SCREEN WOOD

Empowering
Visionary
Interiors

An Interior Designer's Guide

Optimising Acoustics in Education

A practical guide to designing acoustically sound environments that support teaching, learning, communication, wellbeing and safety.

screenwood.com.au
+61 2 9521 7200
hello@screenwood.com.au

Contents

Delve deeper with clickable links.

The clickable links throughout this guide enable you to delve into relevant topics and research. All links direct you to the correct external website pages at the time of publishing.

Designing acoustically sound learning environments for the future

Optimising acoustics in education settings enhances learning, supports teacher wellbeing and transforms the overall classroom experience. Whether designing new spaces or upgrading existing ones, understanding the key acoustic elements is crucial for creating environments that perform.

This practical guide draws on research and insights to explain why acoustics in education matters. In addition to exploring design challenges, trends and aesthetic principles, the guide features a checklist for selecting acoustic systems that align with best practices in safety, sustainability and performance.

Good acoustic design creates educational spaces that reduce stress, support communication and encourage relaxed but focused learning.

Rob Bullen
Rob Bullen Consulting Acoustic and Vibration Services

Understanding Acoustics in Education

The Big Picture

Reverberation control, speech intelligibility, background noise management and **sound isolation** are the foundations of good acoustic design. These elements work together to create a more comfortable space for teaching and learning.

When designing your space, it's essential to survey all the external and internal noise sources that can affect the learning environment. Once you identify where noise comes from, you can make informed choices about how to manage it through soundproofing, architectural acoustic systems and complementary interior design tactics that meet industry standards. The Department of Education, Training and Employment has comprehensive planning recommendations in its Design Standards for DETE Facilities (see section 4.9.1 Planning for Acoustic Control).

Figure 1: An example of typical noise intrusion elements in a modern classroom.

The Four Critical Acoustic Elements

1. Reverberation

What is reverberation?

Reverberation occurs when sound bounces multiple times off walls, floors, ceilings or objects within a room. The more times it bounces, the longer it takes for the sound to reach the listener's ears and the longer the sound appears to 'ring.' For a comprehensive dive into reverberation, download Screenwood Australia's Interior Designer's Guide to Reverberation Control.

Why reverberation control matters in learning environments

Longer reverberation times make it harder for students to hear and understand what their educators or peers are saying. This leads to distractions, more limited participation and reduced concentration.

Without reverberation control, all occupants may need to raise their voices to be heard, creating excessive noise (see "Keep the noise down, please! Why do classrooms and lecture theatres get loud?" on page 9). Some research has found that poor reverberation control can even push students and teachers toward non-verbal communication methods such as texting or emailing rather than talking face-to-face in class.

Balance is key here as particularly *short* reverberation times may also create issues by making a room's sound feel dead (flat) and unnatural. In this environment, it's harder for students to stay engaged, and educators must project more, which can lead to potential vocal strain. Using architectural products to control reverberation achieves this balance by optimising speech clarity and supporting natural listening comfort for a better classroom experience.

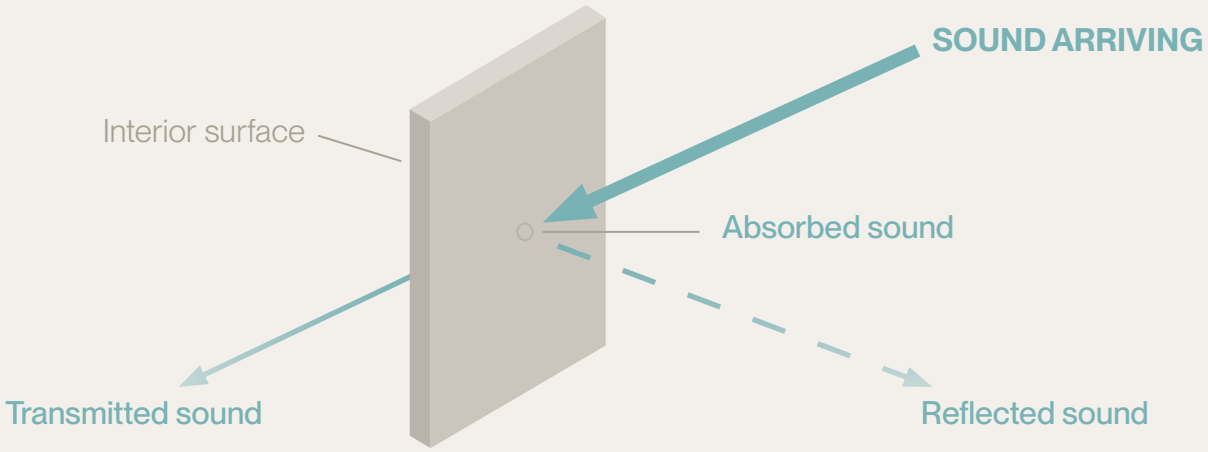


Figure 2: What happens when sound hits an interior surface.

2. Speech intelligibility

What is speech intelligibility?

Speech intelligibility refers to how easily and accurately a listener can understand spoken words in a space. It's determined by the ratio of speech signals to masking effects (noise + reverberation) to calculate the clarity of words, ensuring they're free from distortion, masking and interference.

Measuring speech intelligibility is complex and requires the expertise of an Acoustic Consultant, who uses methods such as the Speech Transmission Index (STI) or the Rapid Acoustics Speech Transmission Index (RASTI) to evaluate a space.

Why speech intelligibility matters in learning environments

Students must be able to hear and understand what's being said by teachers and peers, no matter where they sit in the room. Optimal speech intelligibility depends on a balance of low reverberation, minimised background noise and excellent room design. When the sound is clear, students learn better, participate more and don't miss instruction. Placing architectural acoustic solutions with high NRC ratings on ceilings and walls enables you to achieve excellent speech intelligibility in your space.

