
Why class size matters

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SMALL CLASSES IMPROVE LEARNING AT SECONDARY SCHOOL LEVEL

- Reliable studies link smaller class sizes in secondary school years to higher achievement.
- Controlling for student background, the only objective factor linked with higher student success is class size.
- Achievement gains are most strongly linked to smaller classes in the upper rather than the lower grades.

McLaughlin D & Drori G (2000), US Department of Education sponsored study of achievement in 2,561 schools across the US.

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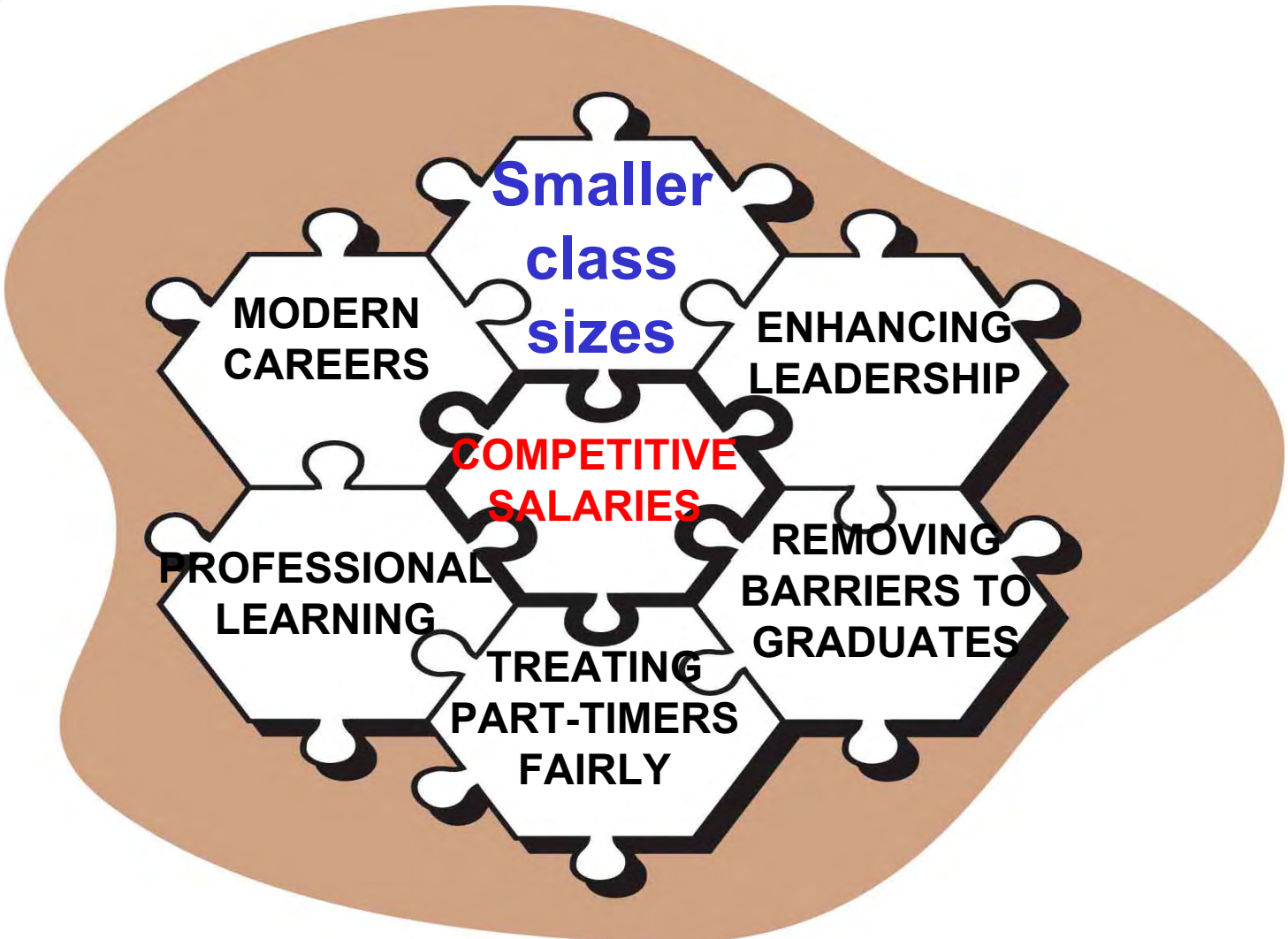
SMALLER CLASS SIZES: A KEY COMPONENT OF STCA CLAIM



