Balancing Light, Flexibility, and Acoustics in Education

Managing Modern Learning Environments with Aluminium Glazed Partitions

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INTRODUCTION

There is growing concern that open-plan learning environments may cause stress for students, prompting schools to consider reverting to traditional single-cell classrooms, despite the significant costs involved.

The situation at Rangiora High School in North Canterbury illustrates the complexities of this issue. In 2017, the school opened a large classroom designed to accommodate 500 students, but recent feedback from teachers and students highlighted several issues. The open space was found to be “challenging” for learning, with distractions from noise, visual stimuli, and fluctuating temperatures making it difficult to concentrate.[1]

As a result, the school has decided to divide the open area into smaller, more manageable classrooms. This example underscores the importance of thoughtful design in educational spaces, where the right balance between openness and intimacy can significantly impact the effectiveness of the learning environment.

The challenge lies in designing future learning spaces that balance the need for collaborative, modern education with the flexibility to offer more personalised, small-group teaching experiences. This whitepaper will delve into the crucial design considerations necessary to achieve this balance, with a particular focus on the effective use of aluminium glazed partitions.

RETHINKING OPEN-PLAN LEARNING

In recent decades, terms like "modern learning environments", "innovative learning spaces" and "flexible learning spaces" have been used almost interchangeably. Set in open-plan environments with a variety of furniture options, these spaces typically involve larger groups of students with fewer teachers, where students are expected to engage in a self-directed, collaborative approach to learning.

In New Zealand, the Ministry of Education, under then Education Minister Hekia Parata, began pushing primary and secondary schools to adopt the trend of modern learning environments in 2011. The plan aimed to upgrade all 38,000 classrooms across the country to these new standards by 2021, promising a comprehensive overhaul of the education system.[2]

A significant number of teachers argue that this shift was a poorly considered experiment that overlooked the diverse needs of students. Many young people, particularly those with behavioral challenges, neurodivergent conditions, or introverted personalities, struggle to thrive in noisy, distracting environments, which can hinder their learning and development.[3]

The issues with open-plan learning spaces are not exclusively a New Zealand phenomenon. A 2015 Australian study examined how well students could understand speech in traditional versus open-plan Kindergarten classrooms. The findings revealed that, in open-plan settings, noise from other classes made it more difficult for students to accurately comprehend their teacher.[4]

A recent Victorian study, conducted across six primary schools, revealed similar results: students, especially those with lower attention and listening skills, experienced slower reading development in open-plan classrooms. This slower progress is likely attributed to the increased noise levels typically found in these open-plan environments.[5]

CREATING A POSITIVE LEARNING ENVIRONMENT

Some schools are now moving away from open-plan designs and returning to traditional walled classrooms. This shift marks a reversal of a trend that was once celebrated as a solution for addressing declining student engagement and performance. It also provides an opportunity to reevaluate what constitutes a positive and healthy learning environment for students and teachers.

There has been a significant body of research identifying the environmental parameters that contribute to student and teacher health and wellbeing, as well as teaching and learning performance. Below are some notable findings:

- Mark Wilson, a secondary school principal who conducted a 10-week sabbatical in 2015 to study modern learning environments in New Zealand, found that student achievement improved noticeably when classrooms met several basic requirements, such as being warm, dry, and free from excessive noise.[6]
- In an analysis published in Indoor Air, researchers examined the effects of indoor air quality, thermal conditions, acoustics, and lighting on learning environments. They reviewed evidence from 21 studies, which confirmed that poor indoor environmental quality can negatively impact learning by causing discomfort and harming students' mental and physical health. Conversely, optimal conditions—such as a cool, bright, and quiet environment with low carbon dioxide levels—can enhance students' alertness and attention.[7]
- In a 2023 Dutch study, researchers explored the impact of various lighting levels and reverberation times on students. They assessed both objective and subjective responses to these conditions, finding that acoustic and lighting environments can positively shape students' perceptions.[8]
- A recent study of four different-sized Sydney schools found that there were much higher intrusive noise levels in open-plan classrooms, resulting in poor speech perception accuracy.[9] In such spaces, teachers had to speak well above a comfortable talking level and there is evidence to suggest that the spaces were not conducive to listening and learning.

In summary, current research highlights four key indoor environmental parameters—air quality, thermal conditions, acoustics, and lighting—as crucial to creating a positive and healthy learning environment. Optimal indoor conditions enhance students' comfort, focus, and cognitive performance, thereby contributing to a more effective and supportive learning experience.

BENEFITS OF ALUMINIUM GLAZED PARTITIONS IN EDUCATIONAL SETTINGS

To create effective learning environments, it is crucial to design them with proper acoustic treatments and include enclosed spaces or operable walls that can be closed when needed, especially during activities that require focused listening. Additionally, incorporating quiet rooms is essential for students who struggle with noise, providing them with a calm space to work away from the main classroom.

Based on these recommendations, aluminium glazed partitions are an effective architectural solution for dividing classrooms into separate spaces because they provide both physical separation and visual connectivity. maintaining an open feel while reducing noise and distractions. They are interior systems that use aluminium frames paired with glass panels, which are designed to separate spaces while still allowing light to pass through.