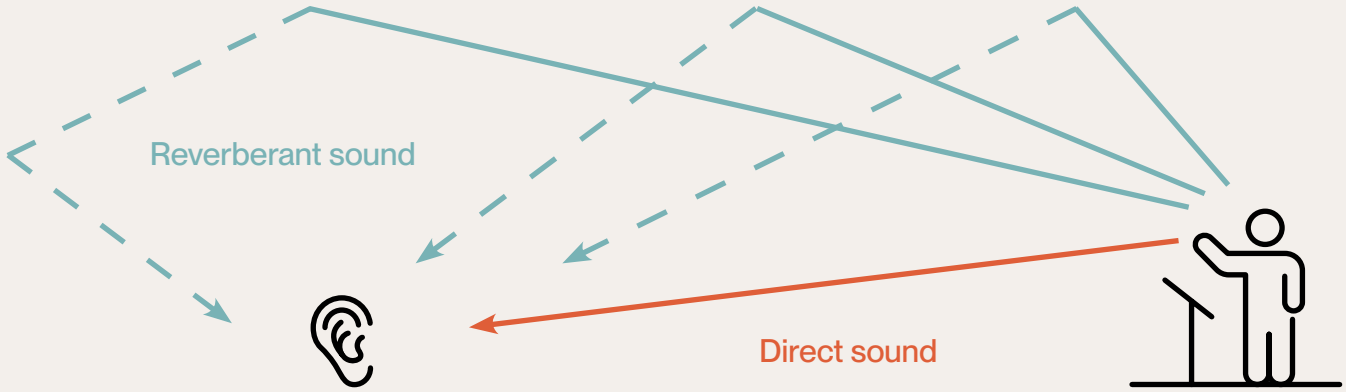


Figure 3: The difference between reverberant and direct sound.

Inside 'The Interior Designer's Guide to Reverberation Control' you'll find:

- Key acoustic concepts every designer should know
- How reverberation time impacts comfort and clarity
- Material selection tips based on NRC ratings
- Best practices for a wide range of spaces
- A check-list for choosing acoustic products

Download the Guide

3. Background Noise

What is background noise?

Background noise refers to steady noise, often from air conditioning, that is present continuously, even when the room is unoccupied.

Why background noise matters in learning spaces

At low levels, background noise can be good, acting to cover up very quiet sounds that would otherwise be distracting. But at higher levels, it causes stress and discomfort and severely reduces speech intelligibility.

4. Sound isolation

What is sound isolation?

Sound isolation refers to the capacity of building materials to reduce noise entering the room from outside. This could be from traffic or playground noise, from another room next door, or from sound in a corridor.

Why sound isolation matters in learning spaces

Schools and universities comprise multiple spaces, each with a distinct purpose. From classrooms, lecture theatres and music rooms to drama studios, gyms and libraries, sound isolation is essential for creating distraction-free learning environments. The degree of sound isolation depends on the noise outside the space and the requirements for quiet inside the space.

5. Understanding Noise Reduction Coefficient (NRC)

The NRC represents the proportion of sound absorbed by a material for speech and similar sounds. And that is what is important in most spaces. Interior acoustic products have varying values of NRC. For instance, high-quality absorbing materials may have an NRC of 0.90, while average-quality materials might have an NRC of 0.45. See Figure 4 on page 13 for the NRC values for a selection of materials available to designers today.

Collaborate with an expert.

Engaging an Acoustic Consultant ensures your interior design and acoustic material choices align with industry standards and best practices. The Association of Australian Acoustic Consultants enables you to search member firms by state on its website.

Why good acoustics in education matters

The ‘acoustic health’ of Australian classrooms

Wilson et al. (2019) surveyed 33 primary schools across Brisbane, measuring unoccupied and occupied classroom sound levels, reverberation times and speech transmission indexes against Australian Standards. Their study found that many classrooms fell short of recommended acoustic benchmarks, underlining the need for improved acoustics.

Good acoustics positively impacts students and teachers alike.

Keep the noise down, please! Why do classrooms and lecture theatres get loud?

Learning environments with poor acoustic design can trigger the Lombard Effect, particularly when students gather to work on group projects. This creates escalating noise that disrupts communication and learning.

What is the Lombard Effect

The Lombard Effect or Lombard Reflex is an involuntary response where speakers automatically raise their voices in noisy environments to be better heard and understood. French otolaryngologist Étienne Lombard discovered this psycho-acoustical effect in 1911.

It has since been found that sound that is reverberant (jangled and difficult to understand) can trigger the Lombard Effect even if it's not particularly loud. This means that controlling reverberation is key to preventing escalating sound levels in learning environments.

Classroom or lecture theatre, student library or indoor gym, music studio or drama theatre – whatever space you're designing, getting the acoustics right is a powerful tool in helping to create better environments.

Noise matters: The impact on teachers and students

According to InclusionED, poor classroom acoustics negatively impact student performance, with the effect being greater for students on the autism spectrum. Indeed, a vast body of peer-reviewed research underscores the critical need for effective acoustic design and noise control to support both teacher health and student academic performance. Using architectural acoustic products to address excess noise and reverberation can help improve:

- lesson delivery
- teachers' vocal health
- speech reception
- speech perception
- reading and language comprehension
- linguistic and cognitive processing
- concentration, psychoeducational and psychosocial achievement
- learning outcomes and classroom wellbeing.

Understanding dB, dBA and dB LAeq

We measure sound levels in **decibels (dB**), which is a logarithmic scale of sound intensity. On this scale, every increase of ten decibels represents a doubling of the loudness of the noise. Because our human ears are less sensitive to very low and very high frequencies, the industry often expresses sound measurements in **A-weighted decibels (dBA)**, which reflects how loud the sound appears to us.

dB LAeq is the A-weighted average sound level measured over a period. It's a useful measurement to gain a single value that reflects the overall acoustic environment in spaces such as classrooms, playgrounds and lecture theatres where sound levels fluctuate throughout the day.

What the studies say

We've collected some of the findings on the impact of noise in learning environments.

The impact of noise on students

The World Health Organisation (WHO) recommends a maximum background noise level of 35 dB in classrooms to ensure good teaching and learning conditions, noting that noise levels commonly exceed this, which can negatively impact student learning, concentration and behaviour. The WHO's Guidelines for Community Noise (1999) provide foundational recommendations on noise limits to prevent adverse health effects, including in learning environments.

- A study in London schools recorded the following readings:
  - Silent reading/test: 56 dB
  - One person speaking: 61 dB
  - Individual work: 65 dB
  - Individual work and movement: 72 dBA
  - Group work: 73 dBA
  - Group work and movement: 77 dBA
- Research also shows that poor classroom acoustics and noise correlate with lower standardised test scores in literacy, maths and science, especially for primary students aged 7 to 11 years.
- Chronic classroom noise exposure is linked to increased cognitive overload and decreased wellbeing among students, negatively affecting their motivation, learning outcomes and overall school experience.
- Approximately 40% of students report difficulty understanding their teacher due to background noise, leading to frustration, distraction and missed learning opportunities.
- Klatte et al (2017) stress the importance of ensuring good acoustical conditions in learning environments. Researching 21 classrooms, they found, "...children from reverberating classrooms performed lower in a phonological processing task, reported a higher burden of indoor noise in the classrooms and judged the relationships to their peers and teachers less positively than children from classrooms with good acoustics."

