Alliance of Girls' Schools Australasia

UNSW AUSTRALIA

# The Girls' School Edge

## Academic buoyancy and student outcomes in Australian girls' schools

# INTRODUCTION

**A recent study undertaken by Scientia Associate Professor Rebecca Collie and Scientia Professor Andrew Martin funded by a grant from the Alliance of Girls' Schools Australasia focussed on the unique role of academic buoyancy in academic outcomes for girls.**

Academic buoyancy refers to a student's capacity to successfully navigate experiences of academic challenge and adversity that commonly occur as a part of schooling, such as a poor test result, stress and anxiety, or competing assignment deadlines (Martin & Marsh, 2008). Academic buoyancy is often referred to as "everyday academic resilience" and has been linked with many positive outcomes, including higher levels of motivation, engagement, wellbeing, and achievement among students. Ensuring that students have healthy levels of academic buoyancy is vital.

Prior research found that female students from both co-educational and single-sex schools often report lower academic buoyancy than male students. Notably, this is one of the relatively few educational attributes where the gender difference is not in favour of girls. Efforts to better understand academic buoyancy among female students and how it can be boosted are essential. Failure to undertake such efforts risks leaving girls' potential unfulfilled in relation to both short- and long-term educational, wellbeing, and occupational outcomes.

The research provides a snapshot of academic buoyancy in girls' schools derived from existing longitudinal data (Australian LSAY data set) predating Covid. It examined data from 627 female students to understand factors linked with greater levels of academic buoyancy in girls' schools, along with academic outcomes that stem from higher levels of academic buoyancy. The researchers also sought to identify different types of learners by way of learning and buoyancy profiles. Overall, results provide understanding about academic buoyancy and how it can be promoted among girls.

# KEY FINDINGS

**The results highlight the importance of teaching practices in supporting female students' learning strategies, navigating academic adversity, building academic buoyancy and ultimately delivering academic outcomes. In other words, like many investigations into school-based determinants of academic success, teaching practice was identified as critical.**

Definitions of key terms are provided in Table 1. Table 2 summarises the predictive association between teaching practices, learning strategies and student achievement. It pinpoints that for girls it is positive relationships with their teachers that have the strongest association with academic achievement. While the key predictor of academic buoyancy is the learning strategy of elaboration — students' use of strategies such as summarising and paraphrasing, identifying the main ideas from texts, and making connections between new content and prior knowledge. In turn academic buoyancy is associated with enrolment in a Year 12 science subject (seen as a reflection of student confidence).

Modelling the data on teaching practices, learning strategies, academic buoyancy, PISA achievement and ATAR outcomes revealed that a high proportion (65 per cent) of students in girls' schools were considered to be thriving learners and 45 per cent were described as tenacious learners.

In all, five different learner profiles were evident in girls' schools which may indicate that girls' schools are individualising their pedagogy approaches to cater to the unique attributes and learning preferences of their students — and future research will be important to examine this further. The five learner profiles are described in detail in Diagram 1 and yield nuanced understandings about specific types of female learners.

Again, it is teaching practice and specifically the use of engaging content — content that students find interesting — that is the key determinant for girls to be considered as thriving learners. The findings show that for every point (on a 4-point scale) that a student rates their school's teaching practice as higher on engaging content, they are 3 to 4 times more likely to be high-thriving learners.

Academic buoyancy was also seen as game-changer for certain learner profiles acting as a protective factor. Students with higher levels of academic buoyancy were able to lift their ATAR outcome.

The Mixed-Thriving learner achieved a similar ATAR to the High-Thriving learner despite being characterised by below average PISA achievement. A similar situation was also evident for the Tenacious Buoyant learner who had an ATAR equal to the Tenacious Non-Buoyant learning, despite having lower levels of learning strategies and PISA achievement.

The common factor delivering improved outcomes for these learner profiles is higher levels of academic buoyancy.