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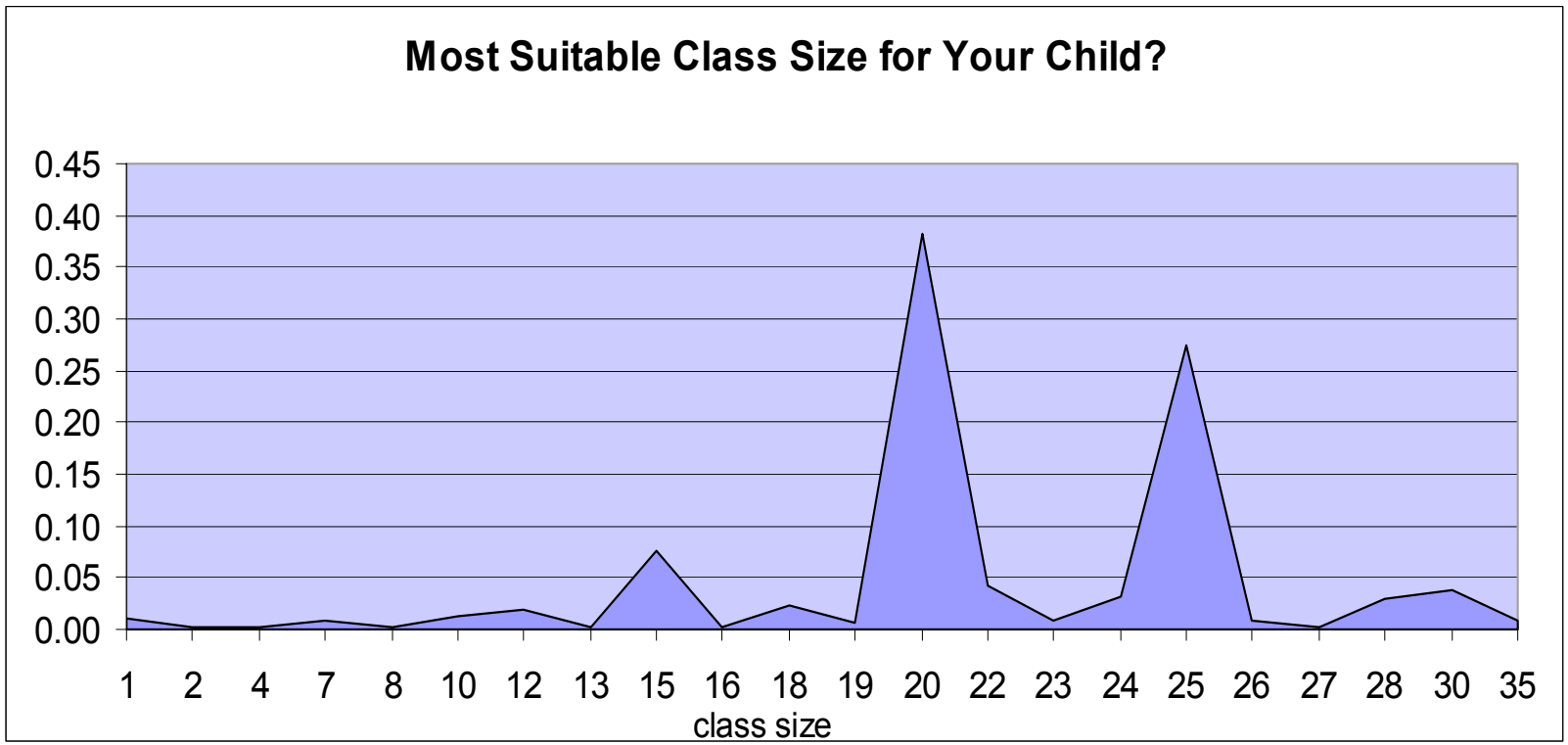
PARENTS WANT SMALL CLASSES

- Parents of teenagers want classes of 20-25



(Windshift 2007)

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SECONDARY TEACHERS WANT SMALL CLASSES

- Secondary teachers want classes of 20-25

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SMALLER CLASSES ARE PART OF A PARADIGM SHIFT IN TEACHING AND LEARNING

Large vs small classes

Teacher centred classrooms

'Chalk and talk' passive learning

Limited knowledge of students as individuals

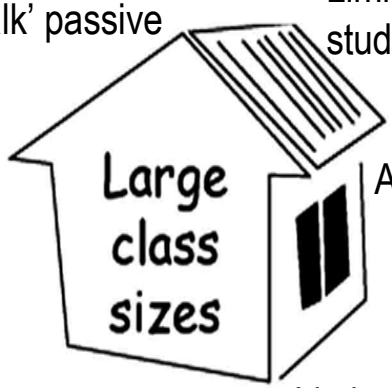
One-off exams

Content based programmes

Behaviour management issues

Infrequent, generalised feedback

Limited options choice and common pathways



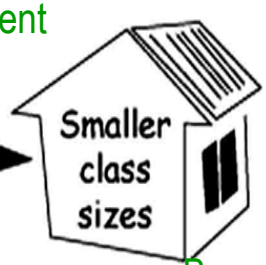
Age organised learning

Student centred classrooms

Active student learning

Detailed knowledge of each student

Ongoing assessment



Developmentally organised learning

Skills based programmes

Broad options choice and differentiation

One-on-one time with students

Regular, detailed feedback

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KEY PROBLEM WITH LARGE CLASSES

- Insufficient time for necessary individual student attention

NZPPTA survey 2004

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BUT THERE ARE OTHER PROBLEMS #1

- Class management issues increased
- Marking pressure hinder feedback to students
- Range of teaching methodologies limited
- Not enough resources for the class
- Practical work often not done or limited

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BUT THERE ARE OTHER PROBLEMS #2

- Constructive student interactions inhibited
- Lack of safety and inadequate physical space
- Problems in managing formal assessment NZPPTA survey (2004)
- High stress levels and high levels of job dissatisfaction.

Allen & Helming (1991)

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PARENTS WANT QUALITY TIME

- Most parents want each subject teacher to spend at least 15 minutes one-on-one time per week with their child.

  (Windshift 2007)

- Currently, a student in an average sized class can expect up to 4 minutes.

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SMALL CLASS IMPACTS ARE LONG TERM

- Students in smaller high school classes are more likely to graduate from school.
- Smaller high school classes have a significant positive effect on wages later in life.

Dunstan C. et.al, 2003

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SMALL CLASSES IMPROVE LEARNING

- Small classes = higher achievement at all year levels.
- Benefits greater when in small classes for 100+ hours.
- Small classes superior in terms of students' reactions, teacher morale and quality of teaching environment.

Glass and Smith (1979), analysis of 77 empirical studies of class size and student achievement

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SMALL CLASSES IMPROVE TEACHING

- Teachers change methods with smaller classes:
  - More individual attention
  - More monitoring of individual progress
  - More creative activities
  - More problem-solving activities
  - More projects and written assignments
  - More attention to gifted children
  - More field trips.