The impact of noise on teachers

- Teachers are three times more likely than other vocally healthy adults to report symptoms of vocal tiredness or avoidance, and over three times more likely to express physical voice discomfort with elevated complaints strongly linked to **poor classroom acoustics and noise**.
- A 2024 Scoping Review of The Effects of Classroom Acoustic Conditions on Teachers' Health and Wellbeing studied thirty-three published articles. The majority of results showed that higher noise levels have an adverse effect on teachers' health and wellbeing (61%), while 39% showed a negative impact of longer reverberation times.
- Classroom noise is reported as a significant stress factor for teachers, with nearly 80% of educators identifying it as a significant concern that affects their ability to communicate and deliver lessons effectively.
- A Danish study found that excessive noise and poor acoustic conditions make lesson delivery more challenging, leading to increased mental fatigue, reduced teaching effectiveness and a higher risk of burnout for teachers.

Standards and guidelines

What are the Australian Standards and Guidelines for acoustics in education?

Today, technically advanced architectural acoustic systems make it easier for you to meet and exceed Australia and New Zealand's stringent standards and guidelines for comfortable, healthy and productive learning environments.

For complete peace of mind, choose a well-designed, prefinished acoustic system that also meets global sustainability standards and complies with relevant fire regulations without compromising aesthetics. Solutions like these are specifically designed for interiors, such as educational environments, where excellence in acoustics, strength, durability and fire safety are paramount.

Figure 4: The NRC values of various interior acoustic products

*When installed as recommended.

The following standards and guidelines are current at the time of publishing. We recommend collaborating with your Acoustic Consultant to ensure you meet the most up-to-date standards for your project. We've collected some of the findings on the impact of noise in learning environments.

Australian national acoustic standards and guidelines

- Standards Australia AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors.
- Australian Building Codes Board (ABCB) National Construction Code Sound transmission and insulation in buildings handbook.
- InclusionED, the government-backed source of evidence for best practice in relation to autism, also draws its recommendations from the study: Classroom acoustic conditions: Understanding what is suitable through a review of national and international standards, recommendations and live classroom measurements (Mealings, 2016).
- Association of Australasian Acoustic Consultants (AAAC) Guideline for Educational Facilities.

These standards highlight the following key recommendations for classrooms and learning environments*:

Unoccupied background sound level:

35-45 dB LAeq

Reverberation time (RT):

0.4–0.6 secs
for **standard** classrooms.

0.3–0.5 secs
for spaces serving students with **hearing/language impairment**.

Speech Transmission Index (STI):

>0.75
for classrooms containing younger primary school. students

>0.60
for classrooms containing older students.

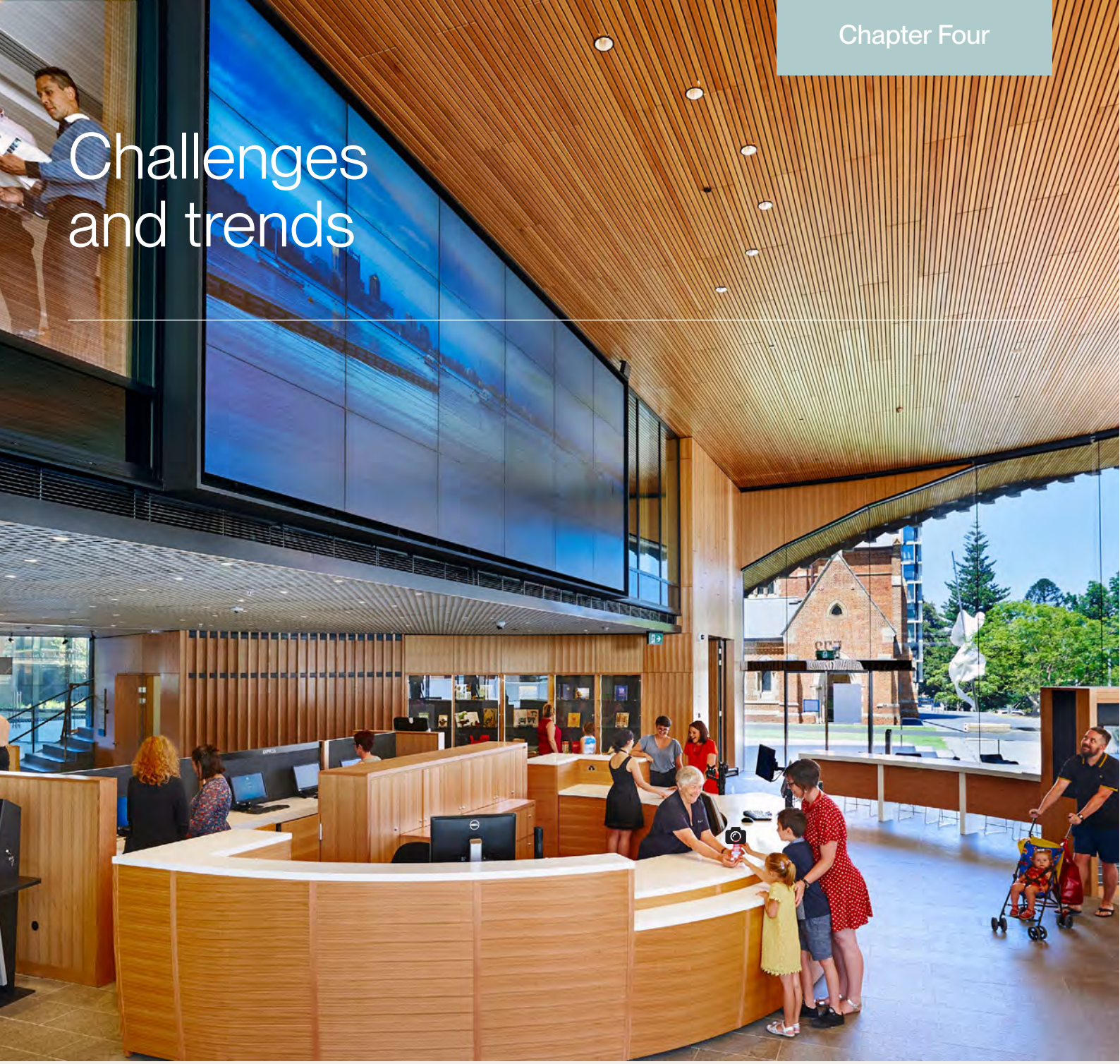
*Sources: InclusionED website, accessed 3.9.25; New Zealand Acoustics journal review: A review of AS/NZS 2107:2016 Acoustics

Australian state education design standards and guidelines

Please refer to your relevant state education design guidelines and standards, including:

- NSW Design Guide for Schools, released in 2025
- **Queensland's** Design Standards for Department of Education Facilities
- **Victorian** School Building Authority's Building Quality Standards Handbook
- **South Australia** Department of Education Facility Design Standards
- **Tasmanian** Government Department of Education Built Environment Guide
- **Western Australia** Office of the Government Architect (OGA) Design Standards
- **ACT** Education Directorate Output Specification: Sustainable Delivery of Public School Facilities Project Vol 2 Part C

Challenges and trends



City of Perth Library featuring Screenwood Acoustic Panels.

