development Division. “Just to come up with those few words in the rubric took many, many hours of talk!”

Eventually, they arrived at a repertoire of teaching practices. Each practice was broken down into four levels—from novice to expert—and described in detail. The rubric was trialled in 2006 in tandem with the new structure, and refined further.

Collaborating for Success

PoETEL was soon adopted across the school and is still in use today. While the rubric was designed primarily for observing classroom lessons, the teachers at Tampines Primary have also found it useful for lesson planning.

PoETEL became a guiding structure for every teacher in the school as it served as “a guide for lesson planning and execution, a tool for lesson evaluation and a frame for professional development” (Tampines Primary School, 2009).

The school culture was a critical factor for change to occur. “All our teachers were very collaborative and collegial. Because of that, we were very open with our sharing.” Many of them also took this as an opportunity to learn.

Donna also credits a lot of the success to Principal Mrs Wong. “I think she was very revolutionary. Because my Principal was so for it, time was given to talking about it, and new structures were allowed to emerge. Time must be given to teachers; even time to just dialogue is important.”

This process of thinking and talking is an important one for all teachers, says Donna. “It really made us think about what effective teaching and what engaged learning is. It’s really professional talk, and the rubric is the product of that.”

A Supporting Structure

Donna believes that a structure like this is useful for beginning teachers, especially those who teach English at the primary school level.

“The student teachers who come to NIE for our primary school programme are generalists. Very few of them have a relevant degree in English,” notes Donna. “I feel that a structure like what we had in our school worked because there was someone else there to guide you along.”

Besides teacher support, the structure created deliberate opportunities to learn from one another in an immediate and authentic scenario.

Looking back, Donna says this was one of the best journeys she’s had in her teaching career. “I really liked the fact that we went back to look at what teaching should be,” she says.

“It was scary but at the same time very fun because a lot of leeway was given in terms of freedom of curriculum, what you want to teach, the resources that you use. I think that, to a teacher, is very empowering and very exciting. I really enjoyed that a lot.”



Where teachers used to progress in silos within the confines of their own classrooms, learning now extended beyond the immediate classroom.

- Donna Lim,
English Language and Literature
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Useful Resources

- Goh, S. F., Lim, C.-T. D., Osman, N., Wong, B. E., & Boey, H. P. S. (2007, May). *Impact of planning and application of PoETEL on students’ engaged learning*. Proceedings of the Redesigning Pedagogy: Culture, Knowledge and Understanding Conference, Singapore. Retrieved from <http://conference.nie.edu.sg/2007/paper/papers/INO506.pdf>
- Goh, S. F., Nonis, D., Lim, C.-T. D., & Wong, B. E. (2007, July). *A school-based curriculum innovation: Practices of effective teaching and engaged learning*. Paper presented at the Australian Curriculum Studies Association Conference, Melbourne, Australia. Tampines Primary School. (2009). *Practices of effective teaching and engaged learning (PoETEL)*. Singapore: Author.

Donna Lim is on secondment to NIE as a Teaching Fellow with the English Language and Literature Academic Group. Prior to this, she was Level Head for English at Tampines Primary School, where she had taught for about 10 years.

Article highlights

- Why is there a need for a school-based curriculum?
- How can Science be taught more holistically?
- Is a curriculum planning framework necessary?



Kelvin, Ernest and Terence believe in making learning meaningful

Different schools have different needs, and different students have different needs.

*- Mr Terence Yeo,
Queensway Secondary School*

Bringing Science to the Disenchanted

In every school, there will be a number of students who are not interested in studying Science. How do we make Science more engaging for them? Four secondary school Science teachers decided that this was a curriculum issue worth investigating.

As they reflected on their teaching experiences, Science teachers Kelvin Lim, Ernest Yu, Terence Yeo and Jacqueline Tan found that they faced similar challenges.

So when they had to pick a topic for their curriculum project, they chose to look at how they could refresh the teaching of Science, starting with the design of the curriculum.

Seeing Science as a Whole

This was back in 2011, when they were enrolled in NIE's Management and Leadership in Schools programme, training to become heads of department (HODs).

"One of the problems we saw was that the teaching of classes was didactic in nature," says Kelvin, HOD at Pei Hwa Secondary School. They wanted to see what else they could do to inject some life into Science lessons.

Another problem they surfaced was that Science tended to be taught in silos, especially at the secondary level. But this shouldn't be the case, says Ernest, HOD at Anderson Secondary School.

