

No matter what
your ability is,
effort is what
ignites that ability
and turns it into
accomplishment.



Carol Dweck

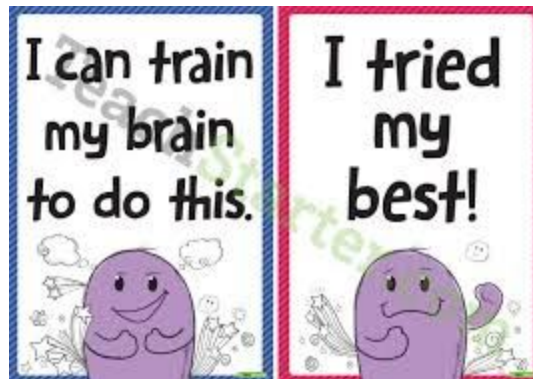
A Growth Mindset at Chew Valley



Growth Mindset Teaching to Accelerate Student Achievement

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Term 2 2016



Acknowledgements

I would like to thank the following schools and people who have enabled me to complete my investigation. I have greatly valued the time away from school which has provided me with thinking and reflection time away from the usual businesses of school. The opportunity to visit schools, talk with principals, teachers and colleagues as well as read and watch many talks and links around growth mindset has been a privilege.

Thank you to

- The Board of Trustees of Te Horo School for agreeing to my sabbatical.
- To the staff of Te Horo School for taking on additional responsibilities during my absence. To Nicki Allcock who was the Acting Principal in my absence
- Nicki Allcock, Lauren Smith and Jenny King (Te Horo School Management Team) who I met with individually.
- The Ministry of Education and Teach NZ for granting me the leave and allowing this to happen.
- The Principals, staff and children from the following schools
 - Oakura School
 - Omata School
 - Welbourn School
 - Bell Block School
 - Levin North School
 - Roslyn School
 - Owhiro Bay School
 - Levin East School
 - Waikanae School
- Michelle McCormack (McCormack and Associates)
- Dinah Harvey (Maths Advisor)
- Principal Colleagues (PLG)
- Kathie Johnson (NZCER) and Professor John O'Neil (Massey University)

Background and Purpose

I first became interested in Growth Mindset practices when pondering with colleagues at Te Horo School why some children continued to struggle with learning despite the best efforts from teachers to implement programmes, work with family/whanau and external agencies. Many of these children were identified by teachers at a young age and placed on the school special needs register where interventions and efforts were made to improve their achievement and behavioural outcomes. Many of these children had also been through reading recovery, been involved with the reading literacy teacher and RTLB as well as teacher aide assistance for much of their school years. Despite the best intentions of all parties many of these students still failed to 'catch up' with their peers and continue to be behind in their learning.

Our staff began philosophical discussions and posed questions such as '*what motivates students to learn?*' We could see how children, when enthused or empowered with something could apply themselves and spend hours practising and going over strategies to get better. Examples we talked about were the 'loom band trend', boys learning scooter tricks, various sports, learning instruments and building relationships with an animal such as rearing a lamb or calf to compete in the school Ag Night etc. What was the key to transferring this motivation to work tirelessly into the classroom? If children could see that effort, practice, failing and trying again could be successful in life why couldn't they apply this to aspects of schooling such as maths, reading, writing, working independently etc?

As our discussions evolved we came across the work around Growth Mindset which was being championed by Dr Carol S Dweck from Stanford University in the USA. Carol's work seemed to look beyond 'specific teaching programmes' which might be a magic fix to improve student achievement and focussed more on how schools should be creating a culture of positive thinking, learning from mistakes, teaching children about their brain and the use of positive language etc. I liked this theory and began to look more deeply into her research.

In March 2015 Carol Dweck and Guy Claxton (UK) presented at a conference in Wellington. Four teachers and I from Te Horo School attended the seminar. Our school had a management unit which was split between 2 staff members who researched growth mindset within their classes and also looked to this research.

Around the same time I finished reading a book titled 'Becoming High Expectation:Teacher-Raising the Bar' by Christine Rubie Davies. In my eyes this New Zealand based research sat perfectly alongside the Growth Mindset research. Rubie Davis found that there were 3 key aspects to becoming a high expectation teacher which accelerate student achievement. These are

1. Children are set clear learning goals
2. Flexible grouping (not ability grouping)
3. Class Climate

The following link is a 4 minute clip which provides an overview of the research

<http://www.education.auckland.ac.nz/en/about/schools-departments/ldpp/ldpp-research/ldpp-research-projects/teacher-expectation.html>

Our staff reviewed the high expectation book and throughout 2015 and early 2016 we trialed the teaching of growth mindset strategies. I placed various links to readings in the school newsletter as well as growth mindset quotes each week. Parents began to come on board and ask questions about growth mindset vs fixed mindset in discussions around school, sending emails. Two staff members held a parent evening to introduce growth mindset to our community.

In 2016 we have been using the services of maths advisor **Dinah Harvey** as our school maths focus for professional development. We worked with Dinah and identified following question within the PD for the year

- Student growth mindset vs fixed mindset - how do we change student perception of themselves?

Dinah references the work from Dr Jo Boaler who is a Professor of Mathematics Education at Stanford University, and the Co-Founder of youcubed (<https://www.youcubed.org/ourmission/>) Our staff have read several of youcubed articles, watched TED talks and have subscribed to the regular newsletters.

The mission statement of youcubed is

Inspiring Math Success for all Students through Growth Mindsets and Innovative Teaching

As time went on we wanted to know how to change a student's and/or teacher's thinking from a fixed to a growth mindset? We had learnt and implemented some of the growth mindset strategies but there was clearly more to the puzzle. Essentially I have been

questioning and thinking about what we could do differently to raise student achievement, particularly for the children who were not making enough progress each year. I decided that I wanted to find out more about the teaching of growth mindset and selected this as a focus for my sabbatical.

I soon discovered once I began to look at schools, visit classrooms and talk with principals, teachers, and students that successful growth mindset classrooms were clearly linked with positive classroom relationships. As a result my research has morphed into how effective teachers create the right emotional and learning conditions which allow students to succeed and make accelerated progress. These classrooms, by their very setup, are classrooms which naturally encourage and allow growth mindset practices to occur. In these environments children tend to be more successful, happier, make greater progress, enjoy being in the classroom, enjoy being around other children and ultimately have a more positive experience at school.

Activities

I began my sabbatical with a PLG (Professional Learning Group) visit to New Plymouth. I have worked with this group of 7 current and ex principals for 2 years. The group meets each term and have looked at over 10 schools in recent times. It is also a wonderful opportunity to discuss and debate theories and issues with colleagues. As well as visiting the New Plymouth Schools we spent several hours with respected educationist Bruce Hammonds. The opportunity to sit alongside Bruce and 'pick his brain' was an honour and fantastic way to begin the investigation.