Overcoming challenges

Acoustics and open-plan classroom designs

From the 1960s to 1970s, large, open-plan education room layouts were introduced in Australia to encourage collaboration, social interaction and flexible learning. The open-plan concept reemerged in the 2000s.

However, despite their initial promise, this classroom design is in decline due to numerous negative academic and educator feedback, as well as studies highlighting significant acoustic challenges associated with these spaces.

The impact of open-plan classroom noise levels

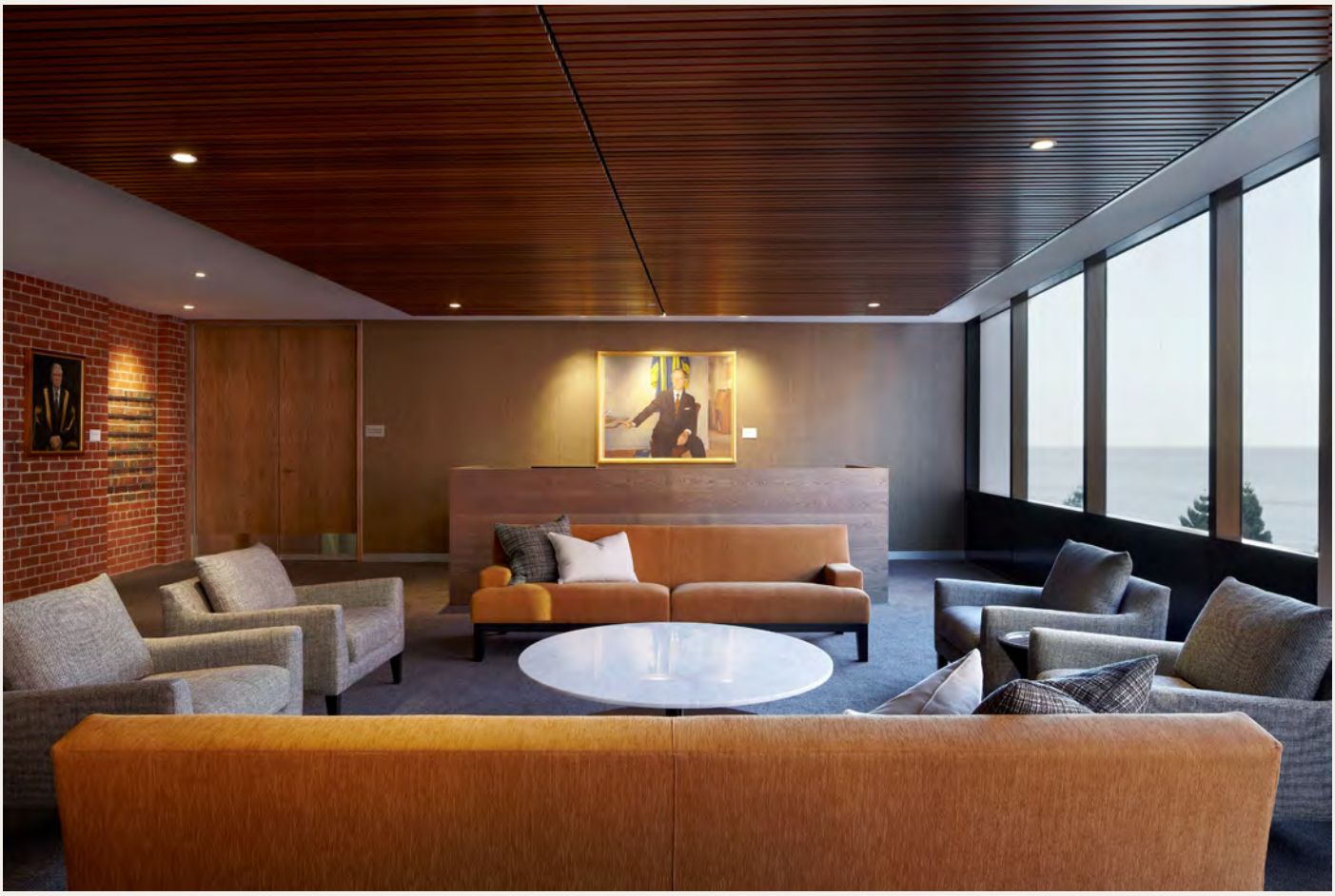
Studies from Macquarie University and the National Acoustic Laboratories have shown that open-plan classrooms generate higher noise levels and reverberation times compared to traditional enclosed classrooms. This is because they allow sound to travel unchecked, increasing reverberation if there is insufficient sound absorption. The resulting environment severely impacts speech perception, concentration and learning outcomes, which is especially challenging for younger children and students with hearing or learning difficulties.

New open-plan designs and retrofitting

Whether designing an open-plan or traditional closed classroom, balancing the pedagogical benefits with acoustic performance is crucial to creating successful learning environments.

- **For new open-plan education spaces,** incorporating effective sound-absorbing materials, quiet zones, and spatial separation is vital.
- **Retrofitting existing open-plan classrooms** can mitigate acoustic issues by adding acoustic panels, ceiling treatments and movable sound-absorbing partitions to reduce noise transmission and reverberation.

Retrofitting open-plan classrooms to address acoustic challenges can improve learning and communication by reducing reverberation. Screenwood's award-winning Modulo® Acoustic featured above is easy to install as a retrofit or in a new building and has an NRC of up to 0.75. Photo courtesy of Screenwood.



