

Seven ways to be smart	Bloom's Taxonomy: Six Thinking Levels					
	Knowing 3 points	Understanding 4 points	Applying 5 points	Analysing 6 points	Creating 7 points	Evaluating 8 points
I enjoy reading, writing & speaking	Draw up a list of events and define the chance of each happening using words like certain. (p113)	Write a report on Blaise Pascal or Pierre de Fermat and their contribution to Probability.	Why is it difficult to win lotto?	Comment on statements of chance from newspapers and magazines.	Create an ad to warn people of the dangers of gambling.	Investigate how insurance companies decide on premiums for different age groups.
I enjoy working with numbers & science	Write the formula for probability and give examples.	Calculate probabilities of certain events.	Express probabilities as fractions, decimals and percentages.	Graph the results of a probability experiment.	Design a 4-coloured circular spinner that would give one colour twice the chance of being chosen.	Conduct a debate on the pitfalls of gambling.
I enjoy painting, drawing & visualising	Draw a roulette wheel showing the numbers.	Make a set of bingo cards.	Draw a tree diagram showing the possible combinations of a three children family.	Produce a chart showing the probabilities associated with a pack of cards.	Create a game to be used at a fete for a fundraiser.	Given a set of ads validate their claims.
I enjoy doing hands-on activities, sports & dance	Use technology to demonstrate random numbers.	Collect and sort out various odds on horse races.	Design an activity or game that uses a die.	Toss a coin 50 times and record your results.	Create a board game and list the rules.	Evaluate a game that you play and give your strategy for winning.
I enjoy making & listening to music	Make a list of the top selling cd's over a 2-week period.	Record and play a number 1 hit and graph its movement on the charts over 2 weeks.	How does predictions and probability effect the music industry.	Write a commercial for a new lottery game.		Make a prediction for a number 1 hit using statistical information to validate your claim.
I enjoy working with others	As a group collect and list types of Casino games.	Share information gained through a survey on being able to roll your tongue.	With another student play two-up and analyse your results.	Survey a group of people for their favourite footy teams and use these results to predict what percentage of jerseys you should order for your sports store.	In a group design a game where the person who starts first can't lose.	Interview people to see who has ever won a lottery prize.
I enjoy working by myself	What is the chance of getting a 6 when rolling a die?	Obtain information on a Callab game.	For randomly chosen local phone numbers, what is the relative frequency of number ending in 9?	Research the idea of quality control and the use of probability.	Using data collected, predict the performance of your favourite sporting team or person.	Evaluate the life of a gambler.

THE MATRIX

YOU KNOW THE FEELING: YOU'VE LEFT A PD SESSION FEELING BRIGHT EYED AND BUSHY TAILED, ONLY TO FIND YOUR ENTHUSIASM COOLS AS YOU RETURN TO THE REALITIES OF WORKING OUT WHAT TO ACTUALLY DO OF A MONDAY MORNING AT NINE O'CLOCK. DOES IT ALWAYS HAVE TO BE THAT WAY? THE ANSWER, **STEVE HOLDEN** FOUND WHEN HE TALKED WITH EDUCATORS ACROSS THE NATION, IS 'NO.'

There's one word that indubitably describes the feeling that possesses educators when they leave a professional development (PD) experience run by Ralph Pirozzo, and it's the same word that describes Pirozzo himself: energised.

Talk with anyone who now uses Pirozzo's forty-two-grid matrix – a learning model that addresses multiple intelligences to engage children in their learning – after a PD session and they'll quickly say that the approach is inspiring. More than that, though, it's practical. It's still the case that many educators walk away from PD wondering 'But what do I do of a Monday at nine o'clock?' – the feeling that the essential application bit is missing. Not so when Pirozzo takes them through his three-stage model, explaining the how-to's of planning and programming, then on to various effective learning and teaching strategies using a hands-on learning approach. The bottom line, says Pirozzo, is that teachers are just like children: they need to have fun while learning and teaching.

When Tony Merritt, Acting Deputy Principal at Canberra's Florey Primary School, attended a PD session to find out how the forty-two-grid matrix works he came away, he says, from one of the best PD sessions ever. 'Our staff members actually stayed on for almost two hours after the course had finished, as we were so motivated to keep working on Ralph's practical and inspirational ideas. The end result of our day with Ralph was that we completed three units of work on our whole-school "Access Asia" unit on India. We worked in pairs, with each pair completing some very interesting units of work – a K-2 unit, a 3-4 unit and a 5-6 unit. We then provided every teacher with an overview of the units, ready for implementation the following term.'

So what's the secret? Merritt says what teachers at Florey find of most benefit is the easy-to-use format of the matrix, that's

designed so students of all ages and abilities remain actively engaged in their learning. 'The matrices provide students of all ability levels the opportunity to participate, as they're able to choose activities that are of particular interest to them, as well as completing the core activities,' Merritt says.

With another six staff members attending one of Pirozzo's workshops later this year, Merritt says the aim at Florey PS is to have all staff trained in using the forty-two-grid matrix to plan future units of work. 'I've designed and implemented three matrices during the last eight months,' Merritt says. 'The students in my class were kept actively involved in their work, and many of them astounded me with their high level of creativity and presentation – a clear sign that this is a valuable learning tool for the majority of students.' So educators might find some use in the matrix of a Monday at nine in the morning? In a word, says Merritt, yes. 'Chances are that Ralph's approach will change the way that many

teachers go about their core business of providing stimulating and challenging units of work for all children.'