The New Plymouth Schools were not currently looking at growth mindset practices however we observed modern learning practices (MLP) occurring. We talked with principals, teachers and students about student agency, personalising learning and working collaboratively. We looked in classrooms and had a tour of each school which was both informative and a privilege.

On return I visited Levin North, Roslyn and Owhiro Bay Schools. I had chosen these schools as all were trialing the teaching of growth mindset. Some teachers were further along the path than others and I was fortunate enough to look around all of the schools and spend quality time with the principals and in the classrooms of the key growth mindset teachers.

By now ideas and theories were beginning to take shape in my mind. I had also spent time reading a number of online articles, TED talks as well as reading Carol Dweck's book; 'Mindset How You Can Fulfil Your Potential' and two books from Mary Cay Ricci; 'Mindsets in the Classroom. Building a Culture of Success and Student Achievement in Schools'. A common theme which was emerging in each of the schools I visited and the additional research was along the lines of relationships and school/class climate. I decided to meet with each of the senior management team at Te Horo School and get their thoughts on growth mindset and their philosophies of teaching. This involved an hour meeting with each person where I asked them questions and took notes during the discussion.

I visited 2 more schools, Levin East and Waikane to look at MLP and to discuss PAT data collection.

The final aspect to my sabbatical was attendance at the NZPF Central Zone meeting in Wanganui. Speakers were Kathie Johnson from NZCER and Professor John O'Neil from Massey University. Kathie talked about how to analyse student PAT scale scores (not stanines) to monitor accelerated learning. John spoke about the 'glass half full' theory in Education. I have given a lot of thought to the following quote presented by John:

"Teachers are not accountable for student outcomes but for creating the conditions in which children see themselves as successful learners." -Professor John O'Neil

Both John and Kathie were very interesting, passionate educators and I was pleased to have heard them both speak.

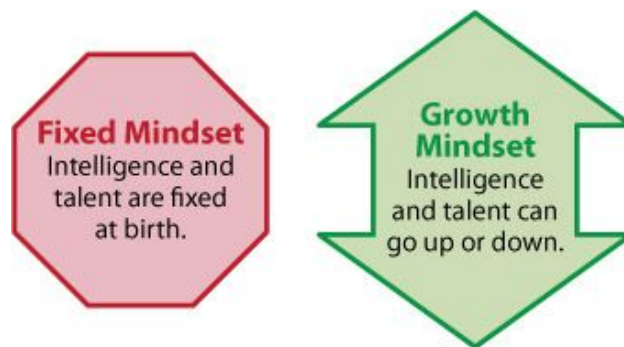
The remainder of my leave has been completing readings, looking at research and collating the information gathered over the term.

What is Growth Mindset?

Growth Mindset vs Fixed Mindset

Carol Dweck who researched Growth Mindsets and is widely regarded as a world leading expert on Growth Mindset said in an interview in 2012 that *"In a fixed mindset students believe their basic abilities, their intelligence, their talents, are just fixed traits. They have a certain amount and that's that, and then their goal becomes to look smart all the time and never look dumb. In a growth mindset students understand that their talents and abilities can be developed through effort, good teaching and persistence. They don't necessarily think everyone's the same or anyone can be Einstein, but they believe everyone can get smarter if they work at it."*

The key points can be summarised in the following 2 images



Summary of Dweck's *Mindset*

Fixed vs Growth

<u>ability is static</u>		<u>ability is developed</u>
avoids challenges	🚫	embraces challenges
gives up easily	🧱	persists in obstacles
sees effort as fruitless	👨🏫	sees effort as necessary
ignores useful criticism	🚫	learns from criticism
threatened by others	👤	inspired by others' success

Accelerated Learning-Definitions

- **ERO:** Achievement is accelerated when a student makes more than one year's progress over a year, on a trajectory that will indicate they are on a pathway to achieve at or above the National Standard by the end of year 8, or an appropriate qualification at secondary school level.
- **NZ Maths (ALiM)-Accelerating learning:**An intervention for students not on track to meet the expected standard.
- "Moving faster through content, allowing students who have already mastered content or who master content quickly to move into above grade-level content."
Mary Cay Ricci (US Educational Consultant)
- **PAT Tests (NZCER):**recommend using SCALE SCORES to measure progress, not stanines. Their scale score tables list 'average scale score and average progress'. Due to the margin of error in testing which varies within their tests schools should refer to the teacher's manual in order to confidently say that a student has made accelerated progress with their learning. As a general rule making more than half a curriculum levels progress in a year indicates accelerated progress.

Findings

Statement: In order to protect the identity of individuals and school I have summarised the findings from the school visits into a narrative. Where relevant I've referenced research or links from authors, presenters or speakers.

Examples of a Growth Mindset Classroom

I have identified the following features displayed in classrooms and schools which operate growth mindset principles. These features were present in the classes I observed, in discussions I had with teachers, students and principals and in professional readings and talks.

1. Specifically **devote teaching time** to learning about growth mindset. Examples I saw included
 - a. Beginning the school year. One example was each student and the teacher identified something they wanted to learn about or an area they struggled at eg how to skip, juggle, play an instrument etc. SMART goals were set, plans and timeframes formulated as well as regular progress check ins. A sharing class assembly completed the unit and new goals set.
 - b. Building the class culture at the beginning of the year with lots of buddy and group work. Every child has a buddy to support them with their learning and behaviour. Ensuring that all children belong in the class and can succeed.
 - c. Teaching games or activities which build perseverance and take time to solve or work out.
 - d. Teaching students about **neuroscience**. This involved teaching about the brain eg it is like a muscle and the harder you try the more it grows-brain neurons increase. Some classes made models and posters of the brain. Classes worked through the online Mojo 5 chapters (see link below)
 - A secret about the brain
 - The magic of mistakes
 - The power of Yet
 - The world of Neurons
 - Mojo puts it all together

https://www.classdojo.com/bigideas/?utm_source=facebook&utm_medium=social&utm_campaign=2016-01-19BigIdeaVideo01#2zrtHt3bBmQ

2. Teaching and modelling the **language of growth mindset** through everyday activities and language as well as deliberate acts of teaching such as role play or students creating growth mindset videos. Growth mindset teachers praised and celebrated student's **effort and process**. They believe that their student will be successful and talked with them about "**the power of yet**". They supported the notion that it is **ok to make mistakes**- "It's a learning opportunity" one teacher told me and "I say this to my students all of the time". Another teacher told me that she will regularly say "Let's get our brain working". One senior class viewed the following Sesame Street song (the power of yet) and unpacked the lyrics in groups

<https://www.youtube.com/watch?v=XLeUvZvuvAs>

Teachers promoted the "**struggle of learning**" and encouraged "**perseverance** and "**grit**" with their students. The emphasis is on **practice** and having a **positive attitude to learning**. Teachers are careful and deliberate **to not praise student's ability** or tell them **how smart, clever or talented** they are. Research indicates that this is not helpful for students in the long term. Students should be judged on their effort rather than comparison against others or scores in tests etc. Parents can easily adopt this language at home. Adults must also ensure they don't reinforce their own experiences which can give hidden or mixed messages to children eg "I wasn't any good at maths, I wasn't a good runner, I didn't like school, I was naughty" etc. Parents must also be aware of comparing siblings or blaming genetics on achievement or behaviour. Carol Dweck says "Praising children's intelligence harms their motivation and it harms their performance" (pg 175 Mindset - How you can fulfil your potential). We should be praising **growth and effort** whilst supporting students during failure and struggle **with constructive criticism** eg helping the child to fix the problem, encouraging more effort/practice, what could they have done differently etc.

