Castleknock Community College

NCSE Practice-Based Research Programme 2025/26
School Research Summary

Castleknock Community College was established in 1995. We are a co-educational school with over 1300 students, 140 teachers and SNAs. We have two special classed that link to our mainstream classes. We have a large AEN department with an AEN link to each year group.

School and project details

Name of school: Castleknock Community College

Practicing teacher leads: Grace Bermingham & Mary McDermott

Research theme: Reducing the Cognitive Load for Students

Research aim: We aim to use UDL strategies to help students to contextualise the content of a lesson and manage their own learning.

Research in practice

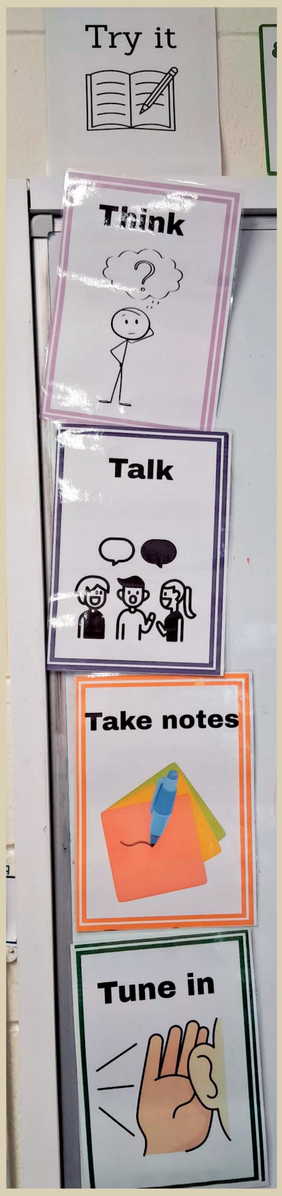
Our current School Self Evaluation (SSE) focus is inclusion. UDL is a tool that provides all students opportunities to learn to the best of their ability and while some teachers have used elements of UDL in their lessons, we made a conscious decision to learn how to embed it into everyday life in the school. As part of our research, we identified barriers to learning for our students. We felt that cognitive load was a significant barrier for many students and therefore one that was important to work on. Our problem of practice was to identify ways teachers can reduce cognitive load for students by using UDL. This is not solely the focus of our own schools' needs but at a national level.

Methods

We drew from Research of Cognitive Load Theory and Richard E. Mayer's Principles to reduce cognitive load. We conducted two student surveys along with teacher observation of student engagement with UDL strategies used in our lessons.

Participants

The research included 120 students (90 students from 2nd year 30 students from LC1) and 2 teachers.



Impact of our research

In our classrooms we could see how the two strategies we trialled improved learning outcomes. The methodologies we tried were suitable for all students, not just those with identified barriers. No student was singled out as being different, yet all students could engage and enhance their learning to the best of their ability. The keyword charts and the 5T charts enabled students to make better choices and afford enhanced self-directed learning. It also helped us as teachers understand the UDL principle of utilising multiple means of representation.

We continue to include these strategies in our teaching across all class groups. The keywords charts are integrated as a part of the primary whiteboard in our classrooms to make them more user friendly. The segments can be made with different shades of colour. The 5Ts have been shared with colleagues who can integrate them into presentations as appropriate or use in hard copy. 49% of the students surveyed before we trialled the visuals stated that diagrams, pictures and graphs aid their learning including comments such as 'summarise the class's work' and stating 'main points' were some of the main responses.

After establishing the visuals, we resurveyed the same groups again to see whether students noted a reduction in cognitive load. The findings were illuminating; most students felt that keyword charts heled them to stay focussed during the lessons and to retain and contextualise the lesson's main focus. Many of the students did not find the keyword chart distracting and liked having keywords placed in a separate space on the board.

Going forward the 5T visuals will be used more in PowerPoint presentation across all subjects we teach. It may not be of benefit to always use them all, but we will use them when they could be of benefit to any or all students. We will use larger visuals for the new academic year as some students felt the current ones were too small.

The keywords chart was challenging in terms of the materials we used. Students found the strategy helpful for the most part, so it merits a permanent place on a whiteboard. To be more user friendly we will section the board with tape instead of using the separate laminated sheets we trialled for research purposes. Most students researched did not notice a difference with the colour used but some did so we will continue to use two distinct shades of green going forward.

