

# Optimising Listening Conditions and Classroom Communications in Collaborative Learning Environments: 'Activate' Technology Case Study

Executive Summary. Dr Janelle Wills. August, 2018

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## FINDINGS

All participating teachers reported positive impacts of the use of the Activate system had on the conditions for learning within their classrooms. Significantly, the use of the system improved instructional, assessment and reporting challenges typically experienced by teachers.

1. The development of collaborative skills is recognised in the Australian Curriculum as important for all students. Teachers found that the Activate system allowed for the **effective management of collaborative learning opportunities** while **increasing student accountability and time on-task**.
  2. Under the Australian Education Act, all Australian schools must assess and report on the available achievement standards of the Australian Curriculum. All teachers acknowledged that the use of the Activate system increased the **accuracy** of their **assessments** and **increased the efficiency of their reporting**. Prior to the use of the system, teachers admitted to making an educated guess as to the level to which students had acquired speaking and listening skills within the Australian Curriculum: English. According to participating teachers the **Activate system took away the guess work and provided evidence for their 'teacher judgements'**.
  3. All teachers commented that they **felt less voice strain and fatigue during the trial**. They also observed increased **student responsiveness and engagement**.
  4. Teachers commented that the system **increased their confidence in utilising student dialogue** as an instructional tool. Student dialogue is recognised as important for literacy development in all subject areas.
- Australian schools across all ctors and states were approached to use 'Activate' technology in classrooms where collaborative learning strategies and systems were in place.
  - Ten classrooms had 'Activate' technology installed in them and teachers and students used it routinely for approximately one school term.

More at [www.activatetocollaborate.com](http://www.activatetocollaborate.com) and Appendix B of the complete Case Study.

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## BACKGROUND

### The Activate System

The Activate System (distributed in Australia by Hear and Learn) providing improved speech intelligibility of teacher and student voices by providing an even distribution of sound so that students hear, understand, and comprehend instructions. These sounds of learning are distributed evenly via flat-panel speaker technology which produces a wider and more intelligible dispersion of the human voice. The teacher wears a lightweight wireless microphone allowing hands free access and easy movement throughout the room. There is no interference or dropout of sound in the room.

Along with the classroom speaker used for whole class instruction, the Activate system utilises portable two-way

audio pods which can be easily placed in various locations in or outside of a classroom. The teacher uses the microphone which includes an earbud to speak and listen across up to 12 groups. A mobile app is used to navigate across groups. The pods provide teachers with the ability to listen in on, and record student group interactions in real-time. Audio files are easily uploaded to Google Drive and then transferred to a school's Learning Management System. The pod system also enables students to communicate directly with the teacher. Using the mobile app teachers can share group and individual insights and responses with the whole class via the pods through to the whole class speaker. Consequently, all students can be heard by their peers as they contribute and provide responses.

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### The Trial

Ten Activate systems were trialled in schools in various locations across Australia (see Appendix A). A range of school sites were accessed including public, independent and catholic schools situated within rural and metropolitan areas. Classroom settings included traditional classroom designs (classic box shaped classrooms) to more contemporary classroom designs. Classes ranged from Year 1 (students aged 6-7) through to Year 6 with one smaller trial involving a secondary class. Settings included students with high level learning difficulties, indigenous students and students for whom English is an additional language or dialect. Trials were conducted for the duration of one full school term.

All participants were asked to respond to the following questions:

1. In what ways does Activate support collaborative learning and student engagement?
2. What impact does Activate have on teachers' instructional practices?
3. Does Activate make the assessment and tracking of students' speaking and listening skills easier/more effective/more accurate?
4. What 'problems of practice' can be addressed through the application of Activate?

Responses were captured via email, skype calls and face to face meetings.

Teachers ranged in experience from early career teachers to teachers with thirty plus years of teaching experience.

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## RATIONALE

The Activate system trial was established to determine if the use of the system in classrooms was able to assist teachers to address key challenges/curriculum priorities within a typical classroom setting. The challenges identified were:

- Providing and effectively managing collaborative learning opportunities.
- Overcoming less than ideal acoustic environments which impact upon teacher voice strain and student responsiveness.
- Accurately and efficiently assessing speaking and listening achievement standards within the Australian Curriculum.
- Reducing teacher talk to increase student dialogue for literacy development.