Allen, (1992), Wisconsin Class Assignment & Teaching Assignments Study

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TEACHERS ENGAGE STUDENTS MORE

- "Teachers in small classes pay greater attention to each pupil. Students in these classes experience continuing pressure to participate in learning activities and become better, more involved students. Attention to learning goes up, and disruptive and off task behaviour goes down"

American Educational Research Association (Zurawsky, 2003)

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SMALL CLASSES INDIVIDUALISE LEARNING

- "*We view education … as a personal and individual experience.*

- *Class-size research… at its best it is an effort to find appropriate casework loads, because much of sound educational practice consists of individual instruction, coaching, mentoring, and tutoring*."

Helen Pate-Bain (1992)

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SMALL CLASSES GOOD FOR STUDENTS #1

- More opportunity to cater for diversity and difference
- Greater engagement in learning
- Better monitoring of student progress
- Earlier diagnosis of student difficulty
- It is more inclusive and more personal
- Reduction in bullying
- Higher levels of physical safety

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SMALL CLASSES GOOD FOR STUDENTS #2

- More immediate rewards for achievement
- Students more likely to be 'on-task'
- Test results improve
- Group work more easily managed
- More opportunity for student interactions
- Improved attendance figures
- Students more positive about themselves
- Easier to maintain a good physical learning environment

SMALL CLASSES GOOD FOR STUDENTS #3

- Gains from small class size are greater for minority and disadvantaged students

- Lower class sizes improved the school social environment that, in turn, leads to higher achievement. The largest effects are in below average socio-economic districts.

Wenglinksy (1997)

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SMALL CLASSES GOOD FOR TEACHERS

- More engaged in professional development
- More engaged in school reforms
- Less stressed
- Absenteeism & illness reduced
- More accountable
- Morale is better
- Retention is improved
- Group work more easily managed

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SMALL CLASSES GOOD FOR SCHOOLS

- Increased capacity to offer curriculum options
- Students more positive about school
- Lower rates of school vandalism
- More effective use of limited classroom resources
- Parents more likely to be involved
- Easier to maintain a good physical learning environment
- Noise levels are lower

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WHAT ARE CLASS SIZES ACTUALLY LIKE IN NEW ZEALAND SECONDARY SCHOOLS?

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RATIOS ARE MEANINGLESS

- *Pupil-teacher ratios … reveal little or nothing about the actual classroom conditions in which pupils are learning.*

- *… large urban districts tend to have low pupil-teacher ratios because of the large numbers of … remedial teachers, yet often have badly overcrowded classrooms.*

(Finn, 2002)

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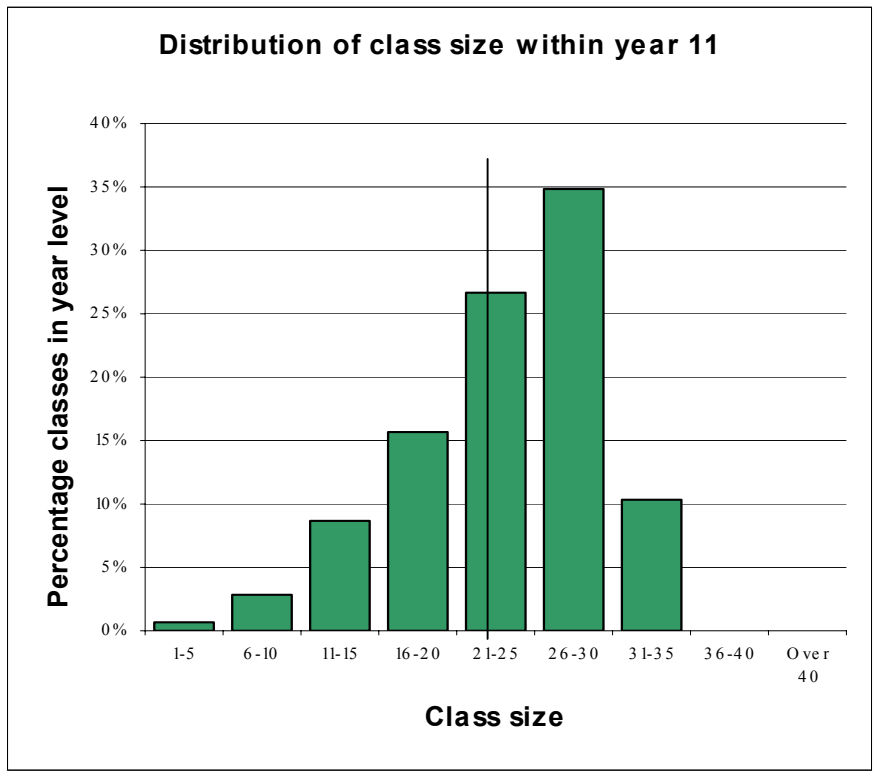
PUPIL:TEACHER RATIO IS NOT CLASS SIZE

For Year 11 the roll-generated PTR =

23 students per teacher

- Actual class sizes:

NZPPTA survey 2004



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AVERAGE SIZE IS NOT ACTUAL CLASS SIZE

Averages hide complexity - a mix of large and small classes.