Taking part in this research has clearly outlined for us the merits of supporting all students by making changes to how we provide opportunities for engagement and representation. Collaborating with colleagues throughout the process ensured we met deadlines and could adjust strategies as needed. Students appreciated the opportunity to provide feedback through the surveys and they valued having an input into methodologies and strategies used in their learning environment. This is an important process that we feel should continue.

Research findings

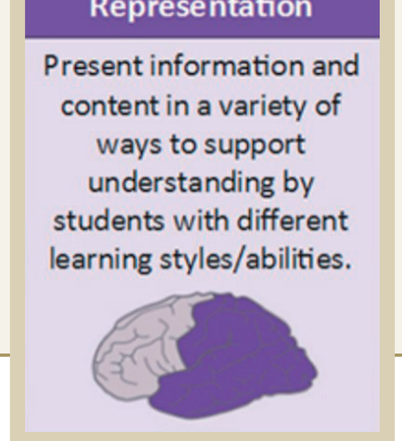
When students were initially surveyed on their learning their responses were interesting. Too much information presented in lessons and students feeling tired were the most common reasons given for students finding it difficult to remember lesson content. The greatest distraction to students by far at 40% was their own thoughts.

Students reported that visuals and pictures were one of their favourite and most useful strategies for remembering content. This was closely followed by practicing questions. This aligns with key educational theories such as Hattie's *Visible Learning for Teachers* that pictures and graphics are necessary for learning.

Cognitive Load Theory as identified by John Sweller in 1988 notes that lessons and materials should be designed to reduce unnecessary load. Fewer distractions mean better learning. If students are overloaded with difficult content (*intrinsic load*) or too many distractions (*extraneous load*), there is less space for meaningful learning (*germane load*). For the purposes of this research project, we focused on reducing extraneous load through UDL. We focused on Richard E. Mayer's three principles: Signalling Principle, Coherence Principle and Segmenting Principle to acheive our goal.

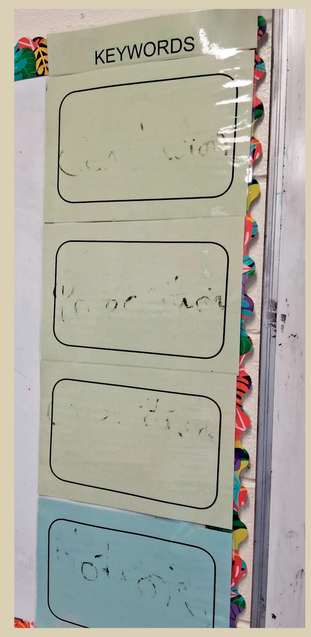
In our follow-up survey, after implementing our two designs, 74% of students wanted the keywords chart to be used throughout their lessons and not as a summary device at the end. They identified it as a useful tool to improve teaching and learning.

We created a keyword chart and a 5T chart. Students asked for the 5Ts to be used from the start of lessons and expressed a desire for them on PowerPoints when activities are set by the teacher. Students also commented on time being important to them when doing tasks, and they felt knowing how long they had left when doing tasks was also helpful.



Our top three findings

1. **Improved Student Confidence**
   A key learning point was the importance of clarity and cognitive accessibility in the design of our lessons. The keyword chart functioned as both a linguistic scaffold and a confidence-building tool. Students who might typically struggle to articulate ideas were able to engage more actively with confidence because they had a visible bank of vocabulary. 66% of students agreed that a separate space for key words created a more positive and beneficial learning experience.
2. **Improved Student Engagement**
   We observed that students sometimes looked back to these visuals, suggesting that they acted as anchors throughout the lesson. When tasks are supported visually and broken into clear, structured steps, students are more likely to remain engaged. This reflects the UDL emphasis on providing multiple means of engagement, as the graphics helped maintain motivation and clarity of purpose. 79% of the students who used the graphics and key words chart believed the charts were not a distraction in the lesson.
3. **Enhanced Teacher Planning and Collaboration with Colleagues and Students**
   As teachers we frequently consider how to adapt supports for students to encourage greater independence, aligning with the UDL principle of developing expert learners who are strategic and self-regulated. Through our second survey we identified scope to encourage students to develop their own keyword chart throughout lessons to provide greater autonomy over their learning. 74% of students felt the strategies used for this research would be of benefit to them in other subjects. By collaborating together as teachers and with our students we have established ways to improve these strategies going forward.



Maynooth University
National University of Ireland Maynooth

An Chomhairle Náisiúnta um Oideachas Speisialta
National Council for Special Education