Each challenge is addressed over the page:

## The importance of collaboration in classrooms

There is extensive acknowledgement nationally and internationally that 21st century skills, including collaborative problem-solving skills, are a necessity for our students.

The Melbourne Declaration on Educational Goals for Young Australians (2008) identified essential skills for 21st century learners – in literacy, numeracy, information and communication technology (ICT), thinking, creativity, teamwork and communication. The Melbourne Declaration underpinned the development of the Australian Curriculum which was designed to equip young Australians to live and work successfully in the twenty-first century. A significant expectation of the Australian Curriculum is that students interact effectively with their peers in collaborative groups and teams to develop the essential skills for 21st century learners.

According to the Australian Curriculum, students from Prep onwards are expected to be given opportunities to:

- Negotiate and communicate effectively with others;
- Work in teams, positively contribute to groups and collaboratively make decisions and
- Resolve conflict and reach positive outcomes.

Collaborative learning has been recognised by the Victorian Department of Education and Training as a high impact teaching strategy in a document provided to all Victorian schools (Department of Education and Training, 2017). The High Impact Teaching Strategies: Excellence in teaching and learning document outlines the 10 instructional practices shown to reliably increase student learning wherever they are applied. These practices were identified from the findings of tens of thousands of studies of what has worked in classrooms across Australia and internationally. Within the document John Hattie is cited to have found an effect size of 0.59 for collaborative learning. An effect size of this nature is considered strong and is typically associated with student progress gains of approximately 5 months (Evidence for Learning (2017) Teaching and Learning Toolkit - Australia. <http://evidenceforlearning.org.au/the-toolkit>).

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## Issues with quality sound in classrooms

Listening is the primary access point to learning for teachers and students alike. According to Dr Carol Flexer, Distinguished Professor Emeritus, Audiology, 70% of a student's school day is composed of listening activities (2018). Although classrooms appear to be relatively small spaces, there are several barriers that prevent effective listening for students. Hearing loss among students (often not diagnosed), teacher vocal strain, distance from the teacher and ambient noise all of which negatively impact speech intelligibility and the student's ability to comprehend what is being said by the speaker.

Typical classrooms have significant background noise from air conditioners or fans, the movement of students and even traffic. Consequently, teachers must try to project their voice to get above this background noise. According to Flexer (2018) there are two consequences of voice projection of this nature:

- a. Voice strain and teacher fatigue.
- b. As teachers project their voices only the dominant sounds get above the background noise. Soft consonants, which give the word most of its meaning, are not heard above the background noise. This creates what is called the intelligibility gap, where a portion of the sounds are lost within the background noise. Unfortunately, younger students with limited vocabulary and experience can't fill in the blanks created by the gaps. Thus, students only get part of the meaning conveyed by the teacher.

Lack of clear access to instructional information drains a student's cognitive reserves and dilutes learning. The end result is a high risk for a slower pace of learning (Flexer, 2018).

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## The need for student dialogue

It has long been acknowledged that *'talk is the sea upon which all else floats'* (Britton, 1970) with recognition that students' learning and literacy are heavily influenced by the nature of classroom dialogue. It is through 'talk' rather than teacher talk that students are able to make meaning. Making meaning – comprehending, constructing, interpreting or understanding one another and the world around, according to Edwards-Groves and Davidson (2017), involves real, in-practice actions and interactions. Unfortunately, it is teacher talk which predominates the classroom (Freebody et. al, 1995,

Edwards-Groves, 2003, Fisher & Larking, 2008, Edwards-Groves & Davidson, 2017).

Although the architecture and design of classrooms has changed, classroom discourse practices have remained remarkably unchanged over the last century and a half (Nystrand, 2006). Students need to learn ways of interacting with each other to enhance meaning making and cognitive development (Gillies, 2014). Further, despite its importance student dialogue is typically not monitored or assessed (Edwards-Groves and Davidson, 2017).