3. **Mixed ability or flexible grouping** is a common feature of growth mindset classrooms. Teachers regularly move students seating positions within the classrooms (sometimes weekly through random pulling names from a hat). Instructional teaching may often begin with the whole class to introduce themes or the learning before switching into smaller groups or individuals. Some classes held 'learning workshops' where students have the opportunity to opt into these.

The teachers believed that when the culture is 'right' in the classroom students will happily opt in and view this as empowering. Ability grouping reinforces negative child perceptions of their ability or lack of. Children in lower groups may have their learning restricted by teachers with less exposure to learning opportunities and experiences, therefore, it may place a ceiling on what they are taught or exposed to.

Christine Rubie-Davies (Auckland University) says "flexible forms of grouping enable students to choose associated learning experiences. This increases opportunities to learn and decreases the stigma of being in the bottom group. Student self efficacy improves as does motivation and engagement." (Pg 219 *Becoming a high Expectation Teacher Raising the Bar*).

4. Opportunities for students to work in **cooperative situations**. This is linked with mixed ability grouping. Small group/pair opportunities may involve solving student inquiry, rich tasks in maths, reciprocal reading, collaborative story writing, class murals/posters, mixed teams in PE and sports, shared books, working with other classes, technology challenges, dance and drama etc.
5. Teachers who share their own personal learning journeys, often with humour, and experiences in life when things had not gone to plan with their students. This is modeling growth mindset learning especially when they discussed how they coped with failure or had to display resilience, courage or perseverance.
6. **Teacher belief** that they, the teacher, can and will make a difference to the learning outcomes for all of their children.

Jo Boaler (Stanford University) lists this as one of the '9 findings which have very strong implications for mathematics classrooms. If acted upon they could unleash the potential of millions more students'. This came through clearly with each of the growth mindset teachers I met. These teachers talked with confidence that regardless of a student's achievement, emotive or behavioural levels, they (the teacher), would improve the student learning and or behavioural outcomes.

Christine Rubie-Davies (Auckland University) uses the term becoming a high expectation teacher and says that "*High expectations are beliefs that all students will make accelerated progress beyond what they previously achieved. There are no disadvantages for high achieving students.*" "*Students are eager to come to school each day. They have a teacher who believes in every one of them.*" (Pg 218 and 219 *Becoming a high Expectation Teacher Raising the Bar*).

One teacher I spoke with said *“I consciously aim to make kids feel capable in my classroom. I try to build up their self efficacy”*.

Mary Cay Ricci says *“The mindset of a teacher contributes greatly to his or her responsiveness to the needs of students. If a teacher views a child through a deficit lens, then that child will not be given opportunities to grow unless she is in a responsive classroom.”* (pg 31 *Mindset in the Classroom-Chapter 3*)

7. Teaching to **where students need to be** rather than where they currently are at. Two teachers commented that this subtle shift in their thinking progressed their students at a faster rate. They said that they exposed students to wider learning opportunities rather than restricting opportunities. Carol Dweck noted that US teacher **Marva Collins** *“set extremely high standards, right from the start. She introduced words and concepts that were, at first, way above what her students could grasp. Yet she established on Day One an atmosphere of genuine affection and concern..”* (pg 196 Dweck-Mindset How You Can Fulfil Your Potential). These teachers are more likely to avoid stereotyping or bias towards their students and adopt a growth mindset view to student potential.
8. Deliberate learning activities focussed on **growth mindset sayings and quotes**. These were visible around all of the classrooms I visited. Teachers said that these statements were discussed in whole class and small group situations. Teachers and students regularly referred to them throughout the year. One class investigated quotes about failure from famous people eg *“I can accept failure, everyone fails at something. But I can't accept not trying”* **Michael Jordan**. These can be easily accessed from the internet or made by students (refer to below images at end of report)
9. **Learner agency, personalised learning and independent learning opportunities**. Teachers commented when this was present within their classroom there were increased student motivation and engagement to learning tasks. Where student voice is encouraged children are more likely to view learning as relevant and meaningful with higher levels of engagement. I observed a Year 1 junior class who vary their instructional reading with school based texts as well as home/library based books and readers. Honing into student interest increased their desire to learn to read. *“Children and young people will be the best they can be when they are present, participating, engaged, achieving and belong.”* (Success for All, Ministry of Education).

10. **Transition from preschool to primary school.** One principal remarked that “children leave preschool as autonomous learners and we suffocate them with rules and structure”. Preschools allow for **more** student choice in what and where students learn, who they want to work with as well as less restrictions on times for eating, inside/outside play etc. It is significant change for children as they begin school where a more formal approach is taken and **play** is reduced. It is worth schools considering they ensure that the transition to school is managed accordingly. Several of the schools I visited were exploring discovery based learning. One school has introduced 'Investigation time' in their junior classes throughout the day every day and on a Monday they have a full team 'Discovery Time' with all 8 classrooms open for learners to explore. This learning goes up to year 3. To quote NZ educationalist **Nathan Mikare Wallis** who is a Lead Trainer for the Brainwave Trust. *“Schools need to build up children’s success and confidence with learning. We want children to be creative and divergent thinkers”*. Nathan says that it is important that children see themselves as successful learners from a very young age. His interview with Radio NZ titled *“What 3 to 7 year olds need to learn”* is referenced below and an excellent discussion. This is reinforced with comment by Dr Elizabeth Kilbey Consultant Clinical Psychologist who is studying the **Secret lives of 5 Year Olds** (Channel 4 English TV Series) *“You can set children up to be incredibly successful if you approach it the right way”*.

A question I have pondered throughout my research is...Are our schools creating a fixed or growth mindset environment from a child’s first days at primary school?

11. **Coaching and mentoring** of teachers builds teacher capability and shares knowledge throughout the school. Some of the schools I visited had begun to use coaching as a way to upskill teachers, share knowledge and improve growth mindset teaching practices. Effective relationships are key to this success. An important aspect of a successful mentoring and coaching framework is the ongoing cycle of learning for teachers and students. This is an essential element to the growth mindset culture of a classroom and school. One of the schools was using video to record lessons. This is shared with a mentor followed by a PLG (professional learning group) discussion. The video file was also uploaded to the teacher's portfolio and will be linked into their appraisal. The following link from TKI gives a brief overview of Pomaria School's coaching journey.