"You can't do Science by just Physics, Biology or Chemistry," he comments. "We need a holistic approach to fuse the three sciences. I'm looking at a more thematic approach, rather than a topic approach."

This holistic approach affects the curriculum as a whole, rather than just lesson planning. Kelvin spells out what is involved.

"Everything from the planning to the determination of what goes into or comes out of teaching, to designing the assessments that are appropriate, and finally to the activities that go on in the classrooms to bring about that desired outcome. It's a whole package!"

A Framework for Change

These four teachers believed that a school-based curriculum could enrich the learning experience for students. But a framework was needed to hold it all together.

They decided on the Understanding by Design (UbD) framework by Wiggins and McTighe. Jacqueline had been using this approach in her own school, Jurong Secondary School, and strongly recommended it.

Initially hesitant, the rest were soon won over when they saw how a common framework like UbD helped to guide both the planning and implementation of the curriculum.

They felt that UbD provides a systematic approach towards redesigning curriculum that allows you to look at what you want to teach, what you want the students to learn, and finally to decide on the specific activities.

This framework acts as a leveller by putting every teacher on the same page—they know what they are supposed to teach and how to go about teaching it. Though the delivery will vary from teacher to teacher, the content is the same for everyone.

Planning for Meaningful Learning

Teachers may ask: Why change the curriculum when the Ministry of Education already provides a comprehensive syllabus to guide teachers?

"Different schools have different needs, and different students have different needs," notes Terence, now Vice-Principal of Queensway Secondary School. A school-based curriculum ensures that these different needs are met.

For him, the key outcome of any curriculum is that it makes learning meaningful, and students can see why they are learning the content.

For example, when teaching about forces in Physics, teachers need to consider *why* students would want to learn this. “In UbD, we think about student outcomes,” he explains. “So students must learn this so that they can learn the bigger picture of how forces interact with each other.”

Evidence of Student Engagement

Ernest has brought all this back to his own school and vouches for its benefits, especially in enriching the learning experience.

“They’re more interested in Science now—you can see it,” he notes. “We can’t measure the effectiveness, but we can see the engagement level. The students are more vocal, more confident. They are asking more questions and better ones.”

Over at Pei Hwa Secondary, Kelvin and his teachers have done likewise. They began redesigning the lower secondary Science curriculum in late 2011. It took a year to rework the curriculum for one level, and they are constantly fine-tuning it.

Whether it’s UbD or any other model, the point is to have a framework to structure the curriculum planning. “I think the strength of all this planning comes through in the enriched learning activities for students,” says Kelvin.

Championing Change

For school-based curriculum development to succeed, “the outcome must be very clear, and it has to be the same for all teachers,” says Ernest. He also stresses the importance of getting key personnel to champion the change.

For teachers who want to redesign the curriculum in their own schools, Kelvin advises starting small, by taking a few topics you think would work together. He also recommends starting with the lower secondary curriculum, where there is more room to manoeuvre.

Terence, however, cautions against merely “taking it from the upper secondary level and ‘pulling’ it down to the lower secondary” when redesigning the curriculum. It will require additional work and it’s not an easy process.

“Most of the teachers know it’s more work, but they see the value in it, because it enriches the learning experience of pupils,” says Kelvin. “You might not see quantitative results, but it’s the student excitement and engagement that will surface.”

They’re more interested in Science now—you can see it. We can’t measure the effectiveness, but we can see the engagement level.

- Mr Ernest Yu,
Anderson Secondary School

These four teachers graduated from NIE’s Management and Leadership in Schools (MLS) programme in 2011. They won the Dr J.M. Nathan Memorial Prize for their curriculum project “Bringing Science to the Disenchanted”.

MathED

Same Problem, Different Approach

Primary 4 pupils from Mee Toh School take five whole lessons to solve a couple of non-routine Math word problems. It’s not because they don’t know how to. In fact, the Math teachers had specially planned the lessons to be this way. Find out how they went about developing these lessons.

When asked if they were “ready for the challenge”, a class of Primary 4 pupils burst out in cheers: “Yeah!” This is something which rarely happens in a typical Math class.

The enthusiasm and excitement to learn Math is a result of the work of four passionate teachers who had identified the learning patterns of their pupils during Math lessons.

Taking Time to Understand

“Our pupils often encounter difficulties while solving non-routine word problems,” says Mrs Leong Seek Eng, the Head of Department for Math at Mee Toh School.