Retrofitting Acoustics for older education buildings

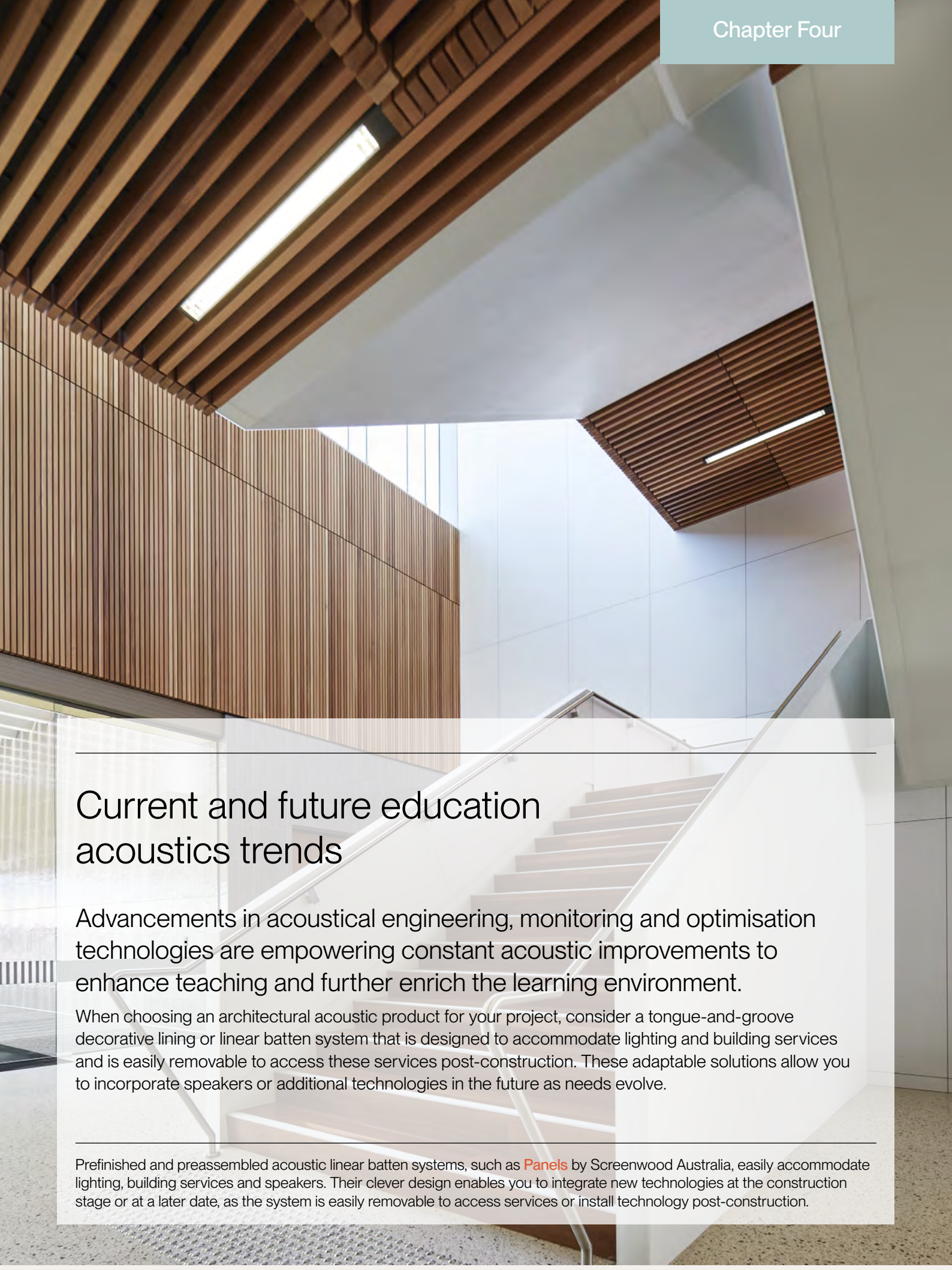
Many of Australia's older education buildings predate construction acoustic standards and guidelines. What's more, their architectural characters often feature cavernous rooms with non-porous surface materials such as concrete, plaster and hard floors. This combination causes sound waves to reflect and persist rather than absorbing them, leading to longer reverberation times. See page 5 for more information about reverberation, or download Screenwood Australia's Interior Designer's Guide to Reverberation Control.

Above: Screenwood Acoustic Panels prefinished and preassembled for easy installation to improve acoustic comfort. Photo courtesy of Screenwood.

Acoustic retrofitting – a multi-layered approach

If your project involves retrofitting a building to meet contemporary acoustic requirements, you'll need to consider specific solutions for different areas. A multi-layered approach helps transform dated facilities into productive learning spaces that align with modern standards, while respecting architectural constraints:

- target noise sources and pathways and seal gaps
- prioritise acoustic ceiling panels and wall treatments, adding mass to increase the density of walls to block and absorb sound if necessary
- lay carpet in high traffic areas to muffle footstep noise and reduce noise impact transfer
- consider secondary window glazing
- add soft furnishings and strategic zoning with partitions to reduce noise spread and reverberation time.



Current and future education acoustics trends

Advancements in acoustical engineering, monitoring and optimisation technologies are empowering constant acoustic improvements to enhance teaching and further enrich the learning environment.

When choosing an architectural acoustic product for your project, consider a tongue-and-groove decorative lining or linear batten system that is designed to accommodate lighting and building services and is easily removable to access these services post-construction. These adaptable solutions allow you to incorporate speakers or additional technologies in the future as needs evolve.

Prefinished and preassembled acoustic linear batten systems, such as Panels by Screenwood Australia, easily accommodate lighting, building services and speakers. Their clever design enables you to integrate new technologies at the construction stage or at a later date, as the system is easily removable to access services or install technology post-construction.

The following are examples of emerging acoustic trends in education:

Acoustic design evaluation using AI

AI is revolutionising acoustic design evaluation in education by using machine learning to rapidly predict key acoustic indicators, such as reverberation time and speech intelligibility, from room geometry and building features.

Recent research demonstrates that AI tools can assess classroom acoustic conditions both numerically and visually (with precision heatmaps), offering you faster and more intuitive feedback compared to traditional simulation methods. These data-driven systems help optimise learning environments, making advanced acoustic analysis more accessible and efficient for your project.

However, this does not mean that an AI chatbot can replace an acoustic consultant (at least any time soon). From experience, designs produced by AI still need evaluation and refinement by an experienced Acoustic Consultant.

Hearing augmentation systems

Wall-mounted or ceiling speakers, combined with pendant microphones, amplify teachers' voices clearly, offering potential benefits for students with hearing impairments. They also improve general classroom communication and reduce teacher vocal strain. Victoria's Mentone Grammar has written an excellent case study here.

Personalised acoustic environments

There is an increasing focus on tailoring acoustic zones to meet the needs of individuals or small groups. Acoustic panels and dividers, supported by modular furniture, better accommodate varied learning styles and sensory sensitivities.

Increasing focus on tailoring acoustic zones to support the needs of individuals or small groups.

Featured here is Screenwood Modulo® Acoustic.