## Assessment of speaking and listening within the Australian Curriculum

*“Listening and speaking are acknowledged as being central for the development of language and literacy”* (Edward-Groves & Davidson, 2017). The Australian Curriculum: English (2018) recognises the importance of speaking and listening within two main areas: **Language for interaction** and **Interacting with others**. But what does this look/sound like in practice as students for example, ‘share the talking space’, ‘provide useful feedback’, ‘be a supportive and attentive listener’ or ‘elicit responses’ in natural interactions? How do teachers effectively assess, monitor and report on these foundation skills within the Achievement Standards of the Australian Curriculum? In reality, most teachers currently admit to making an educated guess when reporting this aspect of the curriculum. Further, it is difficult to gather evidence to support the teacher judgements made.

Australian Curriculum requirements:

### **Year One Australian Curriculum Content Descriptors:**

- Engage in conversations and discussions, using active listening behaviours, showing interest, contributing ideas, information and questions (ACELY 1656).
- Use interaction skills including turn-taking, recognising the contributions of others, speaking clearly and using appropriate volume and pace (ACELY 1788).

### **This requires that students are able to:**

- Identify turn-taking patterns in group and pair work (for example initiating a topic, changing a topic when appropriate, staying on task, supporting other speakers, eliciting responses, being supportive and attentive listeners, asking relevant questions, providing useful feedback, prompting, checking understanding, ‘sharing the talking space’)
- Take turns, asking and answering questions and attempting to involve others in discussions.
- Demonstrate active listening behaviour and responding to what others say in pair, group and class discussions.
- Attempt correct pronunciation of new vocabulary.

### **By Year 6 students are expected to:**

- Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students’ own experiences and present and justify a point of view (ACELY 1699)

- Use interaction skills, for example paraphrasing, questioning and interpreting non-verbal cues and choose vocabulary and vocal effects for different audiences and purposes (ACELY 1769)
- Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions (ACELY 1709)

### **This requires that students are able to:**

- Ask specific questions to clarify a speaker’s meaning, making constructive comments that keep conversations moving, reviewing ideas expressed and conveying tentative conclusions.
- Use effective strategies for dialogue and discussion including speaking clearly and to the point, pausing in appropriate places for others to respond, asking pertinent questions and linking students’ own responses to the contributions of others.
- Use strategies, for example pausing, questioning, rephrasing, repeating, summarising, reviewing and asking clarifying questions.

It is a legislative requirement within Australia that teachers assess and report on all available standards. Yet, so many of the skills outlined above are difficult to monitor in-practice. The moment a teacher walks closer to a group the dynamic and nature of the dialogue between students typically changes. Teachers require a method of capturing the evidence of these skills in natural, informal settings.

## FINDINGS

All participating teachers responded positively to the use of the Activate system. Clear trends and patterns were evident across all locations with the use of the system impacting positively on: student engagement and responsiveness; assessment practices; classroom management and student interactions in collaborative learning situations and teacher well-being.

### **A. Student engagement and responsiveness**

All participating teachers commented upon the various ways that the use of the system impacted upon student engagement particularly in collaborative or small group learning situations.

Teachers found that the Activate system impacted upon

the way they were able to deliver instructions allowing for personalised and more targeted instruction. The ability to target specific groups or students was less distracting for the other groups meaning that these groups could continue with their learning task or discussion and remain engaged.

The ability to listen to the groups allowed teachers to determine how students were interpreting the information that had been given to them. Consequently, they were able to intervene quickly if there were misconceptions or issues that needed clarification. One teacher reported that it allowed her to reflect on the way she was providing instructions and to make alterations, thus improving the effectiveness and clarity of her instructions generally.

A recurrent theme across all sites was that teachers found that reluctant or quieter students were more willing to ask clarifying questions. One teacher commented that as the trial progressed the students' questions became more in-depth and insightful. Several teachers commented that students were more willing to ask for help when they could communicate directly with the teacher via the pod without the need to leave the group they were working with at the time. The stigma of requiring assistance was reduced.

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## B. Assessment practices

All teachers reported that the Activate system made assessment and tracking of the Speaking and Listening requirements of the Australian Curriculum both easier and more accurate. They found that the ability to record student responses for particular purposes was useful for making judgements and for gathering evidence when conferencing with other staff or parents. What had previously been subjective teacher judgements could now be substantiated with evidence. Teachers admitted that some of their previous assessments were not entirely accurate. Some teachers reported that they were also using the audio recording of student interactions for moderation purposes so that teachers were able to agree upon the level/extent to which students had demonstrated particular skills.