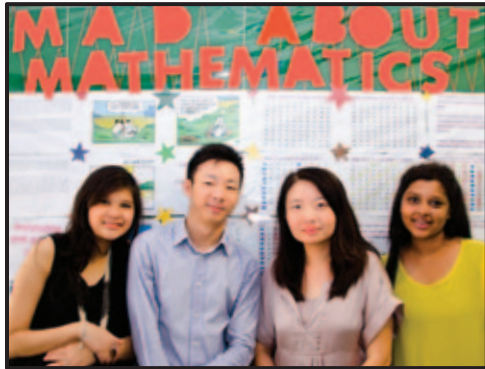
The teachers realized that teaching pupils to use Polya’s four-step method of understanding, planning, solving and checking wasn’t sufficient. Pupils were not focusing on the first two steps well enough to solve the non-routine problems successfully.

As these pupils do not invest enough time on understanding the question and planning the solution, they tend to approach the questions less systematically. When they fail to find the solution and are stuck in a rut, it affects their self-confidence.

So Seek Eng, together with Math teachers Mdm Amalina and Mrs Mohana Parthiben and Research Activist Mr Darren Yeo, embarked on a project to get pupils in the habit of understanding a problem first before planning the solution.

Article highlights

- Why do some pupils struggle with solving non-routine word problems?
- How can we help pupils to understand non-routine problems?
- What can teachers do to improve a problem-solving approach?



Amalina, Darren, Seek Eng and Mohana work together to help their pupils tackle non-routine word problems

Tackling Problems Properly

Rather than dictating that the pupils read and understand the question before attempting to answer it, the team decided to try a different approach. They adopted the STARTUP tool, which stands for “START Understanding and Planning”.

STARTUP consists of five components—*Given*, *Find*, *Picture*, *Topic(s)* and *Heuristic(s)*. The aim of this framework is to remind pupils not to rush into solving a problem without first going through the steps of understanding and planning.

“Each session, we cover one component,” shares Amalina. “For example, *Given* will be covered in one session. The next session, we cover *Find*.”

This approach was adapted from Dr Lee Ngan Hoe’s Problem Wheel. Dr Lee is an Assistant Professor with the Mathematics and Mathematics Education Academic Group in NIE. (Find out more about Dr Lee’s Problem Wheel in “Teaching This Thing Called Metacognition”, *SingTeach*, Issue 20.)

Originally designed for secondary students, the team of teachers at Mee Toh modified it for their younger learners.

“This project focuses on non-routine problems,” Darren says. “These are challenging problems that pupils often struggle with.”

Problem Solving with Confidence

One important factor in making lessons successful is to ask pupils questions that will stimulate their thoughts. To guide pupils in planning the solution to a non-routine problem, the scaffolding questions are carefully planned.

“I think it is more on providing pupils with the right questions to ask themselves,” says Mohana, a Learning Support teacher for Math.

“That’s why we include this when we plan—what kind of questions we want the teachers to ask. Hopefully pupils can internalize them and ask themselves those questions when they solve problems independently.”

The team took five 1-hour sessions to emphasize the five components of the STARTUP tool. Although it does take more time, pupils learn how to properly approach a non-routine problem, and with this understanding, their attention span improves.

With STARTUP, pupils are developed to be independent learners and are not afraid of making mistakes. It helps them overcome their habit of erasing their written work when their answer is different from their classmates’.

“They should identify what has gone wrong and correct their own solutions,” Amalina says. “This helps to build their confidence.”

Sharpening Teaching Skills

The team went through a few stages of planning and development before implementing the framework in a Primary 4 class last year. This year, the team has made additional improvements to the framework.

Through in-house training sessions, the teachers sharpen their skills in setting level-appropriate questions for their pupils. They are also able to set questions for pupils of different abilities to ensure a richer learning experience.

The team developed a curriculum that would best meet the needs of their pupils. As part of the teachers’ professional development, they meet weekly and exchange ideas and experiences.

“There is a lot of professional learning going on when we discuss our teachings,” Seek Eng adds. “We hear how other teachers go about teaching *Heuristics* effectively.”

Although a lot of hard work goes into designing such a curriculum, it all pays off when they see pupils who were once uninterested in Math now so alive in class when solving problem sums. As Mohana puts it: “We were so impressed!”

There is a lot of professional development going on when we discuss our teaching.

- Mrs Leong Seek Eng,
Mee Toh School