

SURKHIYAN

सुरखियां

VISIBLE LEARNING

INTERLEAVING

DUAL CODING

Special Learning and Teaching Edition



VALUE ADDED

IEYC AND FINLANDWAY

PRIMARY IPC

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GICLM as a Centre of Excellence in Learning



One of the most important questions that we ask ourselves as teachers is not 'what works', but 'what works best'. Our understanding of how students learn is constantly developing through cognitive science. I observe many lessons at GICLM and to watch one of our great teachers in action is truly inspiring. Why? Because I see they are establishing strong, but flexible, roots of learning (knowledge, skills and social behaviours) that will not only enable students to pass their exams, but more importantly be lifelong learners who genuinely can apply their talents in many situations. Great teachers set high standards and convey high expectations. Challenge is key, as a mindset of continual improvement is created in a safe environment where learners respect the contributions of others and are not afraid to make mistakes, because that is often how we learn. What ties this together is both teachers and students knowing 'how to learn'.

GICLM teachers meet regularly to continue our own learning in focused workshops and learning groups. We are a research informed school and know what international leaders in educational thought like John Hattie, Lynn Erickson, Dylan Wiliam are saying, to evaluate our best practices. To support staff, we have a mentoring system where senior leaders visit lessons regularly to work on developing teachers' skills in all aspects of classroom excellence. We have created a GICLM Learning Handbook and use Rosenshine's influential '10 Principles of Instruction' as a framework to guide outstanding practice. For example, we have focused on effective feedback techniques, retrieval practice, improving questioning skills, developing cognitive to meta-cognitive learning situations, checking for understanding and developing our students independent practice so they can self-review and become cognisant about what they are doing and how they can improve. As Ron Berger says: 'the work of excellence is transformational...once a student sees they are capable of excellence, that student is never quite the same...'

Placing the student at the centre of all we do, with a focus on their learning, is part of the strong ethos of GICLM. This magazine is really a celebration of learning itself with the hope that it will inspire our community to continue to be learners themselves. Enjoy!

Mr Ian Davies
Head of School



IEYC and Finlandway

In 1969, Parmeshwari Devi Gordhandas Garodia set up a small school with seven students in a garage. Her vision was to provide education to the community which we reside in. This has expanded to bring world class education for our students. We now have around 3000 students on a variety of different programmes under the Garodia Education umbrella.

The International Early Years Curriculum here at GICLM sets international standards for learning, development and care of our young learners. Games, play and invention, sensorimotor training and arts form the main media for their learning. Children unleash their curiosity and hone their love of learning in a safe environment.

We at GICLM believe that early years education is important in a child's development. It not only lays the foundation for later learning, but has a long-term impact in every child's life. It is for this reason that we are delighted to enter into a partnership with Finlandway, as we share the same vision and drive to make a difference. The aim of Finlandway is to bring in a more personalised programme of learning that identifies a child's potential and provides the opportunity to realise it. Finlandway's emphasis on equality, opportunity and excellence coincides nicely with our vision here at GICLM.

We look forward to a prosperous, exciting and long partnership sharing our experiences and achievements.

Ms Priyanka Maligail
Head of Early Years



Laying a Foundation for Learning in Nursery and Playgroup

Laying a strong foundation is very important, be it a building, education, or values. As Playgroup and Nursery are the first place a child steps into school for an early learning experience, providing an enriching atmosphere is the goal here at GICLM.

Learning letters of the alphabet and their sounds are the base for developing language skills. As the little ones of Nursery leap into learning, pictures form a very important part of early literacy. Thus, one letter introduced a week and various activities revolving around the letter help our young learners to remember and recollect. Letters Aa, Bb, and Cc were introduced this month, bringing with them some fun-filled activities and hands-on experiences which our children thoroughly enjoyed.



Ms Diksha Chhabria and Ms Nirmala Ravi
Nursery and Playgroup



Visual, Auditory and Kinesthetic Learning Strategies in Kindergarten

A properly planned learning session keeps students engaged and helps them meet the learning objectives. In our K1 classrooms, tutors incorporate Visible Learning and training techniques as an integral part of our teaching strategies for our classroom sessions. We know that not all students are the same, and we know that the idea of specific learning styles creating better results is an educational myth. All children need to use all strategies to learn well, which is why we incorporate these progressive teaching methods in our classroom. Below are the several core methods of learning which we commonly practice in the classroom.

Visual Learning

This method is most frequently used in our classroom, where information is traditionally taught using picture books, flashcards, games, etc.

Auditory Learning

This format relies upon the student to take in an instructor's information through listening to them live, or via a pre-recorded session.

Kinesthetic Learning

The most intriguing of the learning methods includes mingling elements of both visual and auditory learning and compelling full participation from the student.

Everyone has their own specific needs, which can be addressed through the use of all three of these methods. Students that prefer to listen to their lesson can hear the instructor as they follow along, and those that do well with visuals can watch the instructor, duplicating his or her steps after they're finished. Properly structured learning encourages students to think outside of the proverbial box, coaxing them to experiment with and explore the problems, tools, and substances.

We also believe that learning needs fun. Fun has a positive effect on motivation levels, determining what we learn and how much we retain. Learning needs fun, if learning isn't fun, it won't be effective. It is essential for tutors to understand the learning skills of each student and ensure that all the students have learnt the lessons being taught.

We also believe in regular evaluations, assignments and projects, engaging sessions, research, journaling, feedback sessions, as well as varied content presentation so that the pace of learning remains unhindered, be it virtually or live sessions in the classroom.

In K1 classroom we always seek to include the following items our sessions:

- Preparing examples to clarify and emphasize key ideas
- Provide transitions which show the relationships between key ideas
- Effectively incorporating audio-visual or support materials
- Throughout the session we check on student understanding by asking students to answer some specific questions, asking for specific questions from students, checking the students' understanding by watching the class, by reviewing earlier sessions, reactivating prior knowledge, and through various writing exercises

Ms Aditi Momaya and Ms Purna Vora
Kindergarten I



Effective Questioning

Questions are an integral part of classroom life and essential to every teachers' pedagogical repertoire. It facilitates learning through active discussion. The level of questioning can be from the simplest to the most complex. Using effective questioning with our little ones enhances their speaking and listening skills.

Asking open-ended questions such as 'What do you think will happen? How has it changed? How are these things the same? How are they different?' while involving them in simple science experiments, encourage children to investigate the world around them through observation, exploration and prediction. Effective questions focus on eliciting the process i.e., 'how' and 'why' in a child's response.

Engaging children in Object Talk and Picture Talk conversations by asking questions such as 'What comes to your mind when you see this object? Can you describe the object? What is its shape and size? Which colours do you see in the picture? What are the people doing in the picture? What time of the day is it? and where is it taking place?' aid students in freely expressing their knowledge, ideas and feelings. They also get a chance to use and expand their vocabulary.