<http://nzcurriculum.tki.org.nz/Curriculum-stories/Media-gallery/Effective-pedagogy/Laying-the-foundations-for-coaching-and-mentoring>

12. **Goal Setting.** I observed this within the classes I visited. One of the classes had visible goals for each child displayed on the wall. The school used SOLO Taxonomy and students self assessed themselves against the criteria and moved their name along the SOLO stages. Christine Rubie-Davies (Auckland University) lists goal setting along with class climate and mixed ability grouping as one of the three key features to becoming a high expectation teacher who will accelerate student progress. Goal setting involves teachers and students setting clear learning focussed goals, “*monitoring their progress regularly and providing feedback that foster further student autonomy, development and achievement.*” (Pg 219 Becoming a high Expectation Teacher Raising the Bar). An example of a goal setting template I noted in one of the classrooms was where the student had written

- a. A growth mindset learning goal
- b. Listed strategies to help reach the goal
- c. Check in dates and a box to tick-I have met this goal or I have partially met this goal or I have not met this goal
- d. Finally space for reflection and new strategies to try

13. **Whole school approach to growth mindset.** The schools that were embracing growth mindset the most had a whole school approach. This involved school wide PD, staff meetings, lead teachers, coaching and full support from senior management. Other examples included teachers selecting growth mindset as their Teaching As Inquiry’ (TAI). This involved collecting data on targeted students and monitoring over the year. Results will be determined at the end of 2016.

14. I viewed an online presentation from James Nottingham (UK Educationalist) who discussed Jacquelynne Eccles (USA) formula **Application = Value x Expectation**. Essentially this means that how much a student will apply themselves to a situation (try) will depend on how much they value it multiplied by their expectation of success. In a growth mindset classroom teachers will ensure conditions are such that ALL children will value their learning and expect to be successful hence they will display application to the learning. Consider the opposite for a child who cannot access the curriculum or has behaviour issues. It is likely that they will not value the learning and expect to do poorly.

15. My final point, and **possibly the most important**, is **positive class climate, effective relationships and environment**. As my investigation progressed this

came up time and time again. You get a sense of it as soon as you enter a classroom. The more I observed, read and talked to colleagues, parents, teachers and principals it became clear that this underpins everything.

Classrooms must be fun, warm, safe, caring, non judgemental and inclusive environments. Teachers need to work hard to ensure children are not marginalised from the social makeup of the classroom or unable to access the curriculum. They must believe that ALL of their children can achieve and be successful. Classrooms should be **free of fear** eg fear of asking questions, fear of making mistakes, fear of their teacher, fear of being wrong or failure, fear of not fitting into the social structures of the classroom, fear of not meeting the expectations (perceived or otherwise) of the teacher etc. Fear stifles learning and emotive responses for children. Fear is not present in a growth mindset classroom. *"Fear is such an intense emotion that it can shut down cognitive processes and force the brain to only focus on the source of the fear and what to do about it. The fear of making an error or experiencing failure is a big obstacle to learning".* (pg 140 Mary Cay Ricci-Mindset in the Classroom)

- **Christine Rubie-Davies** *"Another major feature of high expectation classrooms is that they are lovely places to be in.....All children are treated equitably.....The class climate is positive, the teacher is supportive of students and students are supportive of each other. Disciplinary incidents become unusual."* (Pg 219 Becoming a high Expectation Teacher Raising the Bar).
- The Ministry of Education **ALiM** (Accelerated Learning in Mathematics) project has identified 10 themes for success. **Theme 1: An Ethic of care** says "The creation of non threatening mathematics learning environments and the cultivation of positive self concepts in mathematics are fundamental to the success and progress of all students, but particularly for those most at risk. Students operate at their best in an environment of trust. They feel it is safe to ask questions, to take risks, and to share ideas when the responses from their peers and the teacher are honest, constructive and without judgment. Students must also sense a growth not only in their own mathematics capability but also in their ability to achieve realistic expectations with increasing independence."
- The **NZ Curriculum document** states on page 34 under '**Effective Pedagogy Teacher actions promoting student learning**'-**Creating a supportive learning environment**. It says "Learning is inseparable from its social and cultural context. Students learn best when they feel accepted, when they enjoy positive relationships with their fellow students and teachers, and when they are able to be active, visible members of the learning community. Effective teachers foster positive relationships within environments that are caring, inclusive,

nondiscriminatory, and cohesive. They also build good relationships with the wider school community, working with parents and caregivers as key partners...”

- *“Teachers with the fixed mindset create an atmosphere of judging. These teachers look at students’ beginning performance and decide who’s smart and who’s dumb. Then they give up on the “dumb” ones”. (Carol Dweck pg 197 Mindset How You Can Fulfil Your Potential)*

Assessing Student Achievement and Growth Mindset

The schools I visited were in the beginning stages of the growth mindset journey and whilst all were completing growth mindset PD (internal and/or external) they did not have a lot of student achievement data to confirm that the teaching of growth mindset practices improve learning. Despite the absence of complete data teachers I spoke to were confident that growth mindset was having a positive influence on student motivation and engagement. They were feeling positive that the more students understood the principles of growth mindset that it would correlate with improved student outcomes. I read books and readings from world wide respected educational professionals Carol Dweck, Mary Cay Ricci, Jo Boaler and Christine Rubie-Davies whose research support the notion that growth mindset teaching does accelerate progress. Jo Boaler says

“There is a really damaging myth that pervades the US/UK and other countries – the idea that some people are born with a “math brain” and some are not. This has been resoundingly disproved by research but many students and parents believe this. It is really important to communicate “growth mindset” messages to students. Help them know that everyone is a math person and that the latest research is telling us that students can reach any levels in math because of the incredible plasticity of the brain.”
(Jo Boaler)

In the classes I visited the teachers commented that since they have been teaching growth mindset strategies their students had been showing increased motivation to learn and engagement, improved attitudes to learning and were more likely to persevere when challenged and use the language of growth mindset ie positive talk eg “I can....”, “I’m not a quitter” etc.

One teacher shared with me PAT maths scale scores data. A student had moved his scale score of 3 to 29, another went from 18 to 38, another from 27 to 49 and another 28 to 45. There were others in the class who scored greater than 'expected' scale score. This teacher believed that growth mindset teaching had been a key aspect to these scores.