Scenario	Class 1	Class 2	Class 3	Class 4	Average
1.	23	23	23	-	23
2.	32	32	5	-	23
3.	28	28	13	-	23
4.	40	25	4	-	23
5.	22	22	22	3	17.25
6.	28	27	10	4	17.25

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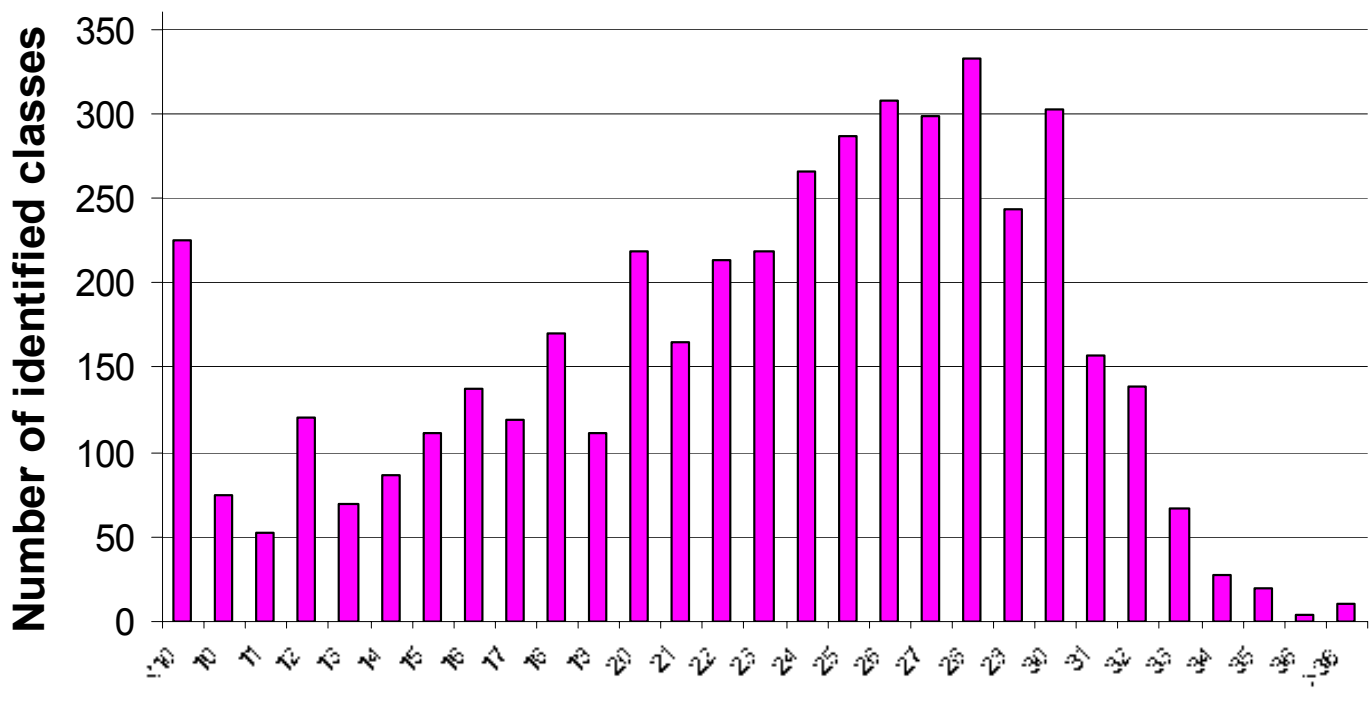
CLASS SIZE IN NZ SECONDARY SCHOOLS #1



(NZPPTA survey 2004)

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CLASS SIZE IN NZ SECONDARY SCHOOLS #2

Learning time spent in large classes by year cohorts (NZPPTA 2006)

Class size	Year 7&8	Year 9&10	Year 11	Year 12	Year 13-15	Composite
Over 25	39%	66%	53%	32%	19%	15%
Over 30	13%	12%	10%	5%	2%	3%

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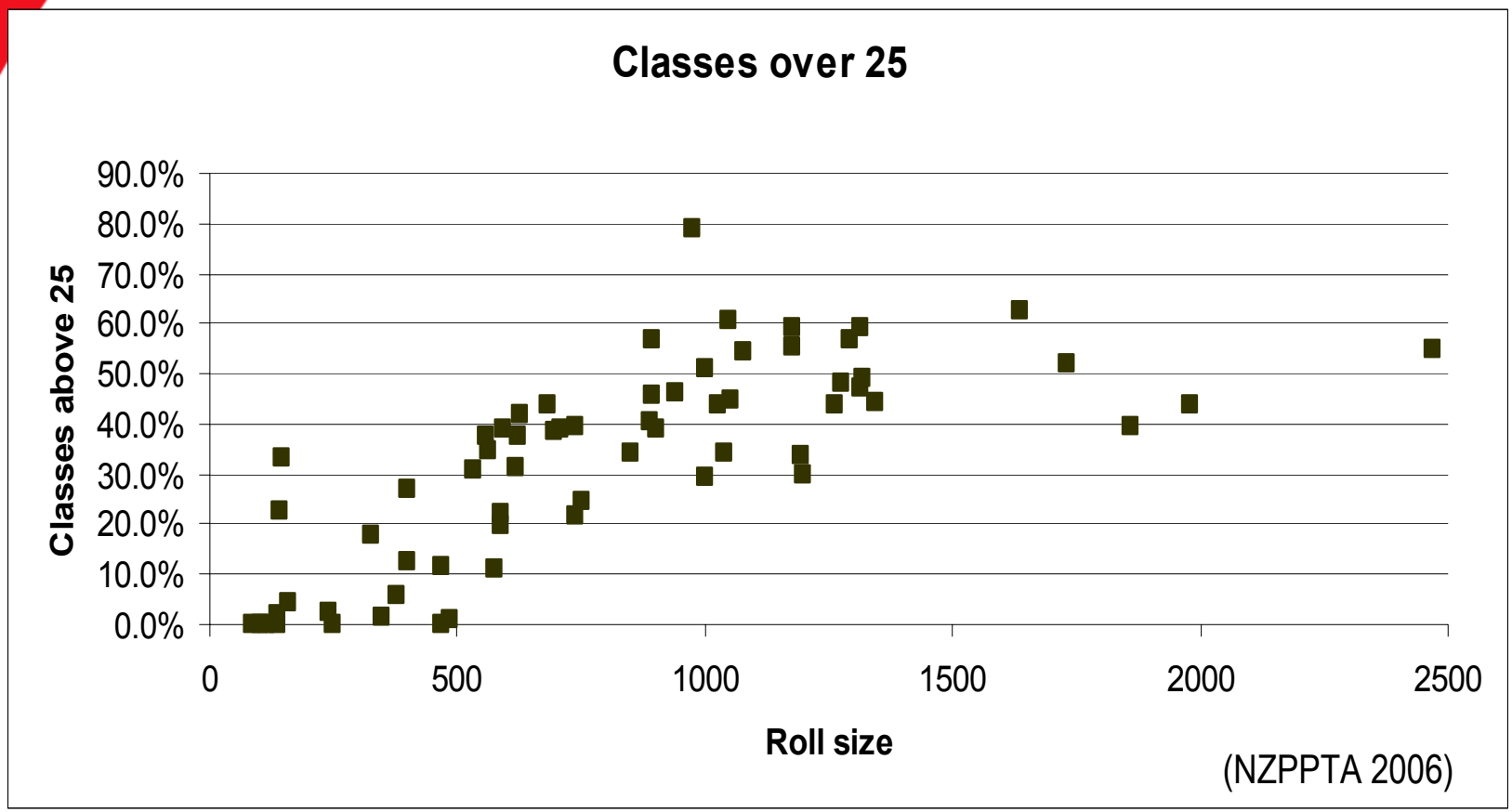
CLASS SIZE IN NZ SECONDARY SCHOOLS #3