Continuous acoustic monitoring apps

Numerous apps now exist to enable continuous noise monitoring by simply using your smartphone. Examples of these apps include:

- NIOSH Sound Level Meter, an award-winning app developed by experienced acoustic engineers and hearing loss experts. Completely free, it combines the best features of professional sound level meters and noise dosimeters in one easy-to-use app.
- NoiSee is an advanced professional-grade sound level meter specifically tailored to meet the needs of occupational health measurements. Note: this app requires iOS 10 or higher.
- ListenApp for Schools allows teachers to evaluate the acoustic properties of their classrooms. The app takes three measurements: unoccupied classroom background noise levels, reverberation times and occupied classroom noise levels. This free app is brought to you by the New South Wales Department of Education and Communities (DEC) Australia, Macquarie University (Audiology & the Institute of Early Childhood) Australia and the National Acoustic Laboratories (NAL) Australia.
- Alertify offers a specific classroom noise sensor that passively tracks sound levels. Measuring decibel levels, they can be placed in rooms such as classrooms, lecture theatres and libraries to gain real-time data on how noise fluctuates throughout the day. Patterns emerge quickly, such as specific rooms that spike during certain times or chronic problem areas near high-traffic zones. Data-driven insights enable you to understand noise patterns and intervene using strategically placed architectural acoustic products on ceilings and walls.

Some educators are also using fun and engaging classroom noise thermometer tools and apps to help manage classroom noise, including Too Noisy Pro and Bouncy Balls.

Pictured above, The University of Newcastle features a mix of ceiling panels and Screenwood's Soundlina®. Soundlina® is a wall and ceiling covering that achieves an NRC of up to 0.85, is Group 1 fire rated as well as PEFC™ and Global GreenTag™ certified. Photo courtesy of Screenwood.

Multisensory and inclusive design

More than a trend, acoustic solutions that support diverse learners, including students with hearing loss, ADHD, and autism, are an essential part of your interior design planning. The Australian Government-backed initiative, inclusiveED, provides valuable guidance on its website to support inclusive acoustic design in education.

Further reading

Amplifying Possibilities With New K–12 Classroom Audio Technologies, EdTech May 2025

Photo courtesy of Screenwood.

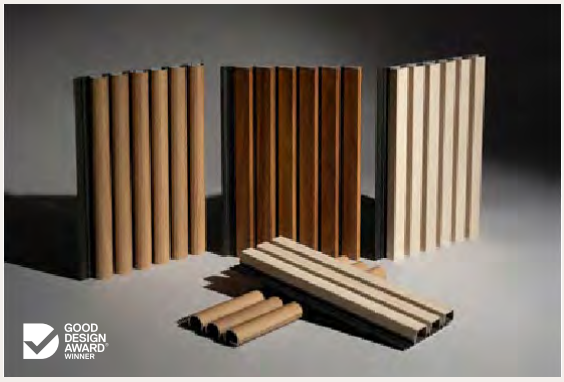
Screenwood's leading acoustic wall and ceiling products for education

Whether designing a new education facility or transforming an existing environment, Screenwood acoustic wall and ceiling solutions empower your vision.

Panels, our prefinished and preassembled acoustic linear batten system, delivers an outstanding NRC of up to 1.0. Trusted by the industry, it blends high-performance acoustic functionality with the natural warmth of wood aesthetics. Panels is a top choice for receptions, corridors and other noise-sensitive indoor areas. The product's aesthetic elegance and ability to curve at scale make it ideal for large and small spaces.

Winner of the 2024 Good Design Award, micro-perforated acoustic wall covering, **Soundlina®** for high acoustic comfort. It achieves an NRC of up to 0.85 when installed as recommended and is Group 1 fire-rated. Thanks to its wallpaper-style application, Soundlina® is ideal for expansive walls, ceilings and architectural shapes, enabling you to achieve optimal acoustic comfort cost-effectively.

Winner of the 2025 Good Design Award, **Modulo®** Acoustic, our prefinished tongue and groove lining, is designed to resolve crucial modern interior design challenges. It integrates a Group 1 fire rating with high acoustic performance and unmatched design versatility—perfect for interiors where safety, functionality, and aesthetics are paramount. The aluminium substrate is wrapped seamlessly in a choice of ultra-realistic NAVURBAN™ woodgrain, silky smooth, or industrial-style finishes for elegant and tranquil interiors.



GOOD DESIGN AWARD® WINNER

AUSTRALIAN MADE

GREENTAG CERTIFIED trust brands

GLOBAL GREENTAG HEALTH RATE Platinum trust brands

PEFC PEFC/21-31-202

Sound and nature: Crafting harmonious learning environments

The role of neuro-architecture principles in classroom design

Imagine a world where students step into a classroom or lecture theatre and feel included, stimulated and supported to learn. Numerous studies and research have found that using neuroscience insights can significantly improve students' academic performance, wellbeing and engagement, a practice known as neuro-architecture.

"Sensory aesthetics can positively influence a student's sense of purpose in school by creating a visually pleasing and well-organised environment. The use of curvilinear forms and edges, natural elements, and a balance of visual complexity can enhance creativity and promote physical activity."

Neuro-architecture – Health, Happiness and Learning
Association for Learning Environments

What is neuro-architecture?

Neuro-architecture is the science-backed practice of designing buildings and spaces in ways that positively affect the four pillars of our wellbeing: physically (body), intellectually (brain), emotionally (emotion) and socially (behaviour).

A white paper published by the Association for Learning Environments (A4LE), titled "Neuro-Architecture: Health, Happiness, and Learning," provides a comprehensive overview of design interventions that increase positive experiences for students.

How can acoustic materials deliver neuro-architectural goals in education design?

Optimal acoustics is a crucial component of creating a learning environment that aligns with neuro-architectural principles. Look for a visually and technically resolved architectural acoustic product that enables you to achieve other critical neuro-architectural elements beyond optimising soundscapes. A4LE's white paper notes the following aesthetic elements that students respond well to:

- nuanced, comfort colours, especially those found in nature
- curved shapes and forms to enhance the space's appeal
- materials that add warmth and comfort
- multisensory aesthetics with colour graduations and blended textures
- biophilic design elements to increase connection with nature (see next section).

Further reading

- The Embodiment of Architectural Experience: A Methodological Perspective on Neuro-Architecture
- The Science of Space: How Neuro-Architecture Transforms Learning
- Neuro-Architecture: How the Perception of our Surroundings Impacts the Brain

Screenwood's acoustic range of products including Soundlina®, Modulo® Acoustic and Panels deliver key neuro-architectural elements, including multisensory textures and nuanced colour graduations. Its ability to accommodate curved shapes while delivering high sound absorption empowers the creation of acoustically sound, biophilic interiors. Photo courtesy of Screenwood Australia.