Assessment Tools

The primary purpose of assessment is to improve students' learning and teachers' teaching as both student and teacher respond to the information that it provides. - NZC Page 39

Before schools select assessment tools they must be clear on the purpose for assessing. Assessing or testing children for the sake of it is excessive and may not necessarily give teachers any better information than they already know. Teachers must have confidence in their ability to gather reliable data using a range of formal and informal methods. Before using standardised assessment NZCER says schools should answer the following questions:

- What information do I need to gather?
- Will the assessment chosen give me that information?
- What is the purpose for gathering this data? How will it help teaching and learning?

Schools have many assessment options available to assess student achievement however when looking for a standardised test the PAT tests are probably the best option. They are NZ designed nationally norm referenced tests, easy to administer and most teachers are familiar and confident with them.

NZCER (NZ Council Educational Research) PAT tests are prepared after a comprehensive a 2 year trial. Questions are carefully selected and align to the NZ curriculum. Each test covers questions over a 2 year period eg a full curriculum level and each subject has its own scale for measuring. PAT tests tell us what student know and what they do not know.

NZCER advise using scale scores to measure the progress of students rather than stanines. Teachers can analyse their students scale scores to measure progress and acceleration. The scale score progress tables are easy to read and an accurate indication can be determined.

Several of the schools I visited were using the SEA (School Entry Assessment) <http://assessment.tki.org.nz/Assessment-tools-resources/Assessment-tool-selector/Browse-assessment-tools/Cross-curricular/School-Entry-Assessment-SEA> This test provides New Entrant teachers with baseline data at the commencement of school.

Questions for schools to consider before assessing student

- PAT testing once or twice a year?
- Have students been given the appropriate information about the PAT test prior to sitting eg what is the test for, how will it help them and their teacher etc?
- Look at the data for each year. What is the data saying? Are there trends?
- **Is acceleration evident** ie greater than the average progress score taking into account the margin of error (this information is available in the teacher manuals). A rule of thumb is moving more than half a curriculum level per year. If acceleration is not obvious discussion must be had as to why this didn't happen?
- Should all students in the same year level sit the same test? Cathie Johnson (NZCER) suggested this question at a meeting in Wanganui I attended. Cathie said that in order to show acceleration higher achieving students should sit tests above the their year level and lower achieving students should sit tests below their year level. The scale score can still be compared if students complete a different test.
- Online vs paper tests. Our school has used the online service in recent years and it has gone well. The online option is especially pertinent if having students sit different tests and avoids children looking different to their peers.
- So what..now what? Teachers to review the data, reflect on the outcomes and use the information to plan future interventions/learning steps.

Measuring Student Attitude and Engagement

Schools can develop surveys, interview questions or questionnaires to gather data and information on students attitudes to learning, the relationships within the classroom (teacher to student and student to student). **NZCER** offer **Me and My School** which is a student engagement survey designed for New Zealand students. One survey is designed for students in Years 7 to 10. The junior version of the survey is designed from students in Years 4 to 6. **Interlead Consultants Ltd** have developed a **student voice survey** which is easy to administer and is a developmental tool for teachers to gather student feedback on teaching and learning relationships, motivation, safety and well-being, standards and expectations and communication.

Comments...

Throughout the term I talked with many teachers and principals and read widely on the topic of growth mindset. The following comments have come directly from the people I spoke with. I have included comments from relevant research which supports these comments.

- “Our school has been trying the same old stuff for years eg teacher aide support, reading recovery etc and many children are still below the standards.”-Principal
- “Children are often overly anxious about getting learning right or wrong-particularly in maths.”-Principal and Teacher
- “Teachers need to let go of some of the control in the classroom. Children enter school at 5 as successful autonomous learners. Unfortunately we do not always cater to all children’s needs and turn them off learning after days of arriving at school.”-Principal
- On mixed ability groupings “this doesn’t single out or marginalise children in the same way as ability grouping has always done”-Teacher
- “Relationships between student and teacher are essential. This can vary within schools and from teacher to teacher and student to student.”-Principal
- “I aim for the 3 Fs-Firm, Friendly and Fun”-Teacher
- “Class climate is important. **ALL** children need to feel safe, and successful in my class”-Teacher
- “I see myself as friendly, consistent and approachable...but not their mate”-Teacher
- “I make myself available for my kids and they know that I care about all of them”
- “Kids have to feel that they belong in my class, I’m not sure that this happens in every class?”-Teacher
- “I am really into inclusion so that no children will feel left out. Everyone has an equal part in the classroom”-Teacher
- “The class culture is really important. This has to be right before successful learning can take place”-Teacher
- “Children need to feel that they belong and that they are the same as their peer group-not dumber or not as good as their peers. I work very hard to ensuring this happens.”-Teacher
- “Don’t stress the kids out”-Teacher
- “Who wants to feel thick or dumb”-Teacher

Conclusions

My investigation has concluded that **when the right conditions are present in a classroom students can make accelerated progress with their learning. A positive classroom environment which benefits all students form the foundations for a growth mindset classroom.** Effective teachers understand the importance of this and work hard to provide an environment for successful learning for all children. In these classrooms children are often happier as their emotional well being is topped up. Children know that their teacher cares and believes in them. Children are not marginalised from learning, behavioural or social situations. Teachers deliberate actions of involving and including all children will ensure the classroom will be a safe and secure place to be. This culture allows the various growth mindset strategies to flourish. You feel this energy when you walk into the classroom. Principals know this, other teachers know this, parents know this and students also know this. **Sir Ken Robinson** discusses this in the following talk titled “**Teachers are Like Gardeners**”. He says that good teachers create the conditions for children to be successful.

https://www.youtube.com/watch?v=aT_121H3kLY

There are many techniques and actions teachers may use to promote a growth mindset classroom whilst establishing an effective culture. Without this culture I believe a classroom operates as a fixed mindset environment. Teachers may use the language of growth mindset, encourage effort etc and think that they are teaching growth mindset however they are missing the vital ingredient which underpins everything.

Relationships,relationships, relationships!

He aha te mea nui? He tangata. He tangata. He tangata.

What is the most important thing? It is people. It is people. It is people

Growth mindset classrooms promote student voice, independence and increased responsibility-for all students, not just the bright or more capable ones. Teachers teach about the brain, they teach children that struggling, failure and showing perseverance are an essential part of the learning journey. Teachers extend students learning opportunities by teaching to where students need to be (or higher) rather than where they are currently. Students are provided with challenges and learn to embrace struggle rather than giving up. They devote time to teaching about growth mindset eg using online tools such as Mojo, youtube etc. They are careful to model and praise process and effort rather than perceived natural abilities or talents. Students enjoy working with

a variety of peer groups and are accepting of others. Teachers have high expectations of their students and demonstrate this through techniques such as mixed ability groupings and goal setting.

Students will understand that their efforts are the key to successful learning and will display resilience, perseverance and grit and view failure as part of the learning journey. They will be open minded to feedback and accept challenges. They will understand the power of yet and how their brain works during learning. Teachers, students and parents will use growth mindset language and the classroom will be a supportive and nurturing place.