Distribution of large classes by roll size



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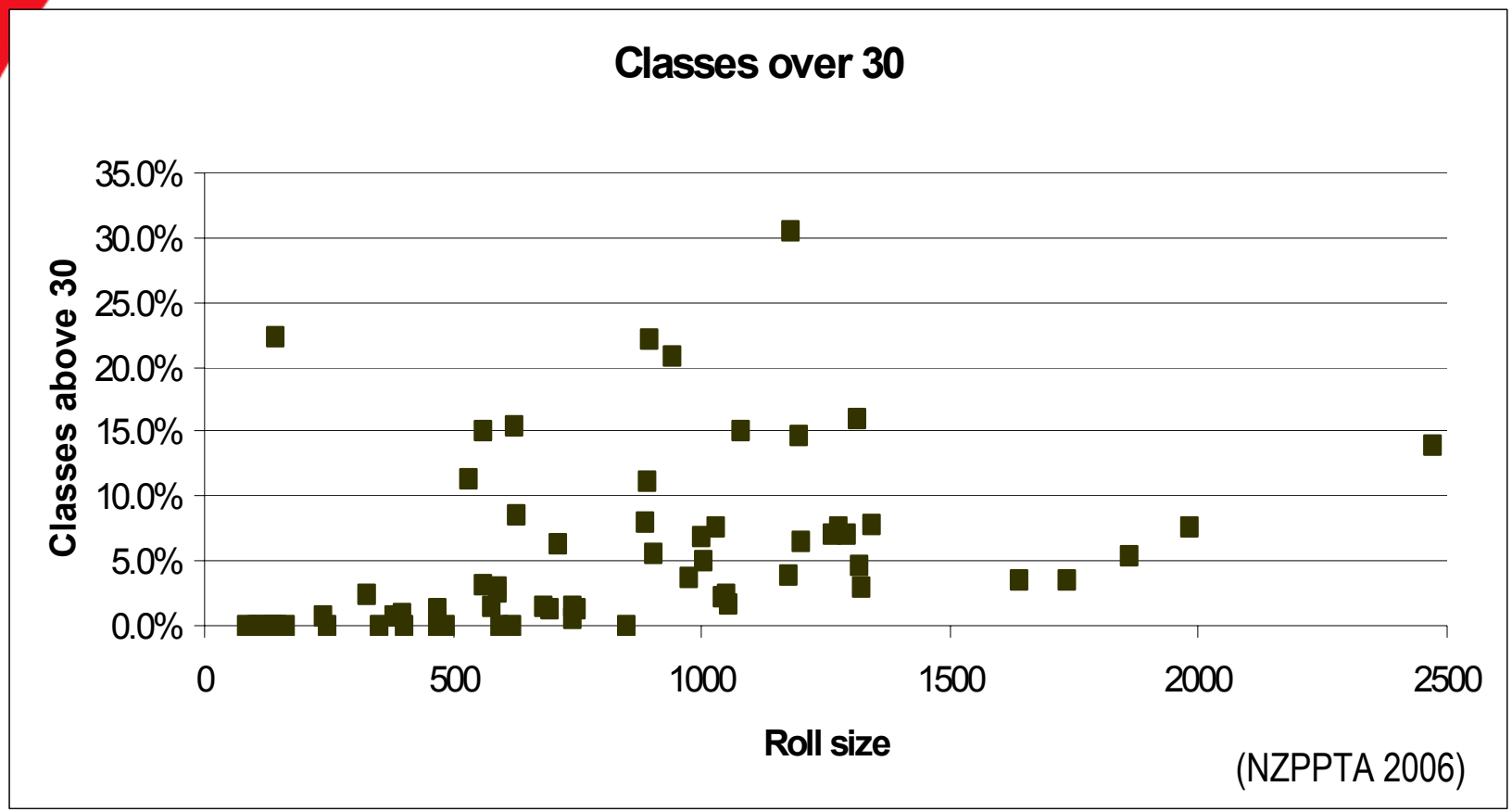
CLASS SIZE IN NZ SECONDARY SCHOOLS #4

Distribution of large classes by roll size



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RECOMMENDATIONS AND POLICIES RELATING TO CLASS SIZE

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MINISTERIAL STAFFING REVIEW GROUP

- Recommendation 3.6

  - Reduce pupil:teacher ratio by 2 per yr level.