Typically, teachers across all sites commented that they were surprised by insights that they gained from the opportunity to monitor student interactions in authentic situations. Teachers found that students previously considered to be quiet or non-contributors could be heard teaching other students or providing detailed explanations and justifications of reasoning.

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## C. Classroom management and student interactions

A challenge for teachers within collaborative teaching environments is the ability to monitor groups to ensure that students are on-task and that the dialogue within the group is productive for learning. All teachers commented that the use of the pods to monitor the groups had a significant impact on the dynamics within the classroom. A recurring theme was that the students had a greater sense of accountability and were more focused.

Teacher comments included:

- "Students are noticeably more actively involved when I am using the system."
- "The learning environment is calmer, and it is faster to settle the students thus maximising instructional time."
- "My teaching is more targeted and dynamic. There is less teacher talk and more student interaction and voice."
- "Having the new system in the room has provided me with the confidence to include collaborative learning tasks in day to day learning."
- "I was amazed the first few times I used it as students were discussing in ways I'd never heard before."
- "It has given 'voice' to the children who don't usually speak up and share their ideas."

Teachers across all sites also began to use the system for the assessment of reading skills. They found that the recoding functions allowed them to playback the assessment and pick up on student behaviours that they had previously missed. Teachers using the system in this way found that the students were self-monitoring during the recording process and found the ability for students to listen back to their own reading useful feedback. The ability to self-reflect in this way has a powerful impact on student learning. Some schools used the recordings as a basis for collaborative discussions amongst teachers and for compiling evidence for Individual Education Plans.

Teacher comments included:

- "My assessments are more authentic and detailed."
- "The system has given me unique insights with lots of surprises about how my students interact in small groups."
- "Activate provides an opportunity for continual formative feedback in a more authentic way."
- "It allows me to identify misconceptions and errors faster and as a result I can quickly change/modify instruction to suit."

Teachers found that some of their assumptions about the dialogue occurring in groups was incorrect. Most teachers commented that they were pleasantly surprised. One teacher team observed that before using the pods if a group was loud there was a tendency to shut down the conversation as the students appeared to be 'off-task'. With the use of the pods it was possible to hear that the students were actually 'on-task' and having a rigorous

conversation. The intervention by the teacher changed to being about noise level rather than shutting down the conversation. Thus, learning and essential student dialogue continued.

Teacher comments included:

- “The children seem more accountable for their learning and more willing to join in with group discussions.”
- “The children are enjoying working within a group and have worked significantly better when they know the activate is on the desk and I can listen in at any time.”
- “Students seem to participate more willingly in conversations knowing Activate is there. They will often come to ask if I heard them say a specific line or thought. This tells me they appreciate the opportunity to be heard.”
- “I can monitor small groups working with other adults, and adult and children can report back to me, particularly when working out of sight in other rooms or on verandas.”

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## D. Teacher well-being

Overwhelmingly, the teachers participating in the trial found that the use of the microphone and speaker reduced voice strain and fatigue. One principal observed that: “The system saves the teacher’s voice and vocal chords, enabling them to interact with whole class, selected pods or individual pods, or exclusively with another teacher in the room, when team teaching, at a volume consistent with everyday talking. There is less voice fatigue.”

Continually throughout the trial teachers commented that they felt less fatigued and more energised due to no longer needing to project their voices. The ease of monitoring small groups was also noted.

A principal noted that teachers using the system were more easily able to collect evidence that they were meeting the professional standards outlined by AITSL. They were able to show that they:

- a.** Know their students and how they learn (using teaching strategies which suit particular students that are responsive to student strengths and needs while focusing on particular learning needs, or particular learning activities which support particular individuals or small groups)
- b.** Know the content and how to teach it (by grouping students to cater for learning needs, they can adjust the nature of the learning and the task to best suit the learning needs and outcomes for the students involved, and make the content more relevant and meaningful for the students)
- c.** Plan for and Implement Effective Teaching and Learning (by setting explicit, challenging and achievable goals for all students and monitoring and providing feedback in an ongoing manner, providing opportunities for ongoing self-evaluation and reflection on the effectiveness of their processes.)
- d.** Creating and maintaining a supportive and safe learning environment. (This is readily done with the use of the Activate system, as the teacher is able to listen in to any particular group at any time, and behaviour management is at their fingertips. The environment is created to empower on task behaviour.)
- e.** Assess, provide feedback and report on learning (This is particularly beneficial for consistent teacher judgement as teachers are able to hear the whole group and through conversing can target particular pods in moments of assessment -whether formal or informal, formative or summative. The timeliness of formative feedback is accentuated using the Activate system).