## What can we take from the findings?

Taken together, the findings from the study provide guidance for practice, including teaching practices to focus on, as well as the learner profiles that would benefit from additional support to improve their learning strategies, PISA achievement, and academic buoyancy.

The teaching practices included in the study — teacher-student relationships; useful content; and engaging content — were positively associated with student learning strategies. Importantly, engaging content was positively associated with the learning strategy of elaboration and was also important for predicting membership in the thriving learner profiles. Elaboration was positively associated with greater academic buoyancy.

## What can teachers and schools do to support female students?

Teaching practices are key to providing students with a positive school experience and for predicting learning strategies, PISA achievement and academic buoyancy. To develop academic buoyancy teachers and schools should focus on creating highly engaging content for students and encouraging students to use elaboration strategies.

Alongside this, the learner profiling provides a deeper understanding of the different types of learners within girls' schools. This information is relevant for teaching practice as it reveals how efforts can be targeted to the specific needs of each learner profile — that is, what combination of support for the three learning strategies (elaboration, memorisation, control), achievement, and academic buoyancy should form the focus for each profile?

The three thriving learner profiles would benefit from efforts to maintain and further develop their learning strategies and academic buoyancy. For the Mixed-Thriver, this should include a particular focus on boosting achievement given their below average levels on this factor. For the tenacious learner profiles, efforts to increase their low levels of the learning strategies are essential, as are efforts to develop academic buoyancy for the Tenacious Non-Buoyant profile.

## Learning Strategies

This section provides details of strategies that teachers and schools may use to address the needs of each learner profile, along with strategies for promoting the teaching practices across the learner profiles.

Researchers have shown that students need to be aware of elaboration, memorisation, and control in order to make the most of these learning strategies (Pintrich, 2002). It is, then, important that students are provided with opportunities to become aware of, implement, and refine their use of these strategies. Teachers can do this by:

- including time in activities for students to reflect on the main ideas of a text (elaboration), practice recalling key facts that need to be remembered (memorisation), and think about what they know and do not know about the topic (control);
- building students' awareness of these three strategies by noting occasions when students are using them and labelling the strategy being used;
- embedding discussions of these learning strategies in everyday lessons;
- modelling the use of these strategies (e.g., when solving a problem for the class) by showing students how the strategies can be used and by explaining why the particular strategy is helpful in a specific situation;
- having students set goals for their learning that incorporate plans for using the learning strategies; and,
- providing feedback to students about their use of the learning strategies (Pintrich, 2002; Kitsantas & Cleary, 2016).

**TABLE 1:** DEFINITIONS OF KEY TERMS

| | |
|---|---|
| **TEACHING PRACTICES** | |
| TEACHER-STUDENT RELATIONSHIPS | STUDENTS' POSITIVE PERCEPTIONS OF THEIR INTERACTIONS WITH TEACHERS |
| USEFUL CONTENT | STUDENTS' SENSE THAT THE CONTENT THEY LEARN AT SCHOOL WILL BE USEFUL IN FUTURE |
| ENGAGING CONTENT | STUDENTS' SENSE THAT THE CONTENT THEY LEARN AT SCHOOL IS INTERESTING |
| **LEARNING STRATEGIES, PISA ACHIEVEMENT, AND BUOYANCY** | |
| LEARNING STRATEGIES | |
| ELABORATION | STUDENTS' USE OF STRATEGIES SUCH AS SUMMARISING AND PARAPHRASING, IDENTIFYING THE MAIN IDEAS FROM TEXTS, AND MAKING CONNECTIONS BETWEEN NEW CONTENT AND PRIOR KNOWLEDGE |
| MEMORISATION | STUDENTS' USE OF STRATEGIES TO STORE NEW KNOWLEDGE IN THEIR LONG-TERM MEMORY (E.G., RECALLING KEY FACTS) |
| CONTROL | STUDENTS' USE OF STRATEGIES SUCH AS EVALUATING KNOWLEDGE GAPS, CHECKING UNDERSTANDING, AND SEEKING THE MOST IMPORTANT INFORMATION TO LEARN |
| PISA ACHIEVEMENT | STUDENTS' ACHIEVEMENT SCORES ATTAINED IN PISA 2009 |
| ACADEMIC BUOYANCY | THE CAPACITY TO EFFECTIVELY NAVIGATE EXPERIENCES OF ACADEMIC CHALLENGE AND SETBACK THAT COMMONLY OCCUR AS A PART OF SCHOOLING (E.G., A POOR TEST RESULT, STRESS AND ANXIETY, OR COMPETING ASSIGNMENT DEADLINES) |
| **SCHOOL OUTCOMES** | |
| YEAR 12 SCIENCE SUBJECT | ENROLMENT IN A YEAR 12 SCIENCE SUBJECT |
| ATAR | AUSTRALIAN TERTIARY ADMISSION RANK |