That's a view echoed by Paul Carreiro, Principal at Mount Riverview Primary School, New South Wales. 'The matrix has become an outstanding learning tool for our teachers,' Carreiro says. 'A well-planned matrix has the ability to cater for all levels of children in the class with varied abilities, since the matrix takes the children along on their own journey of learning. The implementation in our school has been excellent.'

For Samantha Underdown, a dance teacher at Merrimac State High School on Queensland's Gold Coast and Arts Co-ordinator for the Gold Coast District, the forty-two-grid matrix and the teaching skills that she refined during PD workshops have made an enormous contribution to the intellectual rigor of her teaching. Underdown calls the workshops 'a fantastic PD opportunity' for teachers. 'The matrix format is easy to understand and therefore

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easily shared amongst teachers at the same or different schools,' Underdown says. 'It's been an excellent way to share units of work and be inspired by others. There are fantastic units of work being taught by creative teachers who are committed to improving student outcomes across the state and Ralph's email group helps to share some of this amazing work.'

Liz Sweaney, who is a Consultant with the NSW Department of Education and Training's south-eastern NSW Country Areas Program (CAP), also working with schools in the Canberra Goulbourn Diocese, says the burgeoning number of units that are submitted by teachers to the CAP site (www.cap.nsw.edu.au and go to Teacher

room use and, says Sweaney, it remains dynamic. 'It's interesting to see how students will engage in tasks,' she says. 'This is particularly evident when teachers have spent time working with students on building understanding of thinking and learning preferences. Because there's a selection of tasks the forty-two-grid matrix offers, it becomes a framework so that many students can see it as a way to help them move into exploring and building skills in thinking and learning styles, which may not be their preferred way of operating. Comments from both educators and students demonstrate that the use of the forty-two-grid matrix and the many cooperative learning strategies introduced

grid really simplifies student-centred learning, making it accessible to busy teachers. It also allows students to build up to higher-order thinking, gradually working their way through a learning unit to the higher-order thinking assessment items.' Daly has also found the grid encourages students to reflect on their learning, making 'meta-cognition' more than just a word to be heard at conferences or seen in policy documents. 'Students use the grid to learn more about themselves, their preferred learning styles and how they engage in different levels of thinking,' Daly says. 'This improves their self confidence and self-esteem, as they discover that they are intelligent, and can critically analyse, create and evaluate: what a great gift to give them!'

Jill Patterson, a teacher at Nightcliff Primary School, Darwin, who was a Learning and Technology Coordinator for the NT Department of Employment, Education and Training last year, says the approach works because Pirozzo practises what he preaches. 'The teaching and learning strategies Ralph uses are in alignment with pedagogical theory, and he provides a new array of strategies and demonstrates the variety of ways that they can be incorporated into teaching and learning sequences. Incorporating Bloom's Taxonomy along with Multiple Intelligences allows teachers to actively engage children of all different learning styles and stages of development by providing depth, breadth, sequence and rigour,' Patterson says. Since Nightcliff began planning and teaching using the matrix, she says, the school has enjoyed 'outstanding feedback.'

Talk about PD with most educators and there's a striking characteristic: the initial energy wanes as the looming realities of a Monday morning class loom. Not so, it seems, with Pirozzo's forty-two-grid matrix. Educators use it, says Nightcliff's Jill Patterson. 'For teachers to continue to utilise it,' she points out, 'says a lot.' ▀

LINKS: More on the forty-two-grid matrix can be found at the Promoting Learning International website at www.pli.com.au

For more on the NSW Department of Education and Training Country Areas Program go to www.cap.nsw.edu.au

'Ralph's grid really simplifies student-centred learning, making it accessible to busy teachers. It also allows students to build up to higher-order thinking, gradually working their way through a learning unit to the higher-order thinking assessment items.' BRIGID DALY

Resources under MI links) are testament to the popularity of Pirozzo's framework. 'Type in "Pirozzo" at the bottom of the front page of the CAP website and you'll see how many references are made to Ralph,' Sweaney says. 'During the last five years, I've visited or spoken with many of the educators from the CAP schools in south-eastern NSW who've attended one or more of Ralph's workshops and the majority are always keen to share their use of the forty-two-grid matrix as a planning tool. In a number of classrooms I've seen the grid taped to the teacher's desk where it is used as a constant reference throughout the unit of work for which it has been designed. The grid will be edited and highlighted, have Post-It notes stuck on it and anecdotes for further use. I'd say the best way to describe the grid, for these teachers, is to say that it's a "dynamic" document, a work in progress, a template for further lessons.'

Transform the grid from a planning tool into a practical methodology for class-

through Ralph's workshops are having positive outcomes for them.'

When Brigid Daly, a middle school teacher at Palmerston High School in the Northern Territory, left one of Pirozzo's PD workshops, she knew the matrix was something that would help her in her planning process. 'It's great because it's all-inclusive, it covers all the different levels of thinking and activities which cater for all the different intelligences,' Daly says. 'This is great because it gives learners the opportunity to succeed in ways that they can excel in, and success breeds success and confidence to take more risks in learning.' By providing students with an organised range of approaches to learning, Daly points out, the matrix engages all students. 'They choose which tasks they want to do, which gives them ownership of their learning. This is empowering to them. As an added bonus, behaviour management becomes much less of a problem, with students on-task and engaged in learning that suits them. Ralph's