Ultimately students will be in the position to make greater than expected progress. Teachers who have a growth mindset classroom don't leave students behind. They feel personally responsible that all students in their class will make accelerated progress. They don't judge their students or make excuses for student behaviours or underachievement. They create an inclusive environment where students do not have 'ceilings' placed on their potential, they believe in their students and students believe that they will succeed as learners. When growth mindset teaching is coupled with inclusive and effective, high expectation based teaching and a classroom culture that believes in every child accelerated progress can be made for all students.

“You can be the person who turns things around for students and liberates their learning path. It usually takes just one person—a person whom students will never forget”. -Jo Boaler

Additional Resources

Talks....

- **Carol Dweck** The Power of Believing that you can Improve
http://www.ted.com/talks/carol_dweck_the_power_of_believing_that_you_can_improve#t-561874
- Carol Dweck: The Effect of Praise on Mindsets-
https://www.youtube.com/watch?v=TTXrV0_3UjY
- Radio NZ Interview with **Nathan Mikaere-Wallis**. *“What 3 to 7 year olds need to learn”* <http://www.radionz.co.nz/audio/player/2595176>
- James Nottingham Live - Application = Value x Expectation
<https://vimeo.com/119767140>
- **Jo Boaler (Stanford University)** website links to *“9 findings which have very strong implications for mathematics classrooms. If acted upon they could unleash the potential of millions more students.”* <https://www.youcubed.org/think-it-up/>
- ‘Teachers are like Gardeners’- Sir Ken Robinson. Discusses how great teachers create conditions which allow children to be successful
https://www.youtube.com/watch?v=aT_121H3kLY

Online Readings/Articles-selection of useful readings for staff meetings, PLG discussions etc

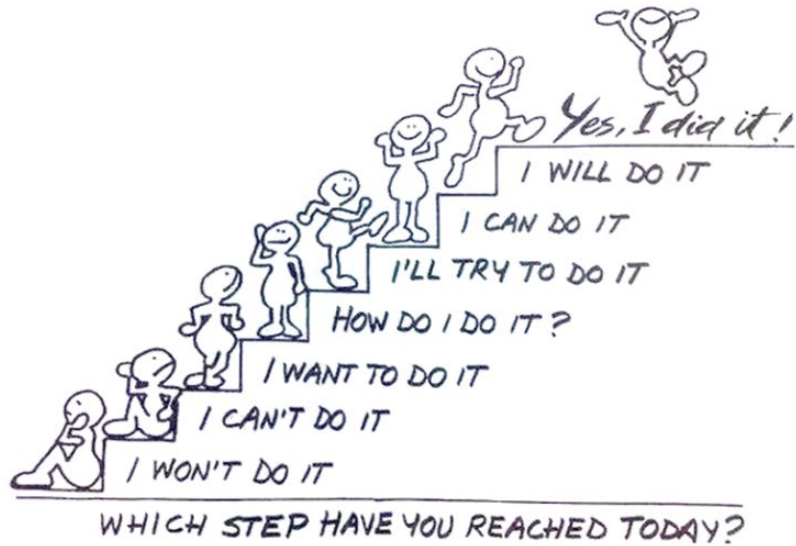
- Fixed vs. Growth: The Two Basic Mindsets That Shape Our Lives-
<https://www.brainpickings.org/2014/01/29/carol-dweck-mindset/>
- <https://www.mindsetworks.com/webnav/whatismindset.aspx>
- Recognizing and Overcoming False Growth Mindset -
<http://www.edutopia.org/blog/recognizing-overcoming-false-growth-mindset-carol-dweck>
- Promoting growth mindset means checking biases at the door, experts say
Educators must confront personal biases before they can address students' mindsets -
<http://www.educationdive.com/news/promoting-growth-mindset-means-checking-biases-at-the-door-experts-say/416134/>
- Christine Rubie-Davies discusses ‘What is all teachers had high expectations for every student?’
<http://www.education.auckland.ac.nz/en/about/schools-departments/ldpp/ldpp-research/ldpp-research-projects/teacher-expectation.html>

Resources

- Class MoJo- Growth Mindset for Students
https://www.classdojo.com/bigideas/?utm_source=facebook&utm_medium=social&utm_campaign=2016-01-19BigIdeaVideo01#2zrtHt3bBmQ
- Sesame Street the power of yet song
<https://www.youtube.com/watch?v=XLeUvZvuvAs>
- Growth Mindset Animation https://www.youtube.com/watch?v=-_oqghnxBmY
- Positive Norms to Encourage in Maths Class
<https://bhi61nm2cr3mkgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2015/08/Norms-Poster-2015-UK.pdf>
- NZCER PAT website <http://www.nzcer.org.nz/tests/pats>