TABLE 2: POSITIVE ASSOCIATIONS AMONG FACTORS

| | | |
|---|---|---|
| **FACTORS PREDICTING THE LEARNING STRATEGIES AND ACHIEVEMENT** | | |
| TEACHER-STUDENT RELATIONSHIPS | » | CONTROL<br>PISA ACHIEVEMENT |
| USEFUL CONTENT | » | MEMORISATION<br>CONTROL |
| ENGAGING CONTENT | » | ELABORATION<br>MEMORISATION<br>CONTROL |
| **FACTORS PREDICTING ACADEMIC BUOYANCY** | | |
| ELABORATION | » | ACADEMIC BUOYANCY |
| **FACTORS PREDICTING THE OUTCOMES** | | |
| ACADEMIC BUOYANCY<br>CONTROL<br>PISA ACHIEVEMENT | » | ENROLMENT IN YEAR 12 SCIENCE SUBJECT |
| PISA ACHIEVEMENT | » | ATAR |

## Achievement

To boost achievement levels, it is important that students are provided with opportunities for success to build their confidence and see the impact of their efforts. Teachers can provide opportunities for success by, for example, developing activities that have multiple, smaller components (Martin & Burns, 2014).

Encouraging students to set growth goals for their learning is also important (Martin et al., 2022). Growth goals involve students setting self-focussed goals that aim to meet or improve on their previous performance (Martin et al., 2022). Teachers can help students set growth goals by having them choose a goal for their learning (for example, identifying one of the aforementioned learning strategies to help them check and improve punctuation in a written piece), setting a timeframe for the goal, breaking the goal into different components, and monitoring and assessing progress. Additional information on supporting growth goals among students can be found in the growth goal setting practice guide from the NSW Centre for Education Statistics and Evaluation (2021).

It is also important to identify any learning difficulties students may experience and to remediate these through focused individualised instruction to assist everyday academic skills (for example, literacy, numeracy, study skills) or through additional support outside the school if clinically indicated (for example, attention-deficit/hyperactivity disorder).

## Academic Buoyancy

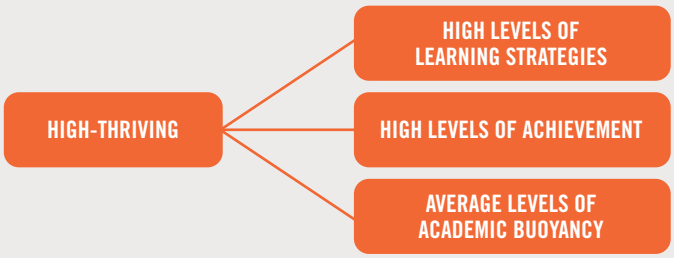
The following strategies can be applied to boost students' academic buoyancy:

- encourage students to recognise academic challenges they face at school;
- ask students to identify resources available to them that can help them manage the challenge when it arises in future (for example, seek help from a teacher or peer, use mindfulness strategies to help with anxiety);
- invite students to access these resources when facing challenges in the future; and,
- have students evaluate and refine their resources as needed (Martin & Marsh, 2008).