  And:

  - 400 FTTE for management staffing
  - More pastoral/guidance staffing

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PPTA CLASS SIZE POLICY

First:

- Maximum class size 30
- Smaller practical class sizes (health and safety)
- Maximum average class size/teacher = 26

Then:

- Fully implement SRG recommendation 3.6, and
- Phased reduction in maximum class size

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THE COST OF SMALL CLASSES

- The staffing cost of SRG rec 3.6 would have been $78M or $283 per student in 2006.
- *This would have cut average class size to 20 students and allowed secondary schools to virtually eliminate classes over 25.*
- As rolls fall, keeping total teacher numbers at current levels would eliminate large classes within 5 years.

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WHAT DOES RESEARCH SAY?

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GETTING IT RIGHT IS IMPORTANT

- Actual class size data is available to researchers who study small numbers of classrooms but data on pupil:teacher ratios or numbers enrolled in classes is more readily available.

- "*These "class size" measures typically contain considerable measurement error. If this measurement error is random, estimates of the relationship between schooling outcomes and class size will be biased towards zero."*

(Ehrenberg, Brewer, Gamoran, Willms, 2001)

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CLASS SIZE IS THE MEASURE

"*Class size is a (more) direct measure of the teaching resources brought to bear on a child's development*."

Report of Alberta's Commission on Learning (2003):

Research using pupil:teacher ratios is consistently marginal. (e.g. *Hanushek, Hoxby*)

Research using actual class size is consistently positive on many variables. *(e.g.Glass&Smith, Boozer & Rouse, Borman & D'Agostino, Wong & Meyer, Krueger, Mosteller, Orlich, Blatchford & Goldstein)*.

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GIGO

- Most papers on class size are not research but reviews of a relatively small number of actual research exercises.
- Some papers are *meta-analyses* which combine the results of research exercises which can repeat or even amplify errors in the design and findings of the original research.

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META-ANALYSIS (MA)

- MA is a tool to assess the outcomes of several independent studies by 'combining' results. It is not original research " *more .. a perspective than a statistical technique*"(Turner P, 1997)
- The validity of a meta-analysis depends on the:
  - validity of research techniques in studies included
  - quality of the review it is based on
  - accuracy of weightings applied
  - absence of bias (including selection, statistical and researcher)
  - a high degree of homogeneity in the studies examined

META-ANALYSIS (MA)

- MA is most often used to assess clinical effectiveness of health interventions by combining data from randomised control trials designed to scientific standard. A lot of 'class size' research does not meet these standards.
- The studies included must be similar. "*… if the studies are too heterogeneous, meta-analysis is either not possible, or unwise*." Andrews & Harlen (2006)
- MA cannot compensate for poorly designed experiments. When studies in the MA are flawed so are MA outcomes.

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GOOD METHOD TELLS A STORY

- *"One well designed experiment should trump a phalanx of poorly controlled, imprecise observational studies based on uncertain statistical specifications"*

(Kruger 1999)

ACHIEVED WITH EXCELLENCE

- In a controlled experiment in first year university economics classes using the same instructors for all sections and controlling for variation in:
  - » instruction,
  - » lecture material,
  - » topic coverage
  - » student abilities, etc

and repeating the study over several semesters

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ACHIEVED WITH EXCELLENCE

statistically significant evidence is found that small class size has a positive impact on student performance.

(Walker and Arias, 2004)

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NOT ACHIEVED #1

- "*Despite the … strong evidence of their value… Hanushek has engaged in a vigorous campaign to convince … the public that small classes are not an efficient way to improve student performance.*
- *Few researchers take this position."*

(Finn, 2002)

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NOT ACHIEVED #2

- *Hanushek's reviews include many studies that used small and/or inappropriate samples or did not employ controls for other school characteristics.*
- *In addition, most of the studies examined* student-teacher ratios, *which invalidates conclusions about class size.* *(Biddle & Berliner,2002)*

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NOT ACHIEVED #3

- *"… studies cited by Hanushek are … of pupil-teacher ratios (PTRs), … at … district, state, or national level. PTRs … do not reveal … how many students are actually in classrooms. PTR includes regular teachers, special education and … teachers who don't have … classrooms (e.g, remedial teachers…), administrators, and other staff members…*

(Finn, 2002)

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NOT ACHIEVED #4

- *Researchers at Chicago University noted Hanushek's analyses did not take into account that some studies were more informative than others because they were based on larger samples.*

- *They reanalyzed his data with meta-analysis methods that weight studies by sample size, and reached the* ***opposite conclusion*** *– that resources (including class size) do impact on academic achievement.*

NOT ACHIEVED #5

- Krueger found 277 "studies" Hanushek cited were really 277 statistics from 59 studies.
- Some studies contributed far more than others. Two, contributing 48 statistics, accounted for most negative findings.
- Several studies misinterpreted or mis-coded.
- Krueger reanalysed Hanushek's work, counting each study once, accounting for higher quality of some studies than others, and for some samples being more atypical than others.
- In all cases his results were the reverse of Hanushek's.
- He concluded *"resources in general, and class size in particular, are significantly related to academic performance..."*

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A NZ PAPER

The paradox of reducing class size and improving learing outcomes, (Hattie 2005), concludes that class size reduction can be worthwhile, if certain conditions are met, but:

- *Not new research - a review of existing papers and meta-analyses, with reference to differences in class size and PTRs measurements but no attempt to separate them in looking at previous research.*
- *No definition of learning outcomes and terminology changes - hard to be sure if achievement, performance, engagement, students attention, students retention etc, or only some of these have been included in effect size in relation to learning outcomes. E.g. references to Blatchford, Bassett and Brown (2005) seem to suggest that improving the climate of the classroom isn't a learning outcome.*
- *Decontextualised – no allowance for distinct settings (country, age group, cultural and social domain).*
- *Appears to be researcher bias (e.g. "if **we** cannot stop the tide of parent and teacher lobbying for smaller class size...").*
- *Seems to be selection bias, e.g. no critique of Hoxby study and 'teaching methods' section emphasises literature from the 80's (only one from 2004).*
- *Appears to promote the role of teacher quality on student outcomes – notion lacks currency if class size has significant impact on student outcomes.*
- *Conclusions introduce new ideas - including disruptive students and that class size needs to placed into the wider social and cultural domain of the educational system - without discussion of these in body of paper.*

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SIZE DOES MATTER

- Education is not a mass- production effort, but a personal and individual experience.