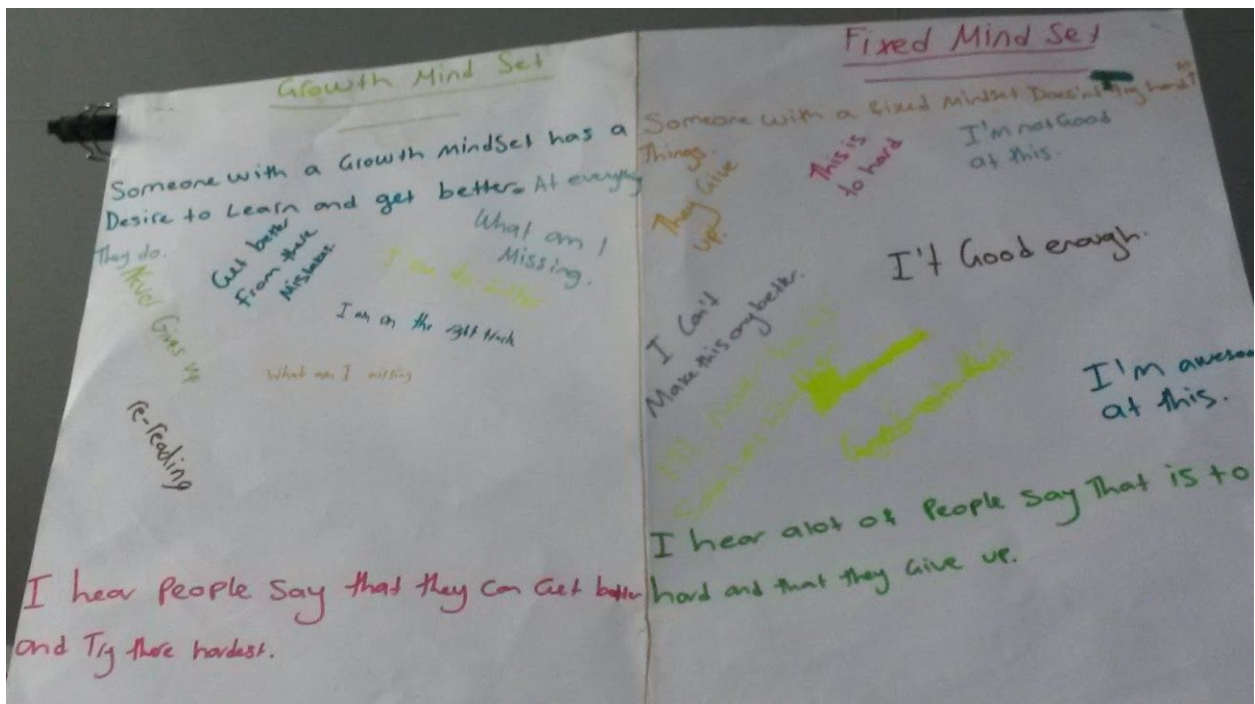
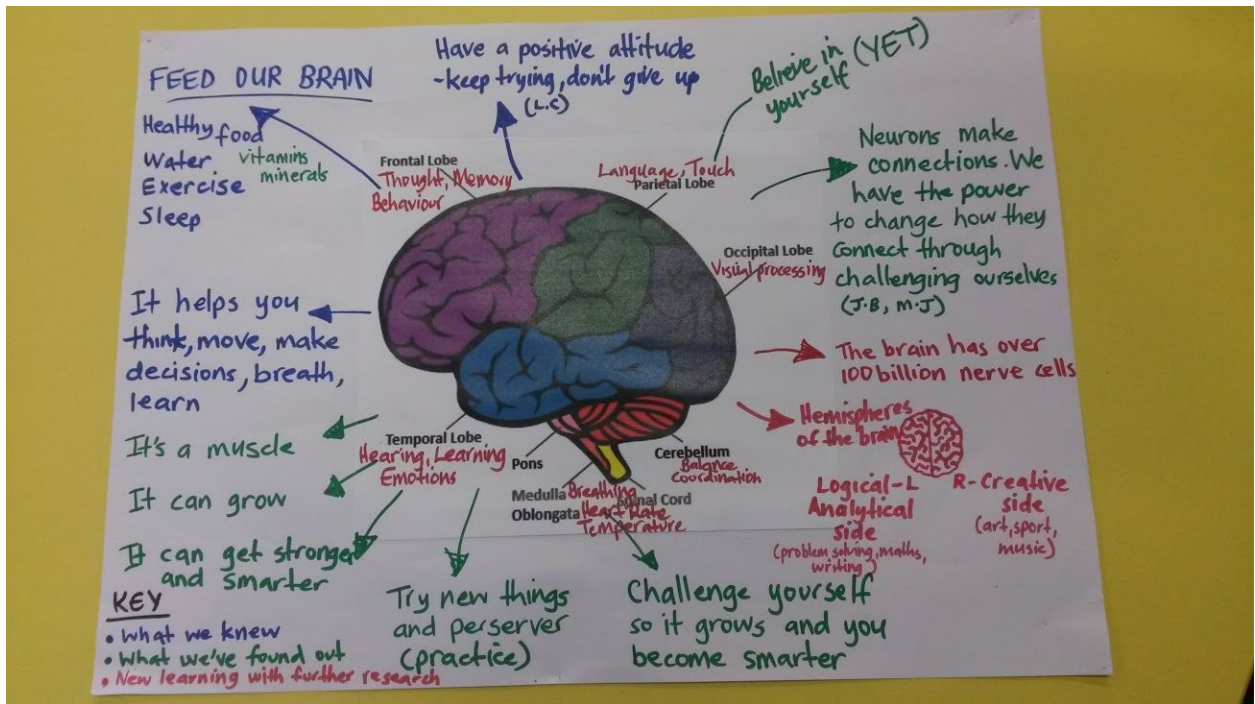
Building a Growth Mindset WHAT CAN I SAY TO MYSELF?		Building a Growth Mindset WHAT CAN I SAY TO MYSELF?	
Instead of Saying..	Trying Thinking..	Instead of Saying..	Trying Thinking..
I tried, but it didn't work.		I tried, but it didn't work.	
I'm going to fail.		I'm going to fail.	
This is too difficult.		This is too difficult.	
This is really easy.		This is really easy.	
I can't do it.		I can't do it.	
I'm not talented enough.		I'm not talented enough.	
I'm not smart enough.		I'm not smart enough.	
I already messed up.		I already messed up.	

"Failure is success if we learn from it." - Malcolm Forbes



Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
You are either good at Maths or you aren't and you can't change it.				
You can only do well in Maths if you are clever.				
Your memory affects how good you are in Maths.				
Learning new mathematical skills does not mean you are changing your ability.				
You can do a lot to change how clever you are.				
You can do a lot to change how well you understand mathematics.				
If you can answer a question quickly you are good at Maths.				
How many answers you get right on a test shows how good you are at Maths.				
Practice exercises are the best way to learn new mathematical skills.				
Watching a teacher do examples is the best way to learn new mathematical skills.				
Trying a problem you don't know how to solve is the best way to learn new mathematical skills.				
The set you are in tells you how good you are at Maths.				
I prefer to work on questions that challenge me rather than questions that I find easy.				

Examples of student created work from classrooms



"Wanted to play instead" tricky to make decisions we couldn't agree on a dance (200) (participated)
 "Swimming made my eyes tired" tricky to get on with others "I quit ballet because my teacher was mean" (Ethan)
 "kung fu - dizzy miguel" "kung fu trying to bring no friends" stella "I quit judo because my teacher was mean" (Ethan)
 "Swimming made me sick" "Ballet - slipped + bleed - Arundo"

"I quit ballet because my teacher was mean" (Ethan)
 "I quit judo because my teacher was mean" (Ethan)
 "I quit ballet because my teacher was mean" (Ethan)

In this classroom, Practise resiliency and

Growth Mindset
 Definition - People with a growth mindset see their qualities as things that can be developed through their dedication and effort

- * I can do it
- * Achieving goals
- * Can-do attitude
- * Give 100%
- * Never give up
- * Improve
- * Edit
- * Use strategies
- * Figure out
- * Train my brain

will use some of the strategies I have

Fixed Mindset
 Definition: People with a fixed mindset believe that they have a fixed amount of talent and nothing can change it.