We find this technique very beneficial as the questions asked by the tutor acts as a simulator which encourages children to think, analyse and respond accordingly. We can arouse interest and keep children engaged throughout the session through questioning, as it allows for students to express their prior knowledge and understanding, formulate a new hypothesis, create new understandings and meanings of concepts, and develop critical thinking skills. We are also able to evaluate them through questioning. Questions also help us give clues and probe children to respond appropriately.

Ms Barkha Nandrayog and Ms Shivani Koppikar
Kindergarten 2



Happy Navratri!

A colourful Garba and Dandiya Rass rejuvenated the vibrancy of our virtual Navratri! Navratri festival is a joyous way of worshipping Goddess Durga. Our GICLM Early Years students were all dressed up in Chaniya Choli and Kurta Churidar and celebrated virtual Navratri with great enthusiasm.

Students along with tutors danced to the beats and tune of 'Dandiya.' The students were also told about the importance of nine days of Navratri and how Navratri celebration symbolizes victory over evil. Students also enjoyed doing the Dussehra activity, creating Rangoli out of different seeds from their pantry and the Dandiya craft.



Happy Halloween!

Trick-or-Treat... our preschoolers' left no stone unturned in showing their creative, spooky side at our Halloween Celebration. All students happily participated, dressed in their Halloween outfits as witches, friendly ghosts, devils, and pumpkins to name a few.



Improving Learning with the International Primary Curriculum

The school introduced our students to better routes to learning with the launch of the International Primary Curriculum, three years back. The curriculum has given our learners the much-needed framework essential in an inquiry-based learning approach, supported by evidence-based assessments and constant feedback for improvement.

- IPC offers a strong curricular structure, making learning tangible and measurable
- Offers flexibility to integrate local flavours, making it relevant and meaningful
- Rigour to enhance and tools to support learning in our young learners
- Engages students in the learning process, thus making them active learners
- Encourages inquiry, collaboration and reflection as an integral part of learning



The philosophy of IPC is based on three essential constructs:

1. Nurturing holistic development of internationally-minded learners through the three areas of learning: Personal, International and Subject Learning Goals.
2. Rigorous and deep learning through the Types of Learning: Knowledge, Skills and Understanding.
3. IPC Learning process – a series of well-defined steps to promote and enrich learning experiences to ensure optimum achievement of learning goals.

Students are led to imbibe each of the eight IPC personal goals through circle-time discussions, morning assemblies, festival celebrations and all of the teaching-learning processes. A recent morning assembly dealt with students identifying some of their most self-defeating habits and setting goals to eliminate these with help from people they could rely on. Some Grade 5 students identified 'procrastination' as their biggest causes for stress.

Each area of learning is given due importance. Each theme is engaging and interesting because of its relevance and flexibility. Avenues to integrate local, national and international flavours makes the learning experience more interesting. For example, when students learnt about 'Island Life', they diverted a little to learn about their own city, Mumbai – which is historically a union of seven islands. Teachers also took this opportunity to explore the original inhabitants of Mumbai, compared Mumbai of the past to the Mumbai they know today, and also learnt about the culture and traits that makes this city so wonderful.

Student learning is deeper, as their knowledge is built on a strong foundation of factual evidence and experiences they encounter. When students learnt about the brain and its relation to learning, they busted a whole lot of myths they grew up listening to. They learnt more about themselves, and how to address tricky situations in case they got stuck in their own learning processes.

Twenty-First Century Skills are also highlighted throughout the entire learning process. Skills including inquiry, critical thinking, collaboration and creativity, among many others, are integrated with each theme (unit) they learn. By the time students complete their Primary years, all of the skills right from basic skills like literacy, numeracy, communication to ICT skills and so on are deeply ingrained into them. These skills are so well-developed that our learners are able to use these skills and their repository of knowledge in unfamiliar situations to find solutions and answers to new issues based on their understanding and experience.

Every stage of the Learning Process is monitored through student self and peer assessments, teacher assessments, and learning gaps, if any, are identified and remediated. Students are then given personal goals and targets and supported to achieve these. The whole learning process is so engaging and personally gratifying that learning becomes enjoyable for all students.

Mrs Mahalakshmi Anand
Head of Primary



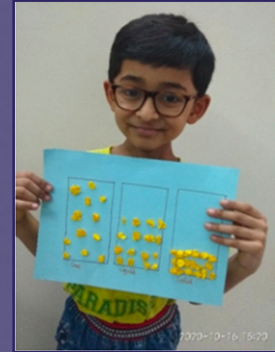
Building Models as an Effective Learning Tool

Meaningful learning depends just as much on the teaching process as it does on the way students process the teaching. One of the effective techniques used for teaching science is Modelling.

Modelling is an instructional strategy in which the teacher demonstrates a new concept or approach to learning and students learn by observing. So much of what we deal with in science cannot be seen and so models are a powerful tool in the science classroom that help us represent, describe, explain and reason about the material world. Models slow students' thinking down and encourages them to think deeply and imaginatively about scientific ideas.

The students of Grade1 had a fun time learning about the different states of matter. This concept was taught to them keeping in mind the various techniques for effective learning, including modeling. Students easily grasped the concept of intermolecular distance between the particles in the various states of matter by using hand gestures. Here the technique of modelling was thoroughly used. Students were also able to explain the interconversion of matter using this modelling technique. They all had fun preparing a chart showing the different states of matter.

Models are enablers – they are there to help students see what outcomes should look like. They allow your students to engage and succeed.



Ms Anagha Karangutkar
Grade 1

Deliberate Practice

Deliberate practice refers to a special type of practice that is purposeful and systematic. While regular practice might include mindless repetitions, deliberate practice requires focused attention and is conducted with the specific goal of improving performance.

Students have a remarkable capacity to improve their performance if they train in the correct way. This is easier said than done. Deliberate practice is not a comfortable activity. It requires sustained effort and concentration.

1. **Motivation** - When working with numbers, students often face failure, frustration and slow progress. It becomes important to motivate them and help them. Without the motivation to push past obstacles, when improvement stalls, the natural inclination will be to give up.
2. **Give enough time and effort** - Students are given enough time and guided to put in the required effort that helps them gain more confidence with the concept.
3. **Set specific and realistic goals** - Motivation also requires keeping your eyes on the prize. Teachers and students mutually agree and set goals that are realistic and work dedicatedly towards achieving them. Deliberate practice relies on small, achievable, well-defined steps that help students work their way towards meaningful improvement. A star on the incentive corner, three claps of appreciation, verbal praise, intimating parents of good work all work well with students to keep up the good work.
4. **Being consistent and persistent** with the work helps students understand the concept and get better clarity to achieve good results.
5. **Deliberate practice is a long-term investment** that aims at improving the capabilities of students.

Ms Bhavana Bhanushali
Grade 2



Technology in Primary

Technology is inevitable for learning today. As the workforce environment changes around for our digital natives, it becomes essential to develop these digital skills in our students. Using technology in the classroom isn't just about having digital devices available, but to engage learners effectively to enhance student curiosity, and further develop students' skills. With technology integration in the classroom, students are provided with new learning opportunities to be innovative, collaborate, and receive quick feedback to best enhance their knowledge at earlier stages.