- Class-size reduction is about finding appropriate casework loads, because much of sound educational practice consists of individual instruction, coaching, mentoring, and tutoring.

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CLASS SIZE REPORT PRESENTATION FOR ANNUAL CONFERENCE 2007 – ANGELA ROBERTS

15 minute speech, 15 minute for questions & comment.

In the background runs the power point. Change slides at bold underlined terms.

Slide 1

Conference delegates, fellow teachers, kia ora nga tatau.

Last year's annual conference asked that a report be presented to you this year on the association's campaign to reduce class sizes. You will see from the written report that my time with you will be spent in both updating you on progress we have made to date and at the same time introducing you to the power point we have developed for members to use with boards, parents and other influential groups as part of our ongoing campaign.

Slide 2

The power point will be running in the background while I speak and I will cover the general themes without referring directly to it. You don't need to try to absorb the detail, just to get a sense of what's there in the slides. There will be a copy available at the end of the day to look through at your leisure and it will be sent to branches after conference.

I must say though that there's an irony in the fact that the first public showing of the power point on why we need small class sizes is to a class of 150!

Anyway, a catch-up on what happened since last conference.

Slide 3

You will be aware that Annual Conference last year kicked off a campaign for class size reduction and controls, **starting with the inclusion** of what we would all regard as fairly basic class size controls in this year's STCA claim, seeking to establish a limit of no more than 30 per class and an average maximum class size of 26 per teacher. While most schools already do this we also claimed 300 additional teachers to ensure that every school is receiving sufficient curriculum staffing to make this achievable everywhere without changes to options.

This first step should have been easy, given that we were largely asking for the formalising of what is the status quo and because the Minister and the Ministry continue to make the noises about

individualising learning and the educational importance of having good relationships between students and teachers.

Previous conferences instructed us to gather information on class size and present that information to the Ministry and the government in the work steam processes. We collected that information and from the end of last year we were set to present our findings and research and arguments for improvements in curriculum resourcing in secondary schools.

Our team included Graeme Macann, ex-PPTA president and principal of Rosehill College, Kevin McSweeney, ex-executive member, past staffing committee member and now principal of Blue Mountain College, plus two executive members currently on our staffing committee, Kate Gainsford and myself, as well as association staff who specialise in curriculum and staffing matters.

We looked forward to discussing with the Ministry how best to meet the educational needs of secondary students in 2007 and beyond.

What happened was that they first refused to talk with us until we had a common definition of curriculum and then refused to agree on a definition, even when we offered to use their own! Effectively the curriculum staffing work stream was blocked. Then it was killed completely when Steve Maharey, Minster for Education Theory, told us that he wouldn't allow any recommendations to come from it which proposed extra staffing anyway.

At that stage Executive stepped up the organisation of a class size campaign which could start as part of the STCA claim, involving billboards, media advertising and lobbying material, and then continue in isolation for as long as it takes to ensure that class sizes in our schools are brought to acceptable levels.

That preparation was justified when the government failed to respond to us meaningfully on the class size elements of our current STCA claim. You all know that the Ministry started by simply refusing to discuss staffing issues with us in the negotiations. So at each possible forum they blocked discussion of the material on class size that we have collected at your direction.

So, as we launch our campaign, what do we know?

Slide 4 **<u>We know parents want</u>** class sizes of between 20 and 25.

Slide 5 **<u>We know teachers also want</u>** similar class sizes to be the rule except where health and safety requires them to be smaller – most particularly in labs and workshops.

Slide 6

And we also know that teaching, learning and assessment have changed and are changing beyond the recognition of those who's children are now in schools. Only the **class sizes have not changed**, but the reality is that demands of modern teaching and learning mean that classes of over 25 have now become as unacceptable to parents and teachers as classes of 40 became in the 1960s.

The goal of our campaign then is to ensure that both maximum and average class sizes are cut to levels which teachers, parents and students find appropriate for effective teaching and learning in the 21st century.

Slide 8

As the people who have to engage on the day-to-day basis with students we know the problems with classes that are overly large and why they must be reduced. **Members have told** us that the main problem is that we just physically don't have the time to work with students enough on a one to one basis.

Slide 9 & 10

But while lack of time for individual attention is the main problem with big classes our members and others have also identified other **major concerns**, including risks to student health and safety.

Slide 11

Parents also have concerns about the lack of time spent with individual students. **They want teachers** to spend quality individual time with their children, and they are talking of 15 minutes or more per week. To achieve that means much smaller classes than many of us have currently.

Slide 12

As professionals we would love our classes to be small, because we know that **size does matter** and that small is best for our students. We know the effects of reducing class size can be both long term and far reaching and the research supports that view.

Slide 13

We know that students have a **better learning environment** when they are in small classes and not competing with 29 others fro help and attention.

Slide 14

We also know that we can **teach better** in smaller classes.