In addition, when students receive a grade in class (and perhaps especially when it is a grade that disappoints them), it may be helpful for teachers to provide a clear explanation for the reasons behind the grade students were assigned, and dedicate time in class for students to formulate an action plan based on the feedback (ahmed Shafi et al., 2018). For additional strategies on promoting academic buoyancy, please see the everyday resilience practice guide from the NSW Centre for Education Statistics and Evaluation (2022).

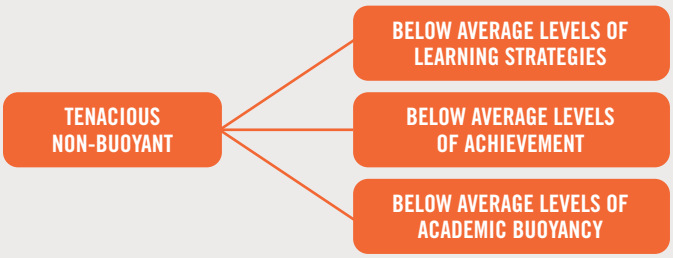
**DIAGRAM 1:** LEARNER PROFILES IN GIRLS' SCHOOLS

**HIGH-THRIVING LEARNER** (15% OF LEARNERS)



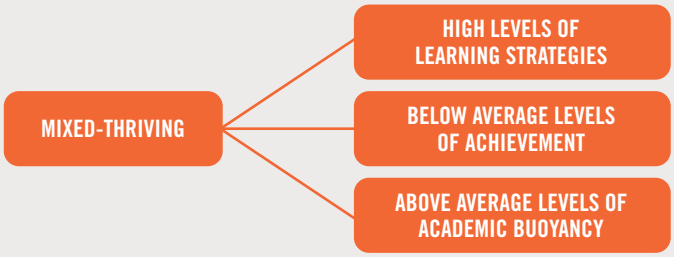

Sara is a student with high levels of the learning strategies (elaboration, memorisation, control) and PISA achievement, and she also reports the average levels of academic buoyancy. In Year 12, Sara is very likely to enrol in a science subject and she attains the equal highest ATAR of all girls' school profiles.

**TENACIOUS - NON-BUOYANT LEARNER** (23% OF LEARNERS)



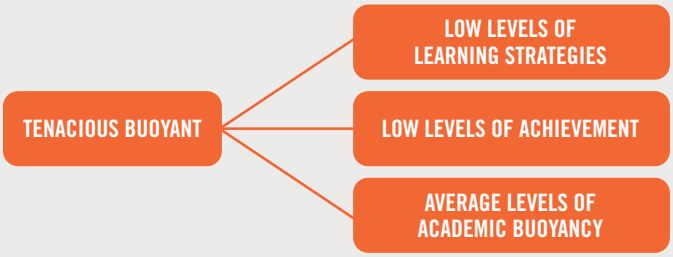

Mika is a student with below average levels of the learning strategies, PISA achievement, and buoyancy. In Year 12, Mika is unlikely to enrol in a science subject and she has a similar ATAR level as the Tenacious Buoyant Learner.

**MIXED-THRIVING LEARNER** (5% OF LEARNERS)



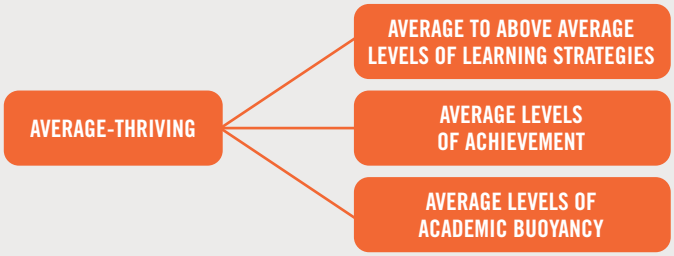

Kaira is a student with high levels of the learning strategies, but below average PISA achievement levels. Notably, Kaira has above average levels of academic buoyancy. Thus, Kaira's strength in learning strategies does not yet show in her PISA achievement levels. However, we suspect that Kaira's high buoyancy levels act as a protective factor against the adversity of low PISA achievement. In fact, in Year 12, Kaira is very likely to enrol in a science subject and she attains the equal highest ATAR of all profiles.

