

**[1]** The field of school furniture in NZ has been traditionally characterised by stability and slow change in design and manufacturing methods.

Over the first half of the 20<sup>th</sup> century school roles increased steadily and the demand for furniture increased but the way schools operated and the learning environment itself changed little. The school desks and chairs in use in 1980s were still very similar in design to those used in the years leading up to World War II – uniformly sized, in-desk storage, cheap to make, durable and designed to be easily stacked. Function definitely ruled over form.

The steady increase in school roles meant Government investment in new schools but the designs of these schools were standardised and controlled by the Department of Education. Classrooms were of uniform size with a given amount of space allocated per pupil. Furniture was ordered centrally and the result was uniformity across the country. The classroom culture had a similar uniformity with a common curriculum and a common approach to learning – students sat at their own desks, movement was kept to a minimum and teachers taught from the front and moved around only as they saw the need.



Economic changes after the Second World War caused considerable social change, with population increases leading to a manufacturing boom. Many manufacturing industries were protected by import tariffs and in the field of school furniture supply costs were kept down by efficiencies in material supply and improvements in manufacturing techniques.

By the late 1980's significant socio-cultural change was occurring in education. Immigration and a trend for movement to cities was changing the ethnic and social balance in schools. The Governments 'Tomorrow's Schools' initiative started to hand more control over to the individual schools and opportunities for differences in approaches to the structuring of the learning environment and how it was managed opened up.

**[2]** The traditional design of school furniture meant that it could usually be manufactured locally, often using locally sourced wood. The robust design ensured the durability of desks and chairs which had high usage and the need for regular replacement was not a common problem. With the increase in school roles demand for furniture increased and specialist manufacturers started to dominate the market. To be competitive costs had to be kept down so any design changes had to be balanced against the cost implications. Ongoing changes in curriculum had more influence on the design of furniture for specialist facilities such as science laboratories, art and textile rooms and workshops than on the general classroom environment.



Changes which did occur in general classrooms such as the introduction of tubular metal frames had to produce significant improvement – in this case the need to stack the desks and chairs was made considerably easier. The cost of investment in new cutting and bending machinery was offset by the use of new labour saving assembly techniques. Material costs were controlled by carefully matching factors such as the gauge of the tubular metal to the strength required of the desks and chairs.





**[3]** The recent development of the Bodyfurn range of classroom furniture by the New Zealand company Furnware has been a significant influence in the school furniture market.

As an established school furniture manufacturer the company recognised that if they were to protect and hopefully increase their market share then the costs associated with innovation could potentially price them out of the market. They had recognised that existing school furniture did not cater well for the needs of a 21<sup>st</sup> century classroom but had to prove that the need for change existed and that the additional cost to schools of addressing this need was justified.

This process was managed by identifying the range of stakeholder groups involved and involving them in the innovation process.

Recent tertiary research had shown that existing furniture didn't properly meet the needs of different sized students. The Company then carried out a significant data gathering exercise to find out the size spread of students in schools across the country.

At the same time they worked with school based focus groups – Boards of Trustees, management, teachers, caretakers and students to find out what frustrated them about existing products and what they wanted from any new designs. Competing priorities within the groups quickly became clear: students wanted more movement but teachers wanted to keep their working positions in class fixed; students wanted lots of different sizes of desks and chairs to be available but caretakers wanted them to be easy to stack, clean and maintain; and school managers wanted to keep the costs low enough that they would be able to afford the new designs. Boards of Trustees wanted to be confident that the end result of the process would significantly benefit the learning of their students.

**[4]** The end result was a new range of desks and chairs - the Apha desk provided a larger working surface for the students and when used with the new Dynamic chair the amount of total space taken up by the desk chair combination was reduced and movement around the classroom improved. The desks were produced in a range of sizes to suit the different ages and ethnic groupings present in today's classrooms. Specific design features were introduced to meet the identified needs of the differing stakeholders. These included using screws which would be more student-proof, ensuring that the plastic surfaces could be easily cleaned and rounding the corners of desks to minimise the effect of contact with the desk while moving around.



To provide the capability for at-desk storage which some schools wanted a new side the Bodyfurn range was extended to incorporate a storage unit to complement the desk and chair system.

The end result was a system which was undoubtedly more functional and fit for purpose but which would come at a significantly greater cost to the user. To address this issue the company made changes in many aspects of production. This included stock control, use of robot welders and computer controlled assembly techniques, outsourcing of components and standardising componentry across different product ranges.

Another management strategy was to work towards environmental Choice registration which ensures the suitability of the equipment for use in 'green' building design. The certification not only provides a competitive advantage in the market place but ensures a healthy working environment for employees.