Slide 15 & 16

The current Minister, bless his silk socks, talks about **engaging students** and individualising and personalising learning. Now, I do wonder if he's ever tried to individualise learning for a group of 30 year 10 students he sees for 3 hours a week or had a go at developing personal learning for 28 fifteen year olds who are keen to get out of school on a Friday afternoon. I imagine not, but if **he is serious** about letting us do the things he just talks about then class size reduction is the way he can help us to achieve it.

Slide 17 & 18 — From that would come a whole range of **benefits for students** and not just educational benefits, but also **social and personal** ones.

Slide 19 — And, very importantly for the future of our nation**, small class** sizes give greatest benefits to students who come to us from the most disadvantaged backgrounds.

Slide 20 & 21 — And its **not just students** that benefit from small classes. Teachers, the teaching profession, **individual schools** and the wider education system benefit too when class sizes are endemically small.

Slide 22 — So, if parents and teachers want classes to be between 20 and 25, and small classes are good for students, teachers and schools then how are we **measuring up**?

At this point I want to make it absolutely clear that when I talk of class size I am referring to real class sizes, that is the number of faces you have in front of you period by period.

Slide 23 & 24 — I'm not interested in statistical averages like the **student:teacher** ratios used by the Ministry. The overall student:teacher ratio they refer to is less then 1:18, suggesting each of us has classes of around 18. **That's just a joke to** those of us who actually do the job the Ministry just make policies and press releases about.

Slide 25 — I'm not even talking about **average class sizes**. The fact that the average class size across the country is 22.7 is just as meaningless for most of us. I wonder how many of us here today would be willing to sell our grandmothers to be teaching just 23 students every hour?

Slide 26 & 27 — The **reality in schools** is that many classes that exceed the sorts of levels we are looking for and **many of our students** will have spent most of their time this year in classes of over 25.

Slide 28 — For most of those classes the reason can be put down to lack of resourcing by the government – **too few teachers** are in our schools to ensure our classes are effective learning environments or to provide a reasonable range of subject options for students.

Slide 29 — **Our large schools** are systematically under-staffed by a formula designed for a time when the larger schools were half the size they are today and our smaller and middle-sized schools struggle to find a balance between a reasonable curriculum and keeping classes at all levels at sensible numbers.

Slide 30 — **So, what do we want?**

We want class sizes that give us the greatest opportunity to get to know and to teach students as individuals and for them to have the greatest opportunity to achieve their potential during their time in secondary schools.

Slide 31 **We want the full** implementation of the School Staffing Review Group recommendations on reduction in class size.

Slide 32 **We want to see** a very small start to improvements by the instituting of 30 as a maximum class size for non-practical subjects, with smaller classes for workshops and labs for health and safety reasons and then the phased reduction in that maximum as more staffing is phased in.

Slide 33 In fact **the costs of** reducing class sizes are small and manageable in the context of falling secondary rolls. It is the long-term gains for students and for the country that would be huge, because as the majority of researchers in this field attest, class size does make a significant difference to student learning and to their prospects in their adult life.

Teachers, students and parents believe the same, and I'll happily bet that no-one here has ever seen a private school advertising that it has classes of 30 as a selling point!

Slide 34 So why does **our Ministry** and its apologists say that class size doesn't make a difference? Fundamentally because owning up to the fact that it does means doing something about it and they can find academic papers to back them up.

Slide 35 **Unfortunately, there are actually few** proper scientific studies of the impacts of actual class size on student outcomes and there are some very poor research and reviews out there that governments use as an excuse to justify not making the investment in class size reduction.

Slide 36 **One of the most frequent faults** we see is the basic failure to measure the right thing. Remember I said before that in New Zealand the student:teacher ratio is less than 18 and average class size is 22.7 students per class? Well, in real life our classes range from 1 to over 40. Not surprisingly, studies that seem to show class size doesn't make a difference use average class size or student teacher ratios not actual class sizes.

These studies are statistically biased towards showing a net effect of zero.

Slide 37, 38 & 39 **Most of the rest of the literature** is composed of reports of work done by others or reanalysis of such studies through an impressive sounding technique **of meta-analysis**. But put simply, garbage in, garbage out. Reanalysing a bad study, **even with the best** techniques properly used does not make that study a good one or correct the faulty findings it comes up with.

Slide 40, 41 & 42 **Properly conducted**, appropriately measured and scientifically sound research invariably indicates that **class size matters**, and it matters **a lot**.

Slide 43, 44 & 45 **Poor research** and poor or **biased reporting** and analysis just doesn't **cut it** as an argument against reducing class sizes.

Slide 46, 47 & 48 **The Minister** has to stop hiding behind this **rubbish** and come to the party. He says he wants to be a **Minster FOR education** and here is his chance to do that.

But we have to be realistic. Even with the movement we have seen in the STCA negotiations over class size, we have only established the most basic of safety nets for students and teachers – effectively they secure for all classes what is currently the status quo for the majority.

Slide 49 **This is only begins** to move us towards the sorts of class sizes we need to have in all of our schools and it will take time to get there. The pressure cannot go away after the current industrial dispute is resolved. So, be in no doubt that we are in for a long campaign which will be partly industrial (extending class size limits in the collective agreement where they can be enforced), partly political (creating the will amongst the government of the day – which ever it is) to put in the resourcing to make small classes a reality) and partly educational. We have to make sure parents and the wider public understand why we are pressing for smaller classes. They have to understand that we want their children to be taught in classes where they can be dealt with as individuals and where they can be sure of getting the personal attention they need and deserve.

Resources have been and will continue to be developed for use in the media and in lobbying. We will be looking for commitments from all political parties to a policy of class size reduction. And they must all understand that the alternative is a long scrap with us and if that is the way it has to be, well tough, because not only are students worth the fight, our teachers are worth it too.

Na reira tena koutau, tena kautou, tena kautou katoa