**TENACIOUS BUOYANT LEARNER** (11% OF LEARNERS)




Olivia is a student with low levels of the learning strategies and PISA achievement, but average levels of academic buoyancy. Olivia has the same probability of enrolling in a Year 12 science subject as Mika, as well as a similar ATAR. It is possible that Olivia's higher levels of academic buoyancy act as a protective factor despite her lower levels of learning strategies and PISA achievement compared with Mika.

**AVERAGE-THRIVING LEARNER** (45% OF LEARNERS)




Amy is a student with average to above average levels of the learning strategies, average PISA achievement, and average buoyancy. Amy is faring relatively well at school, but would likely benefit from efforts to help her move into the other types of thriving learners. In Year 12, Amy is unlikely to enrol in a science subject, but she has the second highest ATAR of the profiles.

**Note**. The scoring code used to categorise students' values in the profiles was as follows: profile means ≥ ±1.0 =very high/low, profile means between ±0.5 and ±1 = high/low, profile means between ±0.25 and ±0.5 = above/below average, and profile means between 0 and ±0.25 = average levels

## Teaching Practices

To build strong teacher-student relationships, teachers can apply the following strategies:

- make efforts to ensure that all students receive attention and resources for their learning needs;
- listen to students' perspectives and encourage them to input in lessons; and,
- show interest in students and their learning goals (Skinner & Belmont, 1993).

To help students recognise the usefulness of the content they learn about in school, the following strategies have been suggested by researchers (Martin et al., 2022):

- emphasise the relevance of content so students understand why it is or will be useful to them;
- provide explanations for why students are learning about particular topics; and,
- have students make links between content and real-life situations that require this learning.

To make content engaging, researchers (Ryan & Deci, 2017; Hidi & Renninger, 2006) have shown that teachers can apply the following strategies:

- invite students' input and choice about the content they learn about;
- design tasks to be personally meaningful to students by, for example, making links with their interests; and,
- provide well-organised activities with clear instructions for how students can succeed in their tasks.

Finally, recent research has provided new directions for balancing explicit instruction and discovery-oriented learning to further enrich teaching practices — and to facilitate learning strategies such as elaboration. Load Reduction Instruction (LRI; Martin & Evans, 2018) is an instructional approach that aims to ease the cognitive burden on students in the initial stages of learning. Then, when students have developed the requisite knowledge and skill, they are moved on to guided independent application.

There are five key principles in LRI:

1. Reducing the difficulty of instruction during initial learning, as appropriate to learners' levels of prior knowledge and skill
2. Instructional support and scaffolding
3. Ample structured practice
4. Appropriate provision of instructional feedback-feedforward (combination of corrective information and specific improvement-oriented guidance)
5. Guided independent application

For more detail on applying LRI and developing in-school policy for LRI, please see Martin (2018) and Martin and Evans (2021).

# CONCLUSION

**Together the strategies described above can be used to help boost girls' academic buoyancy directly, as well as via other factors such as teaching practices and learning strategies that are associated with greater academic buoyancy. For girls' schools, these strategies are relevant for aims to address the potentially lower levels of academic buoyancy that can occur among girls — and also for sustaining the academic buoyancy of the many students in girls' schools who are demonstrating positive academic profiles. In addition to strategy implementation within the classroom, efforts to implement these strategies more broadly in a whole-school approach may also help to create a broader school climate that is promotive of academic buoyancy among girls.**

**Towards encouraging the use and citation of the report it should be referenced as:**

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> For girls, positive relationships with teachers have the strongest association with academic achievement

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