Biophilic acoustic materials enhance learning environments using solid timber or an ultra-realistic woodgrain aesthetic. Their design versatility enables you to explore organic forms and sculptural expressions, creating a sense of fluidity over rigidity, a refreshing departure from conventional classroom designs. Photo courtesy of Screenwood Australia.

The role of biophilia in classroom design

Architectural acoustic materials also present a golden opportunity to harness the power of biophilic design, using solid timber or ultra-realistic woodgrain finishes to bring the outdoors inside.

The Children and Nature Network's Research Digest published a comprehensive review of studies into the benefits of biophilic design in schools. The research and studies outlined in its resource found that biophilic school design can promote:

- greater focus
- reduced stress and anxiety
- more desirable behaviours
- improved cognitive function
- enhanced creativity
- visual comfort
- better teacher retention
- lower absenteeism
- improved test scores.

Click here to access the Research Digest, published September 2024. The Digest features links, allowing you to explore each study and topic in more detail. At the university level, separate studies have shown that biophilic elements in lecture theatres and study areas improve students' mental health, sense of connection and academic engagement.

What is biophilia?

Biophilia is a hypothesis that humans possess an innate tendency to seek connections with nature and other forms of life.

Further reading

Click on these links to read more on the topic of biophilic design in schools:

- The Power of Biophilic Design in Learning Spaces: What, How, and Why? EdSpaces, August 2024
- Learning Spaces: Biophilic Design in Schools, Teacher Magazine, August 2020.
- Determan, J., Akers, M. A., Albright, T., Browning, B., Martin-Dunlop, C., Archibald, P., & Caruolo, V. (2019). The Impact of Biophilic Learning Spaces on Student Success.
- Impact of Biophilic Design on College Student Perception of Mental Health and Environmental Benefits: A dose-response study, ScienceDirect®, January 2025

Materials that signal values

Recent research on school design highlights how architectural choices carry signal values, the non-verbal messages that spaces and materials communicate beyond their functional role (Hofverberg, 2024, Pedagogy, Culture & Society). For example, placing a gym hall at the centre of a school signals the importance of health, while omitting fences signals openness and community connection.

In this sense, the acoustic materials you choose for your project influence how people feel, behave and interact within a space. Selecting ultra-realistic woodgrain surfaces signals warmth, comfort and wellbeing, aligning with biophilic design principles (see the previous chapter). These material choices also demonstrate a commitment to using environmentally responsible and healthy materials (low VOC), especially if they're certified Global GreenTag™ and GreenTag™ PHD PlatinumHEALTH™.

High-performance acoustic materials with an authentic woodgrain aesthetic provide subtle yet powerful cues of the importance you place on wellbeing, sustainability and comfort. Photo courtesy of Screenwood Australia.

The Checklist

How to select the best acoustic product for your learning environment

1. Identify acoustic needs based on space type and understand your precise acoustic prerequisites.

Once you've defined your architectural vision, collaborating with an Acoustic Consultant becomes pivotal in deciphering the precise acoustic prerequisites for your space. Requirements for materials will be expressed in values, including the Noise Reduction Coefficient (NRC) and the Sound Reduction (R). Whether designing a classroom, lecture theatre, music room or school library, working with a consultant ensures you achieve optimal acoustics and reverberation control through strategic surface area treatments.

2. Look for a versatile acoustic system to achieve your design vision.

Acoustic product advancements empower you to push the boundaries in educational interior architecture without compromise. Choose a versatile system that your team can easily and cost-effectively apply to walls, ceilings, corners and sculptural surfaces.

> Design tip: Ensure your acoustic system supports current and future technology integration. Systems like Modulo® Acoustic and Panels enable the removal of specific panels post-construction for technology services and speaker integration. Photo courtesy of Screenwood Australia.

3. Select a product that promotes key neuro-architecture principles.

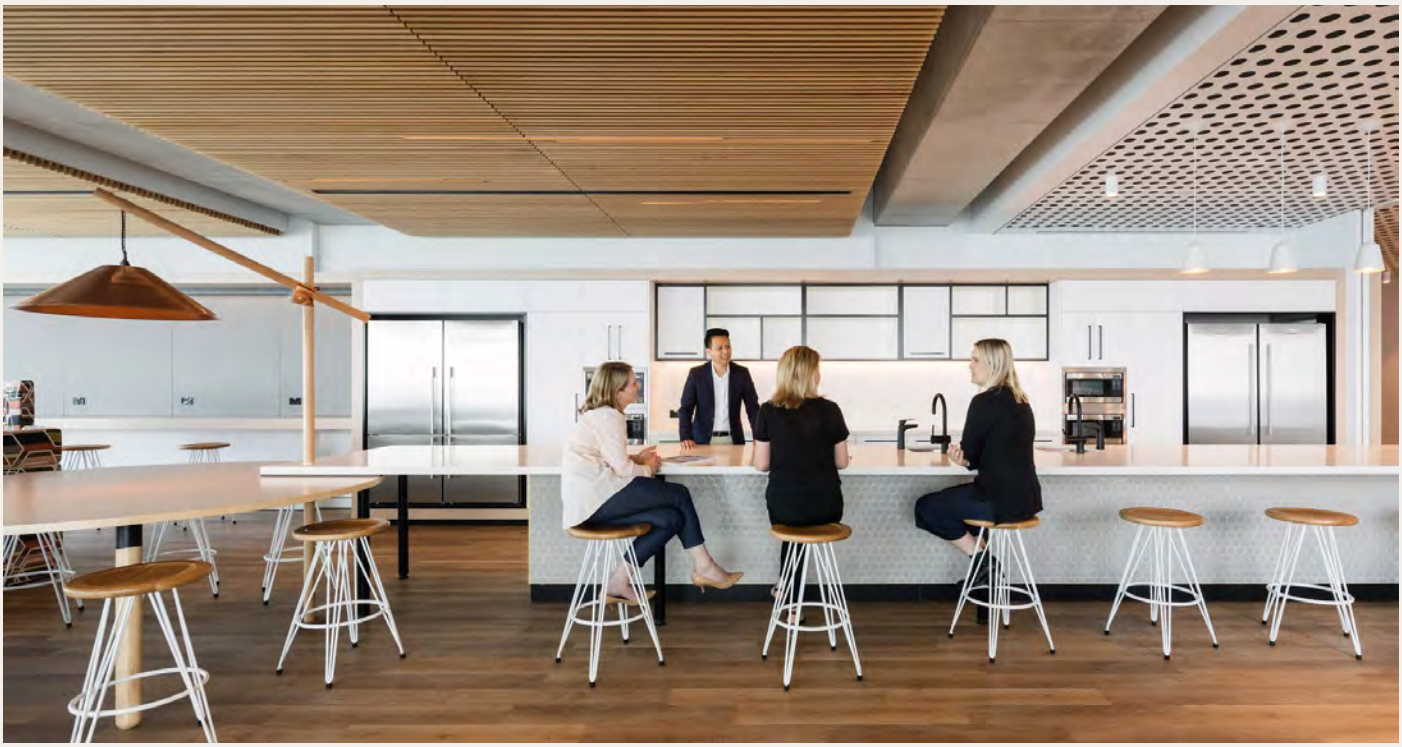
Acoustic systems with an ultra-realistic woodgrain aesthetic infuse a space with natural warmth, making them perfect for biophilic, sculptural and sustainable design exploration.