Teacher comments included:

- “All children can hear me clearly, with less strain on my voice.”
- “The microphone is essential to me. I use it all day, every day. I love my microphone and would not be without one.”



## CONCLUSION

All participating teachers commented on the positive impact the use of the Activate system had on the conditions for learning within their classrooms. Significantly, the use of the system was able to address the challenges teachers typically experience. That is:

- Providing and effectively managing collaborative learning opportunities.
- Overcoming less than ideal acoustic environments which impact upon teacher voice strain and student responsiveness.
- Accurately and efficiently assessing speaking and listening achievement standards within the Australian Curriculum: English.
- Reducing teacher talk to increase student dialogue for literacy development.

According to teachers within the trial, the use of the system had a significant impact on: student engagement and responsiveness; teacher assessment practices; classroom management and student interactions in collaborative learning situations and teacher well-being.

As one teacher concluded,  
*"The Activate system has become a natural part of the classroom. It is difficult for one human in the classroom to monitor all group interactions. The system makes this easier."*

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## APPENDIX A

### School Sites

1. Matthew Flinders Anglican College  
Buderim, Queensland
2. Matthew Flinders Anglican College  
Buderim, Queensland
3. Sunshine Coast Grammar School  
Forest Glen, Queensland
4. Arnold's Creek Primary School  
Melbourne, Victoria
5. Immaculate Heart of Mary Primary School  
Hobart, Tasmania
6. Eastside Lutheran School  
Hobart Tasmania
7. Lidcombe Public School  
Sydney, New South Wales
8. Gymea Public School  
Sydney, New South Wales
9. St Keiran's Primary School  
Tuart Hill Western Australia
10. Didji Didji Aboriginal School  
Bunbury, Western Australia

## APPENDIX B

'Activate' is a brand name of Lightspeed Technologies USA distributed in Australia by Hear and Learn. The Activate system is a hybrid of soundfield technology, and individual pods used by up to 12 groups of children working independently in a collaborative learning environments.

Soundfield is audio tech engineered to deliver Acoustic Access for all students in learning spaces. It captures the sounds of learning (voices of teachers, voices of students, and AV sound sources) and delivers them evenly and gently to all parts of learning spaces and to all learners irrespective of their hearing health.

Activate pod technology allows teachers switch from whole group instruction to communication to individual groups of children using an App on phones or tablets.

The Activate technology allows teachers to listen to the work of children from afar, allows children to gain the attention of teachers from afar and talk two way, and allows the recording of the work of children to Learning Management Systems.

# Activate System

## Listening for insights to activate learning

Engage the whole class. All students must have equal access to the teacher's direct instruction so they can hear, understand and gain insight that leads to higher learning.

Activate group learning. Teachers must be able to listen to student discussions in today's active classrooms. With real-time feedback into the learning process, teachers gain insights needed to activate learning.

Collaborate and share ideas. Teachers need to review their own instruction along with critical student learning moments for self-reflection and collaboration with peers and coaches. Insights shared among educators elevate everyone's skills.



**Activate Pods**  
2-WAY AUDIO PODS ENABLE THE TEACHER TO LISTEN TO STUDENT GROUPS



**Activate Station**  
CHARGES AND CONNECTS TO MOBILE DEVICES VIA BLUETOOTH FOR CONTROL AND AUDIO STREAMING



**Activate App**  
CONTROL, CONNECT AND CAPTURE STUDENT GROUPS AND THE WHOLE CLASS



**Activate Ready**

### What is an activated learning environment?

As new instructional methods change the ways students use the classroom, audio systems need the flexibility to interact with the entire class, small groups, individuals, and even students in the hallway.

Access Technology allows schools to start with whole group instruction with a classroom audio system, then easily add Activate Pods for small group learning.