For our Primary classes, the use of technology (iPad/ computers) is often integrated amongst other Primary subjects to provide students with various tools to learn and understand how concepts can apply to the real world.

A variety of apps are used at different stages of learning from allowing students to create their work, have access to current information, communicate across to peers or help check for understanding. Apps such as Kahoot!, and Quizizz allow daily practice for the material taught, reinforcement of concepts or quick ways to check for understanding. Apps such as Canva, Camera/ Video and Flipgrid are wonderful tools that encourage students to independently be creative and apply the concepts taught to create different mediums to showcase and explain their learning. Apps such as Prodigy are designed to help students independently practise Math concepts taught. Pages and Powerpoint have become a favourite amongst the students to share their research and writings. Students enjoy brainstorming and leaving reflective responses on apps such as Jamboard, Flipgrid and Padlet. This allows students to comfortably ask questions, participate or provide responses they may not be willing to share with thought. Online websites allow students to visualize concepts through models for science. For example learning about the different parts inside the ear, skeletal system, can all employ the use of technology. Tools such as Safari and Youtube are also used to provide deep understanding, clarify student queries and further their understanding about their curiosities. With the lockdown, digital whiteboards have also allowed ways to guide students across various subjects and for students to collaborate, show their steps and reflect easily.

We live in a digital world, and technology is a life skill. As the world around us changes, students must be taught to use technology safely and correctly at an earlier stage. As they familiarise themselves with these new digital technologies, they will further be able to utilise them for other purposes tomorrow.



Ms Keshma Mehta
Grade 3



Effective Learning Strategies

For the ongoing IPC unit 'From Bronze to Bioplastic', students of Grade 4 learnt about different materials and their properties. The concepts were taught keeping in mind the strategies for effective learning like Retrieval, Spaced Practice, Interleaving, Dual Coding, and Elaboration.

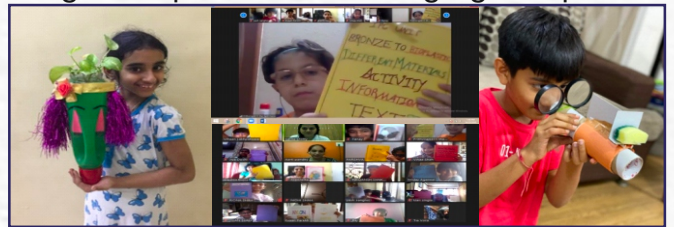
Retrieval Technique was used to recall information about the properties of materials that the students had learnt in the past. This strategy helped students recall information from their memory and enhanced their learning. Moving forward, the technique of Spaced Practice was used where students reviewed different materials over a long period. This gave their minds time to form connections between the ideas and concepts so knowledge can be built upon and easily recalled later.

While learning about the rock cycle, they combined two topics, the rock cycle and the soil profile. Interleaving helped them to see the links, the similarities and the differences. This technique strengthened their understanding and also led them to better long term retention and an improved ability to transfer learned knowledge.

While learning about 'Materials: Now and Then', the Dual Coding technique was used. Students researched and wrote about natural materials used in the Stone Age and the Bioplastic used in the Modern Era. They then used pictures of the materials in the two different periods to provide different representations of the information, both visual and verbal. Adding visuals to a verbal description made their presented ideas more concrete.

To develop International Mindedness, Elaboration was used. Students had to design a new product from a waste plastic bottle or any other plastic product and had to explain their ideas in detail. They had to think about how this activity could help the planet and make connections between reducing waste and saving the planet's resources. They also had to connect their learning about plastic waste being a global problem with their personal experiences.

Ms Sarita Shetty
Grade 4



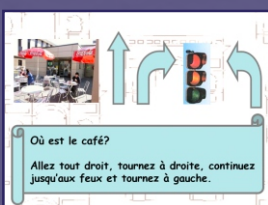
Active Learning

Active learning engages students in learning, using activities such as reading, writing, discussion, or problem-solving, which promote analysis, synthesis, and evaluation of class content. Active in-class learning also provides students with informal opportunities for feedback on how well they understood the material.

One of the active learning strategies is the use of scenarios/case studies which allows students to apply the concepts learned in class to "real-life situations". The students of Grade 5 in French class learnt to ask and give directions to go to a particular destination. First, they were provided with a list of appropriate vocabulary. Students framed sentences using the appropriate prepositions. Later, the students were put into groups of two and were given scenarios where one asked for directions and the other steered him/her in the right direction. This strategy helped improve speaking skills by establishing a dialogue with their partner. Brainstorming is yet another simple, effective way to promote interaction and provide the teacher with a sense of students' comprehension. Students are asked to generate ideas on a certain topic, category or question. When the chapter on 'Food and Drinks' was introduced to Grade 5 students in their French class, they were asked a couple of questions related to making a comparison of Indian and French food habits and cuisine, the kinds of meals that exist in the diet of the inhabitants of France and India, etc. This propelled the students to do some research and come up with a detailed study of the food habits in France and India. It set a good platform to introduce the topic.

Active learning is indeed an efficacious strategy to improve class participation and determine the understanding of students for a particular topic or concept.

We are very careful that Active Learning is very well planned and constructed by teachers. It should not be 'unstructured play' or exploration without prior learning and knowledge/skill acquisition. The best results come from a structured scaffolded activity that guides the learning.



Ms Disha Padhariya
Grade 5



Valued Added – Using Data to Improve School Performance... or “Just How Good is Your School?”

As a practitioner of thirty one years in education, the burning question that always seems to arise from parents is ‘Just how good is my child’s school?’ It’s incumbent of schools to justify why the student should be there and not elsewhere. School results or high academic attainment is inevitably used to justify why their institution is the one to choose, but is this the only true measure of how good a school is?

I recall a seminar I was hosting in Jakarta for thirty or so Principals and Vice-Principals of local schools. The National Examination results for Grades 10 and 12 had just been released. Ironically, the seminar was on ‘using school data to improve school performance’. One of the first questions I posed was “how happy were they with their student’s results?” Every man and woman in the room responded they were extremely pleased. Phrases like ‘best results ever’, ‘huge number of top grades’, and ‘students hitting teacher expectations’ were abundant in supporting their statements. However, when presented with the question of what evidence they had to show the students fulfilled their potential, other than professional judgment, there was none. This is not to say that a teacher’s professional judgment is invalid, it indeed forms a crucial part in assessing a student’s attainment, but it should not be the only metric used.

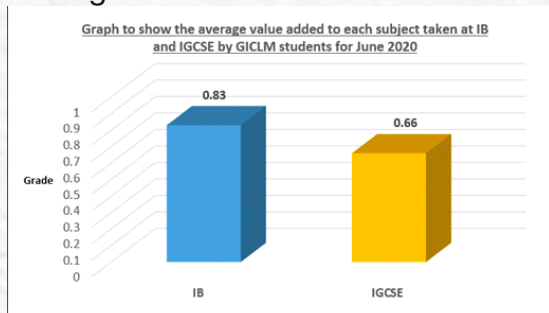


Knowing a student’s academic ability is essential in determining the fulfilment of academic potential and most importantly measuring achievement. The latter being how far a school can move an individual student in their learning journey. Simply put, from being satisfactory to good or good to excellent. Not every child can be a ‘Topper’, and what a school should be delivering is the fulfilment of academic potential.