Below are the benefits of aluminium glazed partitions in educational settings:

- **Natural light:** Due to the transparent nature of the glazed panels, aluminium glazed partitions are engineered to maximise the flow of natural light within classroom environments. The influx of natural light is scientifically proven to improve cognitive function and reduce eye strain, benefiting both students and educators.
- **Visual connectivity:** These partitions are designed to maintain visual connectivity even where an open space is divided into several smaller areas. This transparency fosters a more dynamic atmosphere, facilitating seamless interaction and engagement among students and teachers.
- **Acoustic performance:** A key benefit of utilising aluminium glazed partitions to divide a space is that they create visual connectivity while maintaining acoustic separation. High-quality glazed partitions can be optimised for superior acoustic performance, providing the much-needed acoustic control that creates a focused teaching and learning environment and improves communication between students and teachers.
- **Aesthetic appeal:** With their sleek, modern design, aluminium glazed partitions contribute to the aesthetics of classroom spaces. A well-designed environment is crucial for fostering student engagement and maintaining motivation.
- **Safety and visibility:** These partitions enhance safety by providing clear lines of sight, enabling teachers and staff to monitor and manage classroom activities effectively. This visibility is key to ensuring a secure and well-supervised learning environment.
- **Cost-effective installation:** Aluminium glazed partitions are relatively easy and quick to install, reducing labour costs and minimising disruption to school operations. Their modular design eliminates costly structural modifications when needs change.
- **Operational savings:** These partitions are highly durable and require minimal maintenance, leading to lower long-term operational expenses. Additionally, their ability to enhance natural light reduces the need for artificial lighting, resulting in energy savings over time.

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MAINTAINING FLEXIBILITY IN THE CLASSROOM

A study by Katharina Kariippanon and Dylan Cliff from the University of Wollongong investigated the perceived impact of flexible learning spaces on teaching, learning, and student well-being in Australian primary and secondary schools. The study found that flexible spaces were more enjoyable, comfortable, and inclusive, fostering greater interaction. The research concluded that well-designed and effectively utilised flexible learning environments provided increased autonomy and positively influenced teaching, learning, and overall student well-being.[10]

These findings suggest that modifying the physical design of secondary school classrooms, in combination with student-centered teaching approaches, can have a positive impact on students. How do you provide flexibility while addressing some of the issues with today's open-plan classrooms?

Aluminium glazed partitions offer exceptional flexibility, allowing for easy reconfiguration to suit various teaching methods, group sizes, or activities. This adaptability supports diverse learning styles and can be tailored to meet specific educational needs.

Reconfigurable layouts offer the flexibility to transform a classroom from a traditional lecture setup into a collaborative group work environment. For example, for teacher-centered instruction, partitions can be arranged to create a focused, quiet space where students face the teacher. For larger discussions or group activities, the partitions can be reconfigured into breakout areas, encouraging interaction and teamwork.

In addition, flexible partitions can be used to create customised spaces for students with special needs, offering quiet, distraction-free areas or specific setups that address their individual learning requirements.

Multi-functional spaces are easily achieved by adjusting partitions to meet the specific needs of various activities. This adaptability maximises the use of space and resources within educational environments.

Enhance educational spaces with Potter Interior Systems

Potter Interior Systems specialise in aluminium interior partitioning and supplies a comprehensive range of wall systems, including Rondo steel stud and steel track systems. The New Zealand-based company offers numerous configurations and design options for complete aluminium partition systems for the education sector.

When designing classroom spaces that foster learning, selecting the right partition system is crucial for creating environments that are both functional and conducive to educational activities. The **A Series 105 Aluminium Partition System** stands out for its versatility, making it an ideal choice for integrating plasterboard and glazing applications. With its seamless compatibility with various wall structures, glass thickness options, and a wide range of door sizes, this system allows for flexible design solutions that can be tailored to different classroom needs.

For projects where cost-efficiency is a priority without sacrificing quality, the **C Series 45 Aluminium Partition System** offers a practical solution. Its slim profile and adaptable design make it suitable for creating sleek, modern classroom spaces that are not only visually appealing but also highly functional.

In modern educational settings that may require exposed full-height partitions, the **DF Series Aluminium Partitions** provide a robust solution. The **E Series 105 Aluminium Partitions**, with its edgeline glazing options, and the **Soho Series Aluminium Partitions**, which offer an industrial-inspired aesthetic, further expand the design possibilities, allowing educators to create dynamic, versatile learning environments that support a variety of teaching methods and student interactions.

In educational settings, the ability to easily separate or combine spaces is crucial for accommodating different teaching styles and activities. The **DS Series** door slider, which seamlessly slides into a wall pocket, allows for the effortless transformation of open areas into smaller, more focused learning spaces. This capability supports a range of collaborative opportunities when the doors are open, fostering group interactions and teamwork.

Potter Interior Systems' high-quality **Vision whiteboards** facilitate the sharing of ideas and information. These boards are customisable, including alternative sizes, surfaces and framing options.

Tested performance

Potter partition suites have undergone airborne sound transmission loss testing at CSR's test chamber at the Somersby Hebel factory, following the procedures outlined in ISO 16283-1 for field measurement of sound insulation in buildings.

For architects seeking more information on these acoustically tested solutions, get in touch today at https://potters.co.nz/contact-potters.

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