Design tip: Look for high NRC reverberation control solutions with premium surface finishes in an extensive array of colours you can match across finishes and material selections.

4. Consider cost-effectiveness and ease of installation.

Prioritise prefinished material options that offer simplicity, affordability and easy installation, eliminating costly proprietary accessories.

Design tip: Opting for prefinished products accelerates project timelines and removes the need for off-site fabrication. Furthermore, they provide reassurance through precise colour matching, minimising the risk of unforeseen finishing expenses.



5. Understand the product's certifications and capability to achieve your fire rating and sustainability vision.

Gain an understanding of the product's certifications and capability to align with your sustainability objectives, alongside meeting necessary acoustic performance standards.

- Transparent supply chain: Choose a product from a company with a stringent and transparent supply chain protocol. If selecting wood-based products, ensure they hold PEFC™ wood certifications.
- Best practice sustainability: Choose products certified by Global GreenTag™, as this comprehensive certification aligns with major green building rating tools, including LEED®, International WELL™ Building Standard, Green Star® and BREEAM®.
- Fire rating: For interiors requiring high fire ratings, select a high-performance acoustic product with a certified Group 1 fire rating that also maintains aesthetic appeal.
- Low VOC: Verify that the product meets ASTM D5116-2017 small chamber test standards for low VOC emissions.

6. Ensure your acoustic system performs in tough education environments.

Select an acoustic product pre-finished with a tough, durable surface that eliminates the need for annual staining or oiling. Choose surfaces known for their exceptional durability, such as NAVURBAN™ pre-finishes, which enhance the occupant experience and reduce maintenance expenses even in the most demanding interior environments.

7. Assess your choice by reviewing high-quality samples, requesting demos and visiting completed projects.

Order prefinished samples so you can assess the material quality and colour firsthand. At this stage, it's highly beneficial to visit a site that features the product you're considering.

> Design tip: The manufacturer can usually provide a list of public spaces or facilitate viewings of private installations upon request.

8. Choose a collaborative, local manufacturer.

Prioritise collaboration, locality and on-the-ground support. Ensure that your selected manufacturer offers robust product warranties and explore online reviews or case studies to gain insight into their reputation.

> Design tip: Access to a knowledgeable local team ensures expert guidance on a product's technical capabilities (such as curve radii), accessories (like end panels) and installation techniques. Ensuring complete transparency regarding certifications, particularly acoustic testing results, Global GreenTag™ certifications, low VOC and fire ratings, is also imperative.

Complementary design considerations

In addition to your key architectural wall and ceiling products, complementary interior design strategies can add extra layers of acoustic comfort in your education environment:

- **Acoustic-friendly fittings and furnishings,** such as upholstered furniture (with rubber feet), carpets, curtains and blinds, bookshelves, pinboards and fabric panelling and plants.
- **Curtains or blinds** that use soft, dense materials to help absorb sound.
- **Shelving and partitions** that break up the classroom, creating smaller group spaces.
- **Acoustic-backed carpets and/or rugs** that help absorb and dampen sound, which reduces reverberation. Consider using them in areas where teachers plan to hold group activities.
- **Removing or covering sound-reflecting surfaces** such as concrete walls, hardwood floors or glass doors.

Screenwood acoustic solutions for education

We're passionate about creating acoustic education solutions that support teaching, learning, communication, wellbeing and safety. Our Australian-designed and made products align with Australian Standards™ for end-to-end quality, compliance, and sustainability control. Manufacturing and delivery are super-fast, plus you have an expert local team to guide and advise you throughout the selection, order, and installation process.

For more information, please get in touch with Screenwood at hello@screenwood.com.au.

Contributor

Rob Bullen

Rob Bullen Consulting and Vibration Services
Acoustic and Vibration Services

Rob Bullen has over 35 years of experience assessing and controlling environmental noise and vibration. This includes internationally recognised research into noise impact assessment and the provision of advice to regulatory bodies, including the NSW Environment Protection Authority, on noise policy and guidelines.

Rob has been responsible for the calculation and assessment of noise and vibration impacts in numerous large and controversial projects, including Western Sydney Airport, Brisbane Airport's new parallel runway, M5 Freeway extension, mines and quarries, including Mount Pleasant and Mount Arthur North, and rail projects, including the Epping to Chatswood Rail Link and the WestRail project in Hong Kong.

He currently lectures in acoustics at UNSW Sydney, the University of Sydney, and the University of Technology Sydney (UTS). Rob has recently authored the textbook "The Architecture of Sound: Acoustic Design for Buildings."

For more information, visit robbullenconsulting.com.

About Screenwood

Screenwood empowers visionary interior design by championing the principles of strength, utility, and beauty in architectural, acoustic and fire-rated decorative lining innovations. As designers and manufacturers, the company strives to create a positive impact through technical expertise, master craftsmanship, and genuine care for people and the planet.

In 2025, Screenwood celebrated its 20th anniversary. Since its foundation, Screenwood has collaborated with some of the world's leading interior architects, designers, and builders, shaping rich and sustainable spatial experiences that enhance comfort, wellbeing, and a connection to our natural world.

Screenwood is proud to earn customer trust through consistency, delivering meticulously engineered products and systems that set the benchmark in performance, cost-effectiveness and ease of installation.

Today, millions of people experience Screenwood's systems, whether enjoying a library's tranquillity or a stadium's energy. Screenwood is proud that its architectural products have also been selected for prominent corporate headquarters, five-star hotels, and countless beautiful residences.

For more information, visit screenwood.com.au.

SCREEN WOOD

We’re ready to help.

Screenwood Australia
432 The Boulevard
Kirrawee NSW 2232
Australia

+61 2 9521 7200
hello@screenwood.com.au

Be inspired
Explore our product innovations and get inspired at **screenwood.com.au**

Acknowledgement of Country
In the spirit of reconciliation, we acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

Screenwood for all
Our products are for everyone, and so is our workplace. We believe in constantly building a diverse and inclusive culture for a more equitable world.

Version: 11-2025-V1