Value-added measures, or ‘growth’ measures, can be used to estimate or quantify how much of a positive (or negative) effect individual teachers have on student learning during a given school year or school programme. The use of Cognitive Abilities Testing (CATs) is a suite of diagnostic assessments of developed ability and likely academic potential. The data can be used to identify specific groups of students, including special educational needs, gifted and talented. Given this ‘baseline’ for the potential and strengths of each student whilst highlighting any weaknesses they might have, teachers can structure their lessons to suit different learning types.

Currently, the main providers of CATs tests are; Centre of Evaluation and Monitoring-(CEM) and Granada Learning (GL), both UK-based institutions. At GICLM we have been using the GL platform for the last two years and whilst not all schools use this type of testing, 50% of UK Secondary schools do.

At the start of our academic year 2018, all Grade 9 and 11 students underwent GL-Baseline testing. The results of the tests were shared with parents and students and used by teachers to set ‘subject-specific’ targets reflecting what GL worldwide historical data suggested a student with that score should be achieving. This objective outcome was coupled with the teacher’s professional judgment to arrive at a final Target Grade. In all cases, this Grade was at or above the GL Baseline Predicted Grade. Throughout the two year programme, the student’s current achievement was tracked against their target grade to give a more meaningful assessment of progress. As well as the subject grade predictor, the baseline report was able to identify students’ strengths and weaknesses, enabling teachers to put in specific strategies to meet the needs of students across the academic spectrum. Tracking of students’ progress across each cohort also allowed the identification of generic issues across specific subjects and evidenced-based intervention strategies.



It is always pleasing to know the actual ‘valued added’ that a school makes to a child’s learning. Ultimately good learning and teaching strategies coupled with a real understanding of ‘how students learn’ is crucial to maximizing the student’s full potential. For GICLM, I can report that the 2020 IGCSE and IB results show just how much value has been added. Using the baseline predictors an average of 0.66 of an IGCSE Grade was added to every IGCSE subject entry along with 0.83 of a grade added to every IB subject entry. These valued-added statistics are quite remarkable and clearly show how much of a difference GICLM can make to the education of your child.

Mr Patrick Moore
Head of Secondary



Interleaved Mathematics Practice

To ensure that the students of GICLM are learning math and improving their skills, we use a less common, but more powerful learning practice- “interleaved arrangement”, where practice problems for multiple concepts are interleaved or mixed up across the problem set. The Grade 6 students learnt about the number of faces (F), edges (E), corners (C), and angles (A) of prisms. After the four concepts are taught, students could practice their understanding in two different ways (with each letter below representing one practice problem):

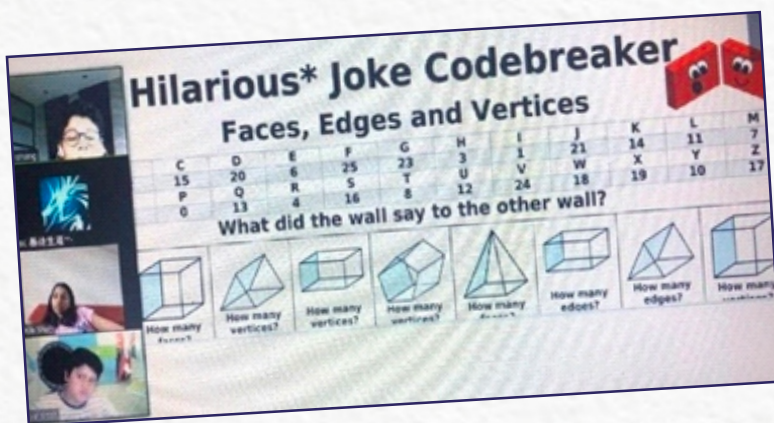
Blocked Problem Set: F F F F E E E E C C C C A A A A

Interleaved Problem Set: F E C A F E C A F E C A F E C A

In the blocked problem set, students completed four practice problems on faces, then four on edges, then four on corners, and lastly, four on angles. Importantly, both sets have the same type and number of practice problems; they’ve simply been rearranged.

Interleaving helps students of GICLM retain new information by ensuring that Transfer takes place from short to long term memory. Simply put, interleaved practice in mathematics gives students a chance to learn what they need to know.

Ms Sandhya Pal
Grade 6

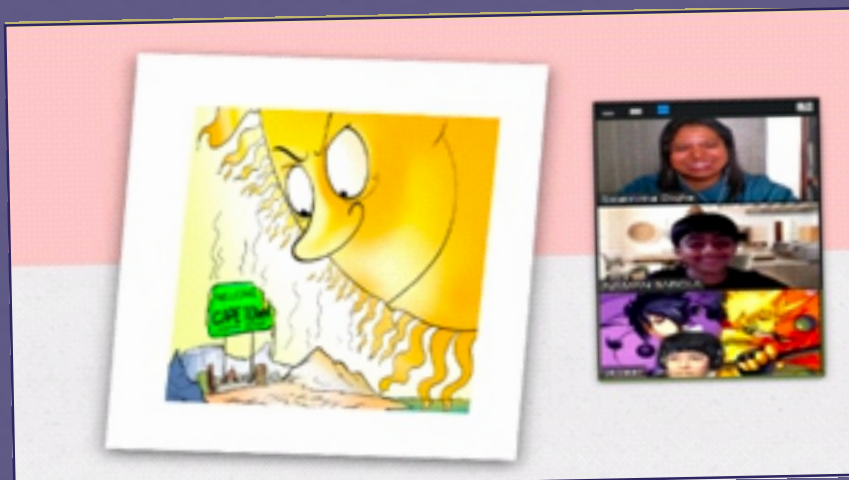


Exploring Myths through Dual Coding

Dual Coding is perhaps the most widely used strategy by teachers from amongst the six strategies for effective learning, for the simple reason that it is easy to use and is extremely effective! In layman's terms it means 'combining words with visuals while presenting information to students'. Personally I like using it with tools like PPTs, Padlets, Charts and Whiteboards (offline and online). Mind maps for ideas and graphic organisers for planning writing are my go-to aids while teaching language.

This time for the unit on Myths and also during Literacy Week with Grade 7, I used the dual coding strategy for a retelling of the Myths. As the oral narration of myths unfolded, related visuals of heroic characters or mythical settings were shown to students through a PPT. We even discussed the effect of using visuals in narration on audiences' attention, wherein they concluded that the myths were more effective and they could comprehend better with the visuals being present. So, for their oral presentations of creative myths written by them, students chose to use the dual coding themselves and enjoyed working in pairs.

Ms Swarnima Dighe
Grade 7



Scaffolding - Guided Practice in Language Acquisition

Scaffolding is guided practice leading to concept mastery and learner autonomy. When teachers scaffold instruction, they typically break up the learning into smaller parts and give the students the assistance required at each stage, beginning with a simplified version of a lesson and gradually increasing the complexity over time.

Scaffolding works very well in foreign language instruction, leading to students expressing themselves with ease and confidence. Hence this week, scaffolding was implemented in the Grade 8 lesson on 'Giving Directions'. Students went on from comprehending the concept from words to sentences to text and getting familiar with specific sentence structures with use of correct directions based on a map. The gradual increase in complexity helped the students master the concept and reduce the feeling of frustration from attempting language skills beyond their current level. Scaffolding thus provides an engaging and interactive learning environment with improved comprehension and problem-solving abilities.

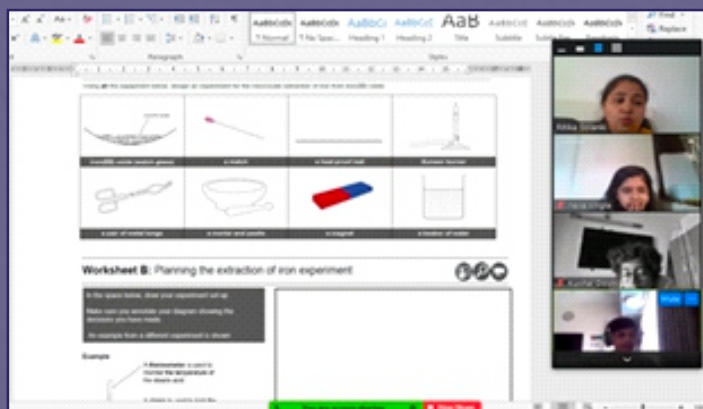


Ms Uma Iyer
Grade 8

Virtual Experiments on Extraction of Iron

Cambridge international examination has come up with online experiments for IGCSE students and one such experiment was done with Grade 9 students, which was a virtual experiment on extraction of iron.

The students were taught in previous classes the reactivity series of metals and as its application -- extraction of metals was introduced to them. There are different metals which are extracted from their ore by different methods. Iron metal is extracted by blast furnace on a large scale. In order to explain the reaction, a virtual experiment was done in class. Students first were asked to plan and after discussion with them, the interactive video was shown. Students were also asked to solve worksheets based on experiments which highlighted their previous knowledge. Overall it was an interactive session with them using retrieval practices. I share here some of the worksheets which are annotated during class and solved later by the students.



Ms Ritika Solanki
Grade 9



Encouraging Critical Thinking: Virtual Lab for Investigating Factors Affecting the Resistance of a Wire

Cambridge Assessment International Education prepares school students for life, helping them develop informed curiosity and a lasting passion for learning. Even when the schools are closed, learning shouldn't stop. Taking this motto forward this week in their Physics class, Grade 10 students of GICLM performed a virtual investigation. The resistance in a circuit changes due to factors like the length and thickness of the wire used. It is the effects of these changes which were investigated.

The activity started with a review sheet where students had to recall the basic concepts of the resistance. It followed with devising a plan to investigate the factors affecting the resistance of a wire. Later students were shown a video of the actual experiment. They were asked to compare their planning to the actual setup. This was with respect to the aim or hypothesis, list of apparatus required, variables, circuit diagram, safety precautions, procedure, observation table, and graph with conclusion. Students enjoyed the activity and also learnt the details of planning any experiment in future.

Ms Smitha Sanu
Grade 10



Higher Order Thinking

“Tell me and I forget, teach me and I may remember, involve me and I learn.” – this quote was given by the great scholar, Benjamin Franklin. Providing carefully designed support for students to learn and absorb new concepts and analyse and evaluate challenging material is of crucial importance in the learning journey.

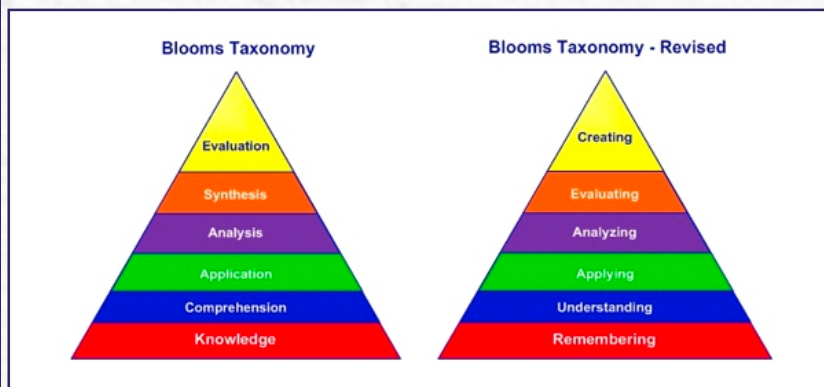
Bloom's taxonomy was designed with six levels to promote higher-order thinking. The six levels are: knowledge, comprehension, application, analysis, synthesis, and evaluation (the taxonomy's levels were later revised as remembering, understanding, applying, analysing, revising and creating). Higher-order thinking is thinking on a level that is higher than memorizing facts or telling something back to someone exactly the way it was told to you. Bloom's taxonomy differentiates between cognitive skill levels and calls attention to learning objectives that require higher levels of cognitive skills and, therefore, lead to deeper learning and transfer of knowledge and skills to a greater variety of tasks and contexts.

Higher-order thinking works very well in economics where students try to apply concepts learnt in the classroom to different real-life issues. This was introduced in class with Grade 11 students where students learnt how to differentiate microeconomic and macroeconomic issues and how sometimes these issues are linked to each other. In this activity, students found different newspaper articles relating to Covid-19 at the micro-level and macro-level and tried analysing and evaluating them individually and in groups.



They analysed how government intervention was helpful, however they also thought critically about the problems the government might have faced in the short run to tackle the situation linking this to many concepts learnt in economics, like scarcity. Higher-order thinking thus provides an engaging and interactive learning environment with improved analysis and problem-solving abilities.

Ms Kshama Kulkarni
Grade 11



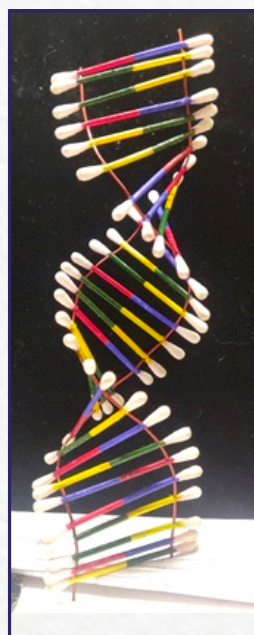
Use of Models to Demonstrate Learning – Grade 11 IB DP Biology

Models are often used so that we can make something complex into a simpler, understandable form. Often models are not perfect; they are approximations and might have limitations. Thinking about these limitations enhance our understanding of the structure or process.

Constructing models can be considered as an effective way to demonstrate and analyse learning in the classroom. The Grade 11 students of IB DP had such an opportunity while learning the structure of DNA. One of the formative assessment tasks related to learning was to construct a model to demonstrate their understanding of DNA. The students were provided with a rubric in advance which helped them to understand the criteria under which the model has to be constructed. In addition to this, they were asked to write a reflection of 300 words which included the difficulties they faced during the task, the limitations of their model and their experience of performing the task.

The students constructed the models individually with readily available materials like straws, ice cream sticks and beads. Their write-ups reflected the difficulties they faced with the materials chosen and how they had to improvise to create the right structure. Moreover, the students claimed that this was one of the most enjoyable experiences during this online learning period. Grade 11 student Nysa Phulwar wrote in her reflection, "It was a great way to learn, create and understand the structure of DNA. COVID has not been kind to us and this was a great way to take a break from the text and the computer screen. I found it to be an interactive and enjoyable task."

Mrs Elza Eldo
IB DP Coordinator



Visible Learning

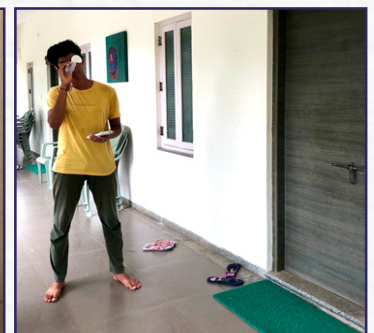
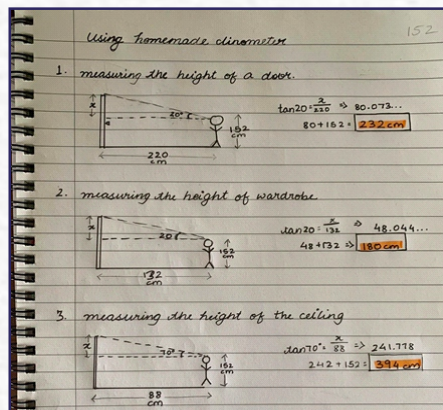
Even though I am miles apart from my son, I always ask him, “what did you learn today in school?” Often, my son answers “nothing”, “we just answered worksheets”, “we just followed the dance steps on YouTube”. I wonder when I will hear specifics from him instead of those answers. Most probably, many students might answer their parents the same way as my son. These answers from our students will change with visible learning, as practised here at GICLM.

As we plan our lessons, we should plan our instructions, convey our objectives and assess their learnings frequently. According to a study by John Hattie, the best strategies are metacognitive, self-reported grades and formative evaluation. He sums up these three as simply “student visible learning”. Student visible learning can be expected to help them achieve more than a year’s growth.

One approach in mathematics we used is the CPA (concrete, pictorial, abstract) approach. For students to effectively learn mathematics, students need to pass through these phases. During their early years, students used manipulatives for them to see how addition works. Then, pictures are used as a substitute for these manipulatives. Students can easily retain what they learn if they can see visually how mathematical processes are done. Once they have mastered them, the teacher knows it is the time to introduce abstract concepts such as the variable X, functions of Y, etc. This however does not mean that our IB students do not need the concrete and pictorial models. In fact, students even in their higher years of education still frequently use these tools. Students in higher years also need to experience the application of what they are learning.

For learning to happen, teachers need to plan everything. With our current situation, hats off to GICLM teachers for exerting much effort to deliver the best learning possible, even if teachers only see students via webcam. Although strategies vary from one class to another, rest assured, learning is visible at GICLM.

Mr Mark Orcine
Grade 12



Constructivist Learning: A TOK Lesson in Science and Ethics

Constructivist learning is the process of connecting students background knowledge and conceptions with new experiences and understandings. It is the preferred pedagogy of the IB. It is a powerful learning practice because students construct meaning in the subject matter and their lives, ideas are formed and knowledge is gained and it enables students' to develop their self-identity. Importantly the lesson experience is not a passive one. Yes, there may be some knowledge shared to prompt thinking and further development of ideas, but answers are not always provided and discussion can be scaffolded at increasingly complex levels to elicit advanced responses and applications of knowledge and skills in new situations. This is not testing information but encouraging student's to use their own thinking and self-review to improve their understandings and skills (we call this meta-cognition). If they can apply this without teacher direction, then student's genuinely have become independent learners hopefully for life.

Lesson Context: This lesson was the culmination of a unit that looked at What is Science? Is the Scientific method a rational methodology or is there room for emotion? What theories exists about scientific change, what is pseudo-science and is there a relationship between religion and science ending with a slightly philosophical debate about the Big Bang. Ethics was a natural conclusion.

Starter:

Group Discussion	Starter: Science and Ethics	Quick small group discussion allows students to engage with Retrieved Information and ideas from previous sessions, allows reference to own personal ideas and introduces key concepts that we can refer to through the lesson.
	<p>In groups:</p> <ul style="list-style-type: none"> • Is science, or should it be, value-free? • Should scientific research be subject to ethical constraints or is the pursuit of all scientific knowledge intrinsically worthwhile? • Do we tend to exaggerate the objectivity of scientific facts and the subjectivity of moral values? • Do human rights exist in the same way that the laws of gravity exist? 	

Teacher introduction of key understandings:

<h3>WHAT IS ETHICS</h3> <p>The study of ethics is concerned with questions such as 'How should we act?' and 'What is right and what is wrong?' Are there any differences between the two?</p> <p>Ethics is about moral choices. It is about the values that lie behind them, the reasons people give for them, and the language they use to describe them.</p>	<p>Back to a whole group. Setting some foundations for an understanding of ethics with some additional comments in a student's understanding about the role of religion, atheism, culture and the notion of 'what it is to be right?' and 'who decides this?' Are the laws and rules of a country arbitrary or based on some sort of code of practice?</p>						
<h3>What is Ethics?</h3> <p>What is Ethics? Simplistically we talk of two perspectives:</p> <table border="1"> <thead> <tr> <th style="background-color: #fce4d6;">Universal position</th> <th style="background-color: #e1bee7;">Relativist position</th> </tr> </thead> <tbody> <tr> <td style="background-color: #fce4d6;">Universalism suggests there are morals and values that transcend ALL cultures, faiths, societies.</td> <td style="background-color: #e1bee7;">There are no universal rules. What is good morally in one context may be morally bad in another. Every group/culture has a 'right' to its beliefs because of its traditions/ history.</td> </tr> <tr> <td style="background-color: #fce4d6;">In Science: Eg. Doctors should save lives whatever the circumstances</td> <td style="background-color: #e1bee7;">In Science: Eg. Killing the elderly in a time of drought is acceptable practice because statistically more will survive long term</td> </tr> </tbody> </table>	Universal position	Relativist position	Universalism suggests there are morals and values that transcend ALL cultures, faiths, societies.	There are no universal rules. What is good morally in one context may be morally bad in another. Every group/culture has a 'right' to its beliefs because of its traditions/ history.	In Science: Eg. Doctors should save lives whatever the circumstances	In Science: Eg. Killing the elderly in a time of drought is acceptable practice because statistically more will survive long term	<p>Two basic and key positions about Ethics are introduced to give an academic grounding and point of reference in later discussion.</p> <p>Theory is connected to real-life Scientific situation to show application of the idea. They will need this understanding later.</p>
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Main Activity


Some ethical positions and Science

Ethical Positions: These are just a few main ones:

Ethical Position	Meaning
Utilitarian	Utilitarianism is the theory that any action that causes happiness is good whereas any action that causes sadness is bad. It promotes actions that cause the most happiness in a group of individuals.

Scientific Situation:

Emergency Department in hospital: Funding



Students were split into new groups with clear instructions to:

Read and think about the new ethical position as explained

Then, apply this ethical position to the situation of a homeless person admitted to hospital, evaluate the good and bad aspects of this position and then give their personal response.

Two more ethical positions were evaluated:


Some ethical positions and Science

Ethical Positions: These are just a few main ones:

Ethical Position	Meaning
Deontology	Deontology is the ideology that there should be a set of rules that everyone should follow to be good.

Scientific Situation:


The case of Chantal Sebire; Assisted Suicide



Some ethical positions and Science

Ethical Position	Meaning
Relativism	What is right and wrong is relative to the person in the situation.

Scientific situation: Nazi doctors experimenting on Jewish twins at Auschwitz



Discussion: Students were surprised that there are ethical positions that can actually justify war crimes (Nazi doctor's defence after Auschwitz) and were faced with the dilemma about whether a person actually has the right over their own body (assisted suicide in Switzerland). The arguments, based on academic positions, got tougher and tougher (**Scaffolded Discussion with increasing levels of complexity**) and only needed the interjection of the teacher to clarify points, push understandings, challenge their points and add further levels of complexity for advanced learners. The teacher can judge how students are learning by their responses to questions and listening to the quality of the discussion.

Plenary:

Science and Ethics

Some specific science situations:

- Should drugs companies make such profits? (US\$1.3 trillion in 2019 with top 10 companies making US \$392.5 billion. Source the Pharmaletter online)
- Should India spend so much on military scientific research compared to health? (2019: health US\$200 million, US\$13.5 billion - worldbank data)
- Should a scientist 'twink' their results to fit the general pattern they are proposing? 40% minimum are wrong - invalid science. Wikipedia


The judgment by the war crimes tribunal at Nuremberg laid down some standards to which physicians must conform when carrying out experiments on human subjects.

In response to Nazi "research" on concentration camp prisoners:

- Voluntary consent of research subjects
- Research should be based on theory/knowledge
- Experiment should avoid harm and suffering
- No death or injury
- Every precaution taken against harm or injury
- Only trained researchers/scientists
- Subject can leave experiment
- Researcher must be prepared to end with good cause

Teacher draws out some important aspects of the discussion to retrieve key points (and aid Transfer of information from short term to long term memory which in future they will be able to access), gives some extra ideas to think about connected to current issues and showed how the war crimes debate was 'solved' in an ethical manner. Reflection: Students were able to respond in a safe environment (small groups), were given some foundational knowledge to work with, were able to fully offer their own opinions based on critical thinking and took control of their own learning through carefully guided stages. As the teacher, I was able to learn even more about each student eg gauge their level of collaboration on an academic task. Was it successful? To a degree. Some students have greater assurance and confidence in such situations and can engage better.

How do I begin to change this for all students? How do we heighten social skills to improve academic responses? Did they all learn? Yes – and I could see the different levels of achievement to the set task. As a learner, I personally gained much from listening to the ideas of the students. Of course, being able to write articulately about such academic debates in a TOK essay is another matter.....education really is a slow process.



It makes your head hurt.....

The IBDP and the Extended Essay

The Extended Essay is defined by the IB as “an independent, self-directed piece of research, finishing with a 4,000-word paper”. It is one of the core components of the IBDP, and is mandatory for all students. Through the research process for the extended essay, students develop skills of formulating an appropriate research question, of exploring a specific topic, of communicating ideas and developing an argument. The students gain an understanding of the critical thinking skills and processes associated with carrying out research, enabling them to move more comfortably into the world of universities, colleges and careers. It develops the capacity to analyse, synthesize and evaluate knowledge, and provides students with an opportunity to study in depth, a topic of their choice related to any one of their six DP subjects, or takes the interdisciplinary approach of a World Studies extended essay.

Our IBDP Grade 11 students are given an overall orientation as well as subject-specific orientations about the Extended Essay to familiarise them with the regulations governing the extended essay and the assessment criteria. Once the students decide on the subject and topic, they are ably supported by their individual teacher-supervisors who encourage and support the topic of research and the formulating of an appropriate research question. In addition to the three mandatory reflection interviews, the teachers also have regular sessions with their candidates to continuously monitor the progress of the Extended Essay, ensuring that the chosen topic and research question meet all the requirements of the IB, and that the student is using the relevant methods of research to arrive at a conclusion. Apart from online resources, students are also encouraged to use the reference materials available in our library, and they are also briefed about the appropriate methods of citation and referencing to be used in their written work.

From a student's point of view, the Extended Essay is probably a tough task demanding a lot of time, dedication and commitment on their part; however, it teaches them a great deal and makes them independent learners. The completion of the Extended Essay gives them a sense of pride and achievement that is rarely experienced in any other curriculum and this experience is something they carry with them for the rest of their lives.

Ms Vidya Rao
French Teacher

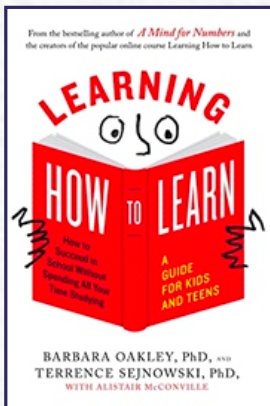
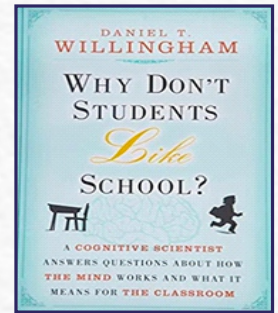


Top 10 Learning Reads

After reading about some of the work in school, here is a selection that might give deeper explanations and 'whet your appetite' for further understandings about learning. Enjoy!

Daniel Willingham (2010) Why Don't Students Like School

A classic, and easy read, that give nine principles to apply to help students learn. It shows clearly that intelligence is not something that you are born with, but is something that anyone can develop through thinking skills. It also contains one of the best lines ever to feature in a book on education: 'Memory is the residue of thought.'



Barbara Oakley and Terrence Sejnowski (2018) Learning How to Learn

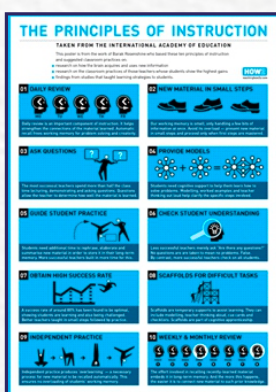
This is a book for both students and parents. Written in an easy to access and enjoyable way, it takes the reader through a series of learning strategies that enable mastery of key skills through practical situations.

An earlier book *A Mind For Numbers* is also a really good read and not just for mathematicians.

Dunlosky et al (2013) Strengthening the Student Toolbox: Study Strategies to Boost Learning

A famous article for the *American Educator* that is easily downloadable.

Dunlosky et al set out to research which learning strategies are the most effective. They found 10. Teachers use these extensively and they are easily understood by students for their own application.



Barack Rosenshine (2012) 10 Principles of Instruction

This comes from another article in the *American Educator* and is easily downloadable.

Rosenshine and Dunlosky have all been issued to our teachers with a poster given to everyone.

This clearly identifies 10 key strategies that teachers should use to solidify learning. They are easily understood and can be applied by students in their own study practice.

The Learning Scientists Website

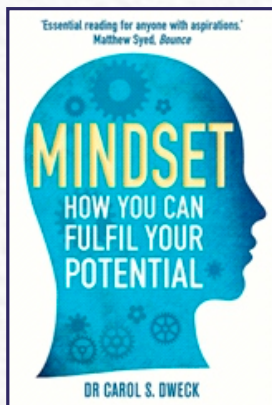
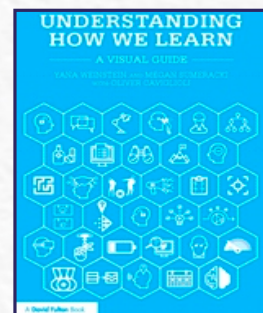
<https://www.learningscientists.org/downloadable-materials>

A great website with downloadable materials, with the aim to make scientific research on learning more accessible to students and teachers



Yana Weinstein and Megan Sumeracki (2018) Understanding How We Learn

One of the very best books ever written about the nature of learning. Perhaps more for teachers, but great illustrations and well written explanations make this accessible to anyone.



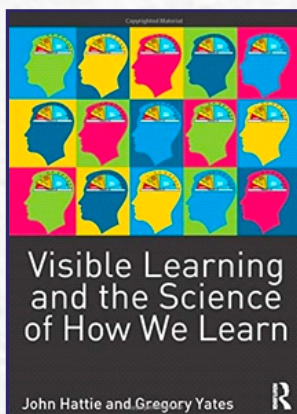
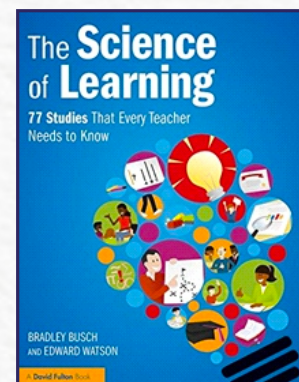
Carol Dweck (2008) Mindset: How You Can Fulfil Your Potential

This book explains how having a growth mindset, as opposed to a fixed mindset, is essential for success. It looks at self-motivation and behaviour.

Whilst it has been difficult to replicate some of her findings and therefore conclusions, currently this still is quoted a lot by educationalists and is worth dipping into.

Bradley Busch and Edward Watson (2019) The Science of Learning

Ok, it is really meant for educators, but this is a simple reference book that succinctly explains 77 key research studies about learning. Behaviour, stress, parents attitudes, homework, retrieval, sleep, resilience, grades etc. The research 'truths' about these topics and more are easily understood.



John Hattie and Gregory Yates (2014) Visible Learning and the Science of How We Learn

For sure a challenge issued to you to look at this book. It is a very practical explanation of 'what works best in schools'. Hattie has based his conclusions on thousands of observations and studies in schools. This is the undoubted key text in terms of world-wide credibility. It is definitely written for the education world and I would only suggest dipping into this if you want an academic understanding.

Paul Kirschner and Carl Hendrick (2020) How Learning Happens

Recently published, this book is intended for academics and practitioners. It superbly analyses and comments on 28 key works on learning and teaching; looking at learning myths, how the brain works, prerequisites for learning, which learning activities work and so on. Another challenge perhaps, but worth the effort.

I make a prediction that this will become one of the seminal educational texts.

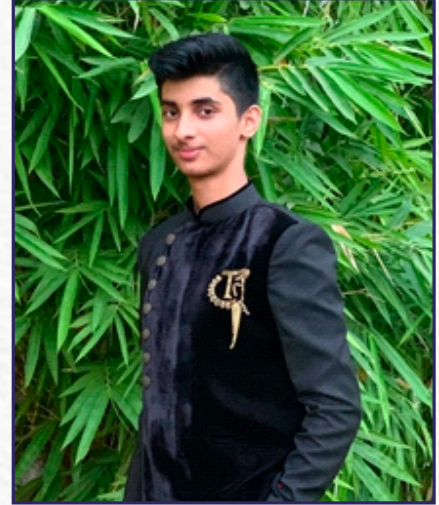
Enjoy!



Mr Ian Davies
Head of School

GAEE International Mumbai Chapter

Since July, I have been working closely with an international student-led NGO called GAEE International (Global Association of Economics Education) - www.gae.org. Their aim is to promote economics, finance, and entrepreneurship and raise interest in it among high school students (Grades 8-12). They have several chapters in many cities, founded voluntarily by local students.



Therefore, three of my friends and I have co-founded the Mumbai Chapter of GAEE International. Throughout the past few weeks, I have been tirelessly working behind this new project and on September 15th, we launched our Instagram page, @gae_mumbai. For the same, we had discussed and enforced many strategies, some of which were targeted to hype up our launch. The initial response was tremendous! However, our next objective is to conduct a free online workshop.

My role is basically to lead the Mumbai chapter by increasing education and skills in the three aforementioned subjects through online workshops, free webinars, social media, etc. I recognised the importance of the division of labour, and thus I divided the departments of operation among the four of us. I am writing the content, which is the very core of our page. I have decided to research very hard, and provide only the required information to my readers, but in an extremely easy and understandable language. For example, the definition of finance can be written as 'concerning money + how and where one uses it'. Such easy terms and phrases can be easily comprehended by a beginner. This will not only help my language and creative writing, but also the art of paraphrasing and user-centrism, as I shall put myself into the reader's shoes and analyse what they want to know and why.

Additionally, I have recognised that I need to keep the interest of maximum possible viewers in my target audience, all of which won't be interested in every subject. So, I'm writing the content not in a way that is very commerce-centric, because that breaks the interest of those who want to pursue arts, medical, law, science, etc. I also reflect that this thought would not have arisen had it not been for IB, which teaches me the importance of critical-thinking and recognising perspectives.

The main challenge is that apart from this venture, I am working on many projects, which require an immense amount of commitment in terms of time and focus. Time management in my GICLM IB schedule, with so many IAs coming in, along with running GAEE Mumbai and managing all my other projects, will be a task. However, I have achieved this during my class 10 boards, when I had a number of extracurricular responsibilities, so I am confident of doing it again. I am thoroughly dedicated towards this, seeing the wonderful response and learnings that this journey holds for me. Such intense stress management and time management will indeed prepare me for the world ahead of IB. To conclude, I would like you, yes you, who are reading this to check out @gae_mumbai on Instagram and stay tuned for free and interesting opportunities learning coming your way.

Tanish Chheda
IBDP I

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