- * Hard
- * I can't do it
- * I'm dumb
- * I give up
- * I'm not going to try it
- * This is good enough
- * It's too hard
- * I'll never be as smart as them
- * I can't be bothered, it's too hard
- * I'm never gonna get this done

I can't make this any better
 I can't do it

Thought, memory and behaviour
 Frontal Lobe
 @ Movement of body
 @ Conventions, planning, problem solving
 @ Reasoning of words
 @ Emotional responses
 @ Speech
 @ Smell
 @ Personality

Language and touch
 Frontal Lobe
 @ Train and pressure
 @ Taste
 @ Body awareness

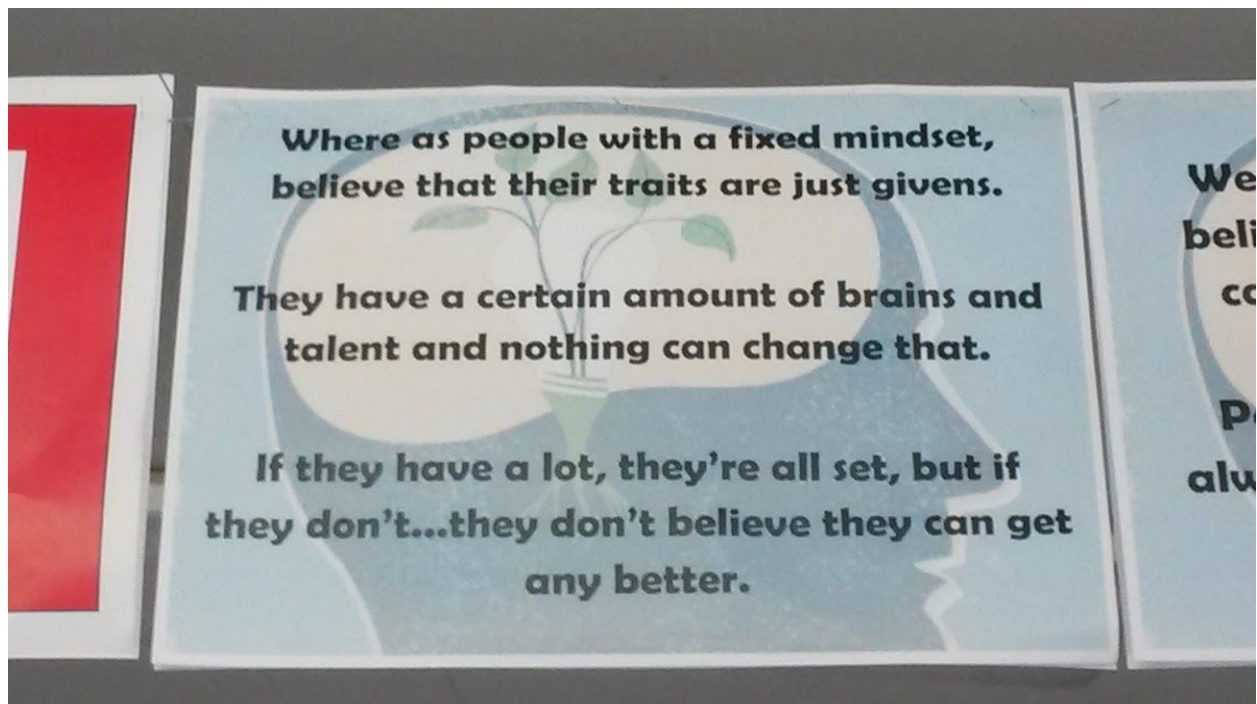
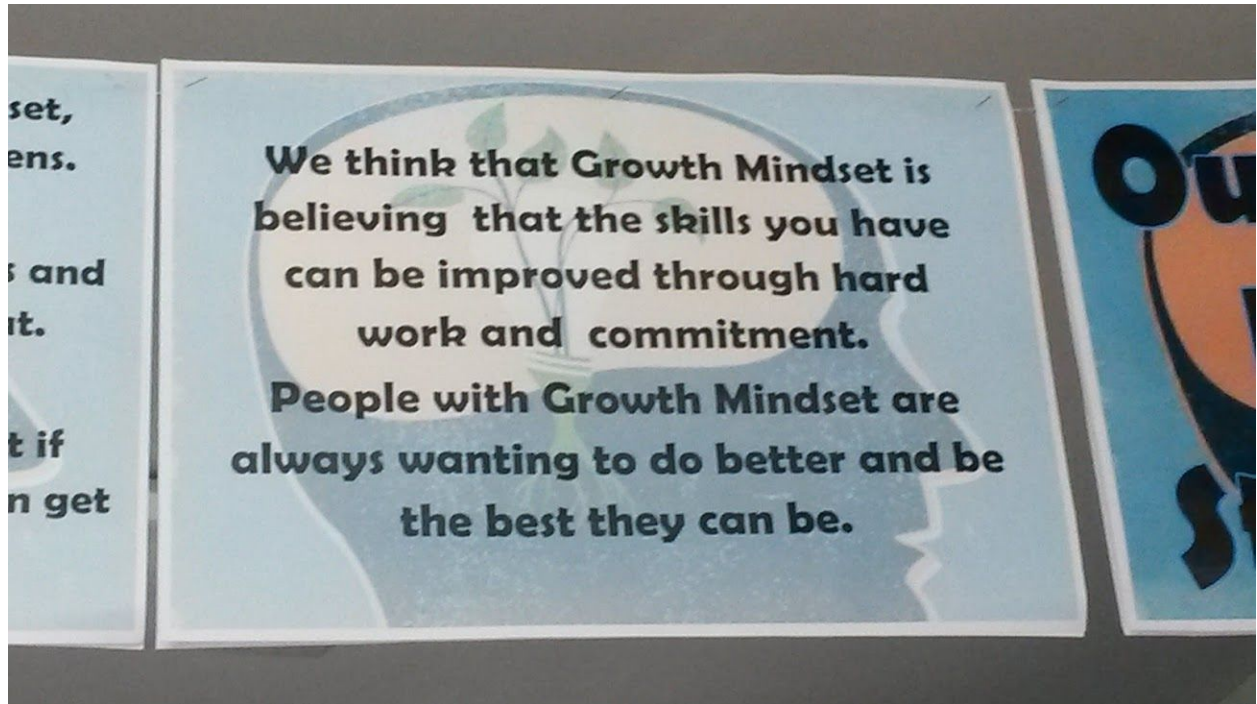
Visual processing
 Occipital Lobe
 @ Vision

Hearing, learning and emotions
 Temporal lobe and Limbic Lobe
 @ Hearing
 @ Recognising faces
 @ Emotions
 @ Long-term memory

Breathing, heart rate and temperature
 Brain Stem
 @ Breathing
 @ Heart rate
 @ Temperature

Balance and coordination
 Cerebellum
 @ Balance and co-ordination
 @ Fine motor skills

This class developed class statements



References

- Dr Carol S Dweck -'Mindset How You Can Fulfill Your Potential-Business, Parenting, School, Relationships' Published 2012
- Mary Cay Ricci-'Mindset in the Classroom-Building a Culture of Success and Student Achievement in Schools' Published 2013
- Mary Cay Ricci-'Ready to Use Resources for Mindsets in the Classroom Everything Educators Need for School Success' Published 2013
- Christine Rubie-Davies-'Becoming a High Expectation Teacher Raising the Bar' Published 2015
- The New Zealand Curriculum Document
<http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum>