"The right to decency and a better life…"

Whitepaper on the importance of using technology to develop good visual, reading and comprehension skills in a post COVID education world

The Lectorsa-team
LECTORSA www.eyebraingym.com

eyebraingym™
training visual intelligence

Contents

Executive Summary

Nelson Mandela said: "Overcoming poverty is not a gesture of charity. It is an act of justice. It is the protection of a fundamental human right, the right to dignity and a decent life…"

Lectorsa is a social impact business in Education working to improve outcomes for students in their chosen career choices while helping them to lead more productive and responsible lives. The outcomes of our systems are measurable and impact directly on the way individuals see, work with and remember visual information. Eyebraingym is positioned to become one of the solutions needed to redress gaps and challenges in the education and training sectors of the future.

Neuroscience confirms that your brain is a self-organising creative system. Every skill and ability you have was constructed in a specific region or regions of your brain, as a result of training and application. Learning is connecting neurons: developing neural pathways and enhancing neural networks. Neuroplasticity is the brain's ability to reorganise itself by forming new neural connections throughout life. Connections within the brain are continually becoming stronger or weaker, depending on what we use. This is the 'muscle-building' part of the brain, the physical basis why repetition strengthens the power of choices and actions. Over time it becomes automatic.

The aim of Eyebraingym is to develop a coherent mind, to achieve improved interaction with visual information through better visual and cognitive skills. Find out how we achieve encouraging results with this online system.

Introduction

More than 1,500,000,000 students in 195 countries have been adversely affected in the 2020 academic year during lockdown and social distancing measures due to the COVID-19 pandemic. Teaching and learning were under pressure before the pandemic, and various challenges within the education spectrum were exacerbated by the lockdown and other measures taken during this time.

This paper will take a look at data pre-dating the COVID-19 impact as well as ways to mitigate gaps and failures that were caused or widened by the COVID-19 lockdown and its implications for education and training. Tailored support and development are needed to enable the delivery of learning at higher levels than before. We will take a look at practical solutions for teachers to support and develop students for personal excellence in learning.

Background to the challenge

According to UNESCO data,[i] 91.3% of the total enrolled learners worldwide have been adversely impacted in some way or another during the COVID-19 pandemic. Even though governments, teachers, parents, and students have done their utmost best to achieve some kind of learning with the technology, support, and materials at their disposal, the possibility of advancing education during this time, or even meeting the same levels as before the pandemic seems unlikely.

Before the pandemic, it was predicted that over three-quarters of a billion young people in low- and middle-income countries will not be on track to acquire necessary secondary-level skills by 2030. If we do not see a rapid improvement in the quality of education, in low-income countries, only one out of 10 will be on track. Without urgent change, more than 1.5 billion adults would have no education beyond primary school in 2030[ii].

> "By 2030 800 million children will have dropped out of school, or graduated their studies without the skills needed for a decent job"
>
> Ten Steps to Equity in Education

In the South African educational landscape, the current situation is also going to have a negative impact for years to come. The basis of learning is being able to interact intelligently with your learning materials. Even with teachers standing in front of the class, the Progress in International Reading Literacy Study (PIRLS) 2016 revealed that 78% of Gr 4 children in South Africa could not read for meaning.

Adequate reading does not develop naturally. If reading with comprehension is not accurately developed, it becomes a life-long challenge. Learners in primary school, through secondary school and even adults, continue to struggle with information, as they are not reading at acceptable levels.

It is for instance, widely presumed that students who have entered university are proficient readers, and have mastered the building blocks of reading. This is, however, not the case for all students. Even at tertiary levels, students very often struggle with vocabulary, and their reading fluency is insufficient.

The impact of the pandemic exacerbated previous fault lines, and we are facing a global tsunami of illiteracy – which implies that the SDG's set out by the UN won't be reached in time. Because illiteracy is one of the leading causes of delinquency, poverty, frustration, and depression in all global communities, governments, businesses, educational institutions, teachers, and parents should sit up and take note of this data. Whole countries, communities and individuals will be severely impacted in the near and extended future if these challenges are not adequately addressed. Illiteracy leads to a loss in productivity, and a decrease of financial health as well as a general decline in lifestyles and wellness amongst people. The current economic situations across the globe have made this phenomenon even worse.

> **Whole countries, communities and individuals will be severely impacted in the near and extended future if these challenges are not adequately addressed.**

Within the COVID-19 pandemic, students are expected to continue learning within a self-paced and student-directed learning scenario. It was expected that students develop the ability to work independently, which is underscored by the skills and strategies of reading with good comprehension. Teachers and students faced many challenges during the lockdown schooling scenario. Many of these would have been less challenging, if students actually could find the right information, adequately read and study the information, and understood the information they had to work through.

Professor Goolam Mohamedbhai discussed the consequences of COVID-19 for higher education in Apri 2020[iii]. He advised that the challenges we will face in the years to come has to be mitigated by partnerships between the government and the private sector. We have to implement immediate, short term and long term measures to effect redress when the crisis is over. We need new ideas, faster solutions that can reach millions at once. At the same time, we need to support the effective development of the foundational skills necessary for learning.

Methodology

The basis of good literacy skills is reading, but reading is not a natural process. The human mind is not innately 'wired' for written information – therefore learning to read, and using accurate skills and strategies to navigate the growing oceans of information is fundamental to achieving success in the challenging post-COVID landscape of education. If students cannot obtain adequate skills by Grade 4, they will continue to struggle throughout their school career, and more than likely end up leaving school without the skills needed for further study or the ability to function in a decent job.[iv]

But there is hope. As students improve their visual processing in reading, they also increase in the mental energy that they can devote to understanding complex ideas. It is the integration of foundational areas in reading development and combining various skills and strategies that provide an entry point to multiple literacies and improved visual intelligence.

> Our student placement tool combines a complete online visual processing, language, and reading with comprehension assessment.

Eyebraingym (and its range of activities) is designed to develop foundational learning skills through augmenting the science of neural wiring to bridge the gap between information and knowledge by training and optimising neural pathways in the brain of each user. Eyebraingym use actions within the reading process to re-wire the brain to produce healthier and stronger minds. The system focus on improving two factors, namely the visual processing factor (VPF) and cognitive development factor (CDF). Each of these two factors incorporates measurable sub-elements. VPF is measured as words per minutes (wpm) read within the parameters of the readability of the material. CDF is measured as a percentage of comprehension against the complexity of content. The combined VPF and CDF give us an AIU-factor (action-interpret-understand).

Eyebraingym is positioned to become one of the solutions needed to redress gaps and challenges in the education and training sectors of the future.

We designed Eyebraingym to develop each students' perceptual accuracy, visual efficiency, visual accuracy and visual memory. This enables students to achieve automaticity in decoding when words and word parts are automatically recognised as visual orthographic images from declarative and procedural memory. This then allows working memory to be utilised for comprehension purposes. Working memory has two significant limitations. It can grasp only approximately seven items of distinct bits of information at a time. Secondly, it can hold this information for roughly ten seconds. If then, when reading, this critical moment in the working memory must be applied for decoding, no time is available for comprehension. This explains why poor readers spend hours on reading and rereading, first to properly decode what they are reading and then trying to add meaning to the text. Finally, the distinct bits of information must be constructed into a schema of function, to achieve not only convergent but also divergent comprehension outcomes.

Eyebraingym is a customised Eye-Brain training course with an individualised specific game plan to suit the personal schedule and or needs of every teacher and student. Eyebraingym is a cloud-hosted, online system that offers a selection of dynamic games and reading actions culminating in cognitive skills development sessions. Eyebraingym is compiled in course format and is designed to enhance the executive function and the interaction of the brain with visual information. It is designed to assist the student in moving information faster to the pre-frontal cortex of the brain. Our exercises are designed to improve comprehension and to bring each user to a new level of competence when dealing with visual information.

The best part of our solution is that training your brain with the Eyebraingym is fun, it is good for the brain. It will be good for you on a personal development level[v].

We need 10 weeks to re-shape the brain and re-wire the way a person interacts with visual information through targeted training sessions. Our clients, from beginner readers to tertiary students and working adults, have achieved fitness and sharpness of mind for nearly three decades.

Eyebraingym brings together ten years of experience, built within a proven and tested system that has more than 100,000 user profiles as proof.

Once registered, the system takes each user through an online assessment module. The FREE Placeme combines a complete visual processing, reading and cognitive assessment in which we measure processing speed, language proficiency and silent reading fluency outcomes.

Based on personal results, Eyebraingym will provide each user with a targeted set of personalised visual processing and cognitive exercises designed to improve their visual intelligence. The exercises are available online, accessible on PC, laptop, tablet and any smart device, including smartphones. After each activity and lesson, we will provide you with an infographic report of progress.

The training will involve an individual specific program, harnessing well tested and proven neuroscience principles in our eye-brain-gym modules. The weekly training sessions are managed by our virtual coach, and our downloaded App gives each user access to all the value-added functions. The online training sessions are flexible to suit different schedules and the specific goals set out at the beginning of the course. These sessions are accessible anywhere, as long as the user has a device with internet access. The student results will be recorded throughout the training sessions, assisting facilitators and teachers with access to real-time feedback from their personal dashboard. Our clients can choose to integrate our training modules into their daily programs at their institutions

The exercises are available online, accessible on PC, laptop, tablet and any smart device, including smartphones.

or in the comfort of their own home. The brain activation sessions with our virtual coach and the visible progress seen in the reporting facility will motivate and inspire each user and encourage them to stay on track throughout their training and development program.

Results are everything, and that is why we supply you with a game-plan to keep you on track to produce lasting results. By staying with the program, our clients increase their cognitive abilities and peak their visual processing skills. They can see more, read faster, remember better and think clearer, as the ability to internalise and interact efficiently with visual information receives much-deserved attention during the course.

The COVID-19 pandemic highlighted gaps and challenges that already existed in the training and education sector… taking 4IR into account we need to achieve higher, to develop more, to read faster, think smarter and learn better.

Key Finding #1

COVID-19 has, in a sense, highlighted gaps and challenges that already existed in the education and training sector. The lockdown of schools and training institutions has placed at-risk students at greater risk and exacerbated the learning gaps that already existed. Keeping in mind that I4R is placing a higher demand on learning, unlearning and relearning, we need more than before… we need to achieve higher, to develop more, to read faster, think smarter, learn better.

Even students that were doing good won't be doing well enough going forward. We are faced with oceans of information, and when the cognitive load exceeds the capacity of the working memory, intellectual abilities decrease. Still, we can assist students at all levels, to develop and improve the skills and strategies needed to achieve better-quality visual processing and comprehension.

We need to support and develop our students to be visually intelligent. Being visually intelligent means being able to process, understand, and express visual information. Reading and comprehension is the foundation of visual intelligence, and Eyebraingym has enabled new possibilities in assisting students online to develop visual processing, reading and comprehension skills.

It is estimated that low-level reading and writing skills cost the global economy around £800 billion each year.

Key Finding #2

With LAB-on-line, the first online visual skills, reading and comprehension development system M3line and Lectorsa developed, we studied more than 100,000 online student profiles. We learned how to harness the truths of reading, learning and neuroplasticity in ways that allow us to configure the eyes, muscles, neurons, and mind in defined patterns to interact in an upgraded way with information.

Eyebraingym brings together ten years' of experience and combines it with cutting edge technology, available through smartphone devices and geared towards upscaling skills for students, learners and workers in a post-COVID education and training environment. Eyebraingym has been tested and proven for over ten years, with more than 100,000 student profiles showing encouraging results (An average of 6 years development measured against international norms and standards[vi]).

Key Finding #3

EyeBrainGym has been developed and designed to make use of the latest technology and to achieve specific outcomes regarding visual processing, reading and cognitive skills development.

With advances made in taking learning online during COVID-19, more students will have access to the internet, data and devices in the future. Various mindsets regarding online learning have shifted, in many sectors of the population, and even as we need to prepare for future challenges in teaching and learning, an online support and development system that enables and empowers teachers and students to achieve improved reading, comprehension and learning outcomes are undeniable a part of the foundations of future schooling and education.

More and more governments, big companies, schools and parents are understanding the importance of investing in internet connectivity, functional devices and data for learners and students. This will enable more students to access systems like Eyebraingym as well as online training for teachers and facilitators. We are standing in the dawn of a new era of student support and development.

We are standing in the dawn of a new era of student support and development.

Key Finding 4#

Eyebraingym is designed to be in line with 21st-century education pursuits and gives measurable improvements with the visual processing factor, cognitive development factor, and action-interpret-understand factor relating to international norms and standards. These outcomes are freely available to our users and accessible as real-time data from various levelled dashboards within the system. Effective use of data available ensures successful implementation at the grassroots level. Return on investment can be quantified, which is one of the reasons sponsoring a school or students to have access to the system makes a lot of financial and social responsibility sense.

"The Lectorsa reading programme improved not only participants' literacy and comprehension skills, but also their time management and communication skills. Lectorsa further assisted participants whose home language is not English to understand English better as a subject, and as a second or third language."

Petrus Lombard Ph.D. [vii]

Key Finding #5

It is estimated that low-level reading and writing skills cost the global economy around £800 billion each year. Poor reading skills impacts all aspects of learning. When we develop and improve these foundational learning skills, we unlock the compounded investment we are all making into education. The investment individuals and companies will be making into the development of these foundational skills in the workforce of the future will ensure future communities live a life of more excellent value and success.

Eyebraingym is one of the game-changers that will enable exponential growth and leapfrog our students and future workers to the skillsets they will need to thrive in the future.

Visual Data

Outcomes achieved for Grade 4, 7 and 11 2019 as well as FET and Tertiary student projects are available in Addendum A.

Eyebraingym achieves measurable improvement through gauging student results against internationally accepted norms and standards for silent reading fluency with comprehension.

The system focus on enhancing three factors, namely visual processing factor (VPF) and cognitive development factor (CDF). Each of these two factors incorporates measurable sub-elements. VPF is measured as words per minutes (wpm) read within the context of readability of the material. CDF is measured as % comprehension against the complexity of content. The combined VPF and CDF give us the third factor - the AIU factor (action-interpret-understand). Which indicates the relative efficiency of interacting with visual information.

Commitment rating refers to students who achieved course completion.

The following graphs depict progress achieved by students participating in 2019 projects across South Africa.

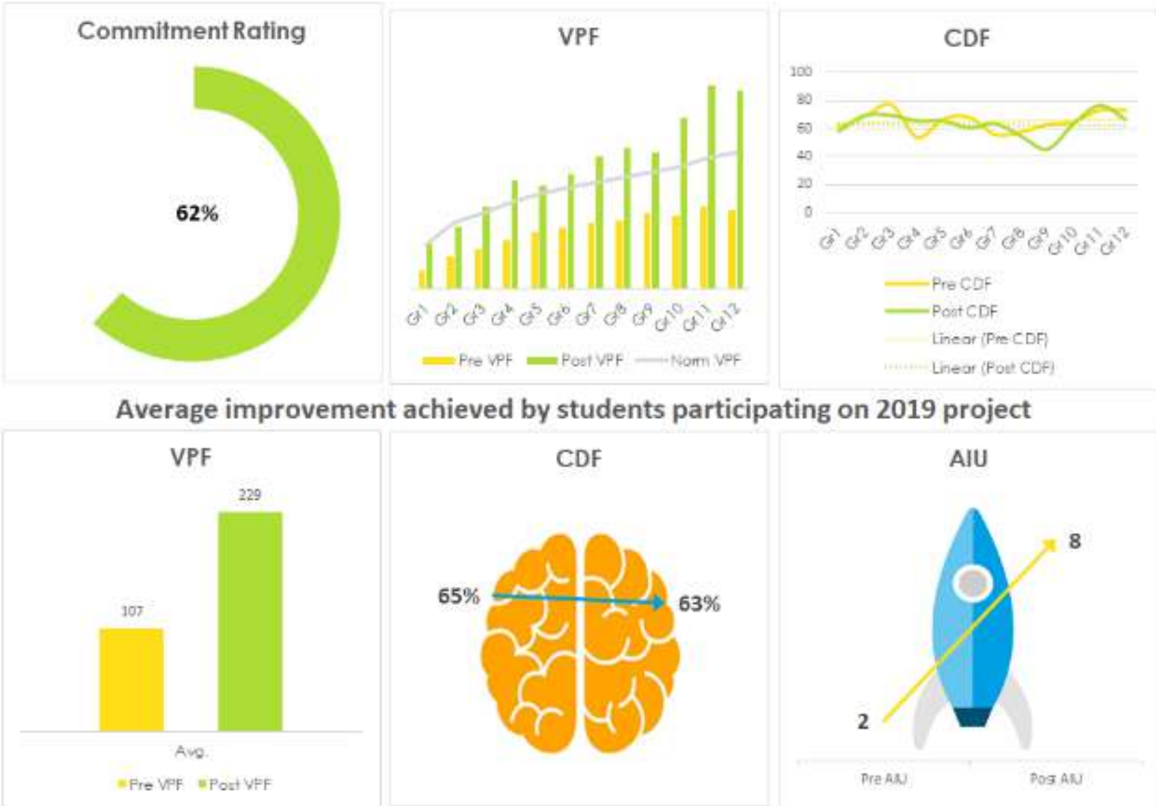

Fig. 1

Fig 1 indicates outcomes achieved with Students from schools across South Africa participating in the 2019 project.

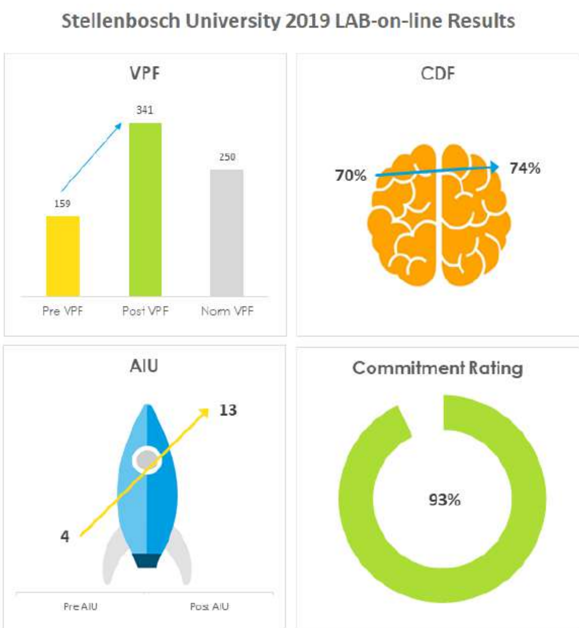

Fig. 2

Fig 2 indicates outcomes achieved at Stellenbosch University during the 2019 project.

Results for Grade 4, 7, 11, as well as various other universities, can be viewed in Addendum A.

Empower communities through reaching international education goals

Governments have identified that education plays a significant role to improve human capital, ensure macro-economic stability; ignite inclusive growth, and advance their country's ability to be globally competitive. Improved education outcomes lead to an increase in tax revenue and GDP; and lessen the demand on social services, health services and safety services; and contributes to low levels of crime and improved health. This is the reason investment is made to continually research new and efficient ways to improve education. New curricula are developed, and vast investment is made to improve learning environments.

The greatest gap currently challenging the improvement of educational outcomes globally is the lack of capacity in our learners, students and workforce to intelligently work with visual information. To achieve this, and other development outcomes, the fundamental skills needed for visual intelligence should rightly receive adequate attention. Eyebraingym has the means to support teachers and students online to develop the necessary skills and acquire strategies to see more, read faster, remember better, and increase visual intelligence, to establish active, involved citizens that can make intelligent choices towards a better future.

We aspire to give students at least four opportunities during their school years to interact on the Eyebraingym system.

Our estimates are that within 10 years of implementation, the throughput rates and graduation outcomes have to see a positive impact and increase graduation rates, as students will be empowered with improved visual intelligence.

Conclusion

Eyebraingym is designed to use the science of neuro-modulation and the physics of muscle training and muscle memory through the processes of reading to develop and train visual intelligence. The system includes an in-depth placement module, an eye gym, downloadable worksheets (enabling blended learning) and scaffolded materials that challenge each user at their personal level. More than 100,000 research profiles and 10 years practical implementation of projects ensure we achieve high levels of success - from the first years of schooling well into tertiary levels and corporate training.

Key Take-aways

There is more to 'reading' than meets the eye! Reading is not just recognising symbols or reading and writing basic words. We urgently need to upgrade the workforce of the future, because we need visually intelligent people, who can interact efficiently with visual information and make informed decisions to create a better future for themselves and the generations to come.

We know that **improved literacy rates are pivotal in achieving truly empowered people** that can courageously rise to break out of the bonds of poverty by the innate possibilities in them. We will not be able to reach real equity in education if we do not empower our students to read and understand better.

When we come together, to enable them, we will be able to ensure connected students, in the classroom and in distance or online learning environments. **We will transform educational experiences, and we will develop engaged citizens.**

We are standing globally in a time of significant challenges, rapid changes and almost limitless potential. We need bigger and smarter solutions than before.

Further Resources on M3ine and Lectorsa theory and solutions

Lectorsa is a **Commonwealth Education Partner**

http://www.cedol.org/partner/lectorsa

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Lombard, P. (2020). Factors that influence the transition from high school to higher education: a case of the JuniorTukkie programme. African Journal of Career Development, 2(1),a5. https://doi.org/10.4102/ajcd.v2i1.5

IGI Global Guide: Student Support Services: Addressing Multicultural Needs in School guidance and Counselling. (2019) Chapter 12: Maximizing Students' Learning Success Through Lab-on-Line: The University of Namibia Experience (pages 262-276). Minda M. B. Marshall, Simon George Taukeni, Rheinhold Disho Muruti, Gibert Likando, Cynthy Kaliinasho Haihambo, Mathilde Shihako, Chamelle De Silva, Marshall M. Retrieved from website: https://www.igi-global.com/book/addressing-multicultural-needs-school-guidance/227627?utm_source=m&utm_medium=ac&utm_campaign=bec_to_prod&utm_content=08.12.2019

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iii University World News. (2020). *COVID-19: What consequences for higher education?* Retrieved from the University World News website: https://www.universityworldnews.com/post.php?story=20200407064850279

iv OECD. (2008). Ten Steps to Equity in Education; [Policy Brief]. Retrieved from the OECD website: www.oecd.org/publications/Policy briefs

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vii Lombard, P. (2020). Factors that influence the transition from high school to higher education: a case of the JuniorTukkie programme. *African Journal of Career Development,* 2(1),a5. https://doi.org/10.4102/ajcd.v2i1.5

ADDENDUM A

Eyebraingym achieves measurable improvement through gauging student results against international accepted norms and standards for silent reading fluency with comprehension.

The system focus on enhancing three factors, namely visual processing factor (VPF) and cognitive development factor (CDF). Each of these two factors incorporates measurable sub-elements. VPF is measured as words per minutes (wpm) read within the context of readability of the material. CDF is measured as % comprehension against the complexity of content. The combined VPF and CDF give us the third factor - the AIU factor (action-interpret-understand). which indicates the relative efficiency of interacting with visual information.

VPF – Reading speed measured in wpm relating to readability of material

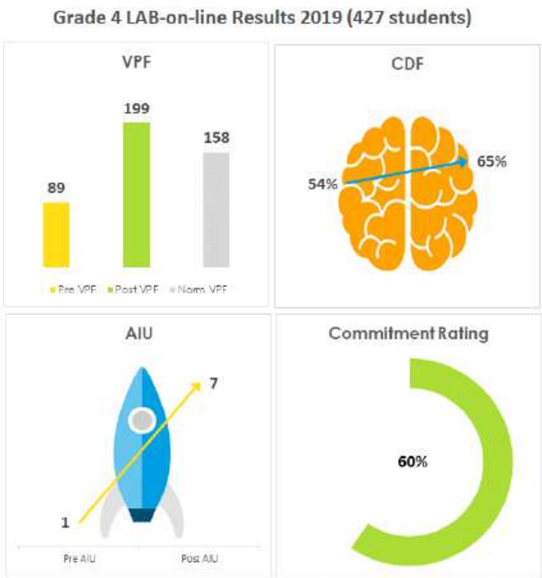
CDF – Comprehension outcome in higher and lower order thinking skills within the context of the complexity of the text

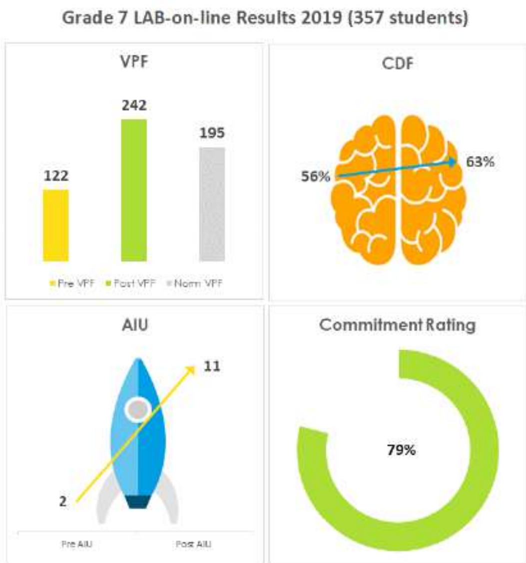
AIUF – Action-interpret-understand factor indicated in a Grade level referring to relative efficiency of the reader

Commitment rating refers to students who achieved course completion.

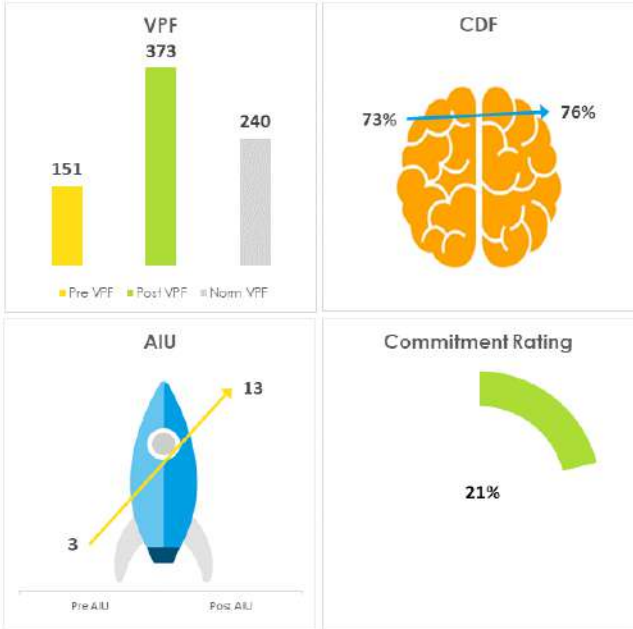
The following graphs depict progress achieved by students participating in 2019 projects across South Africa.

Schools





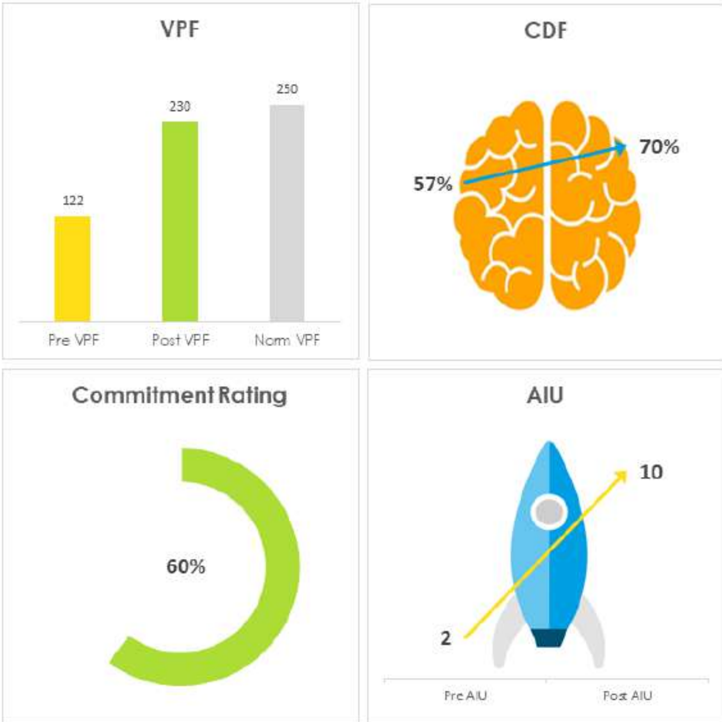
Grade 11 LAB-on-line Results 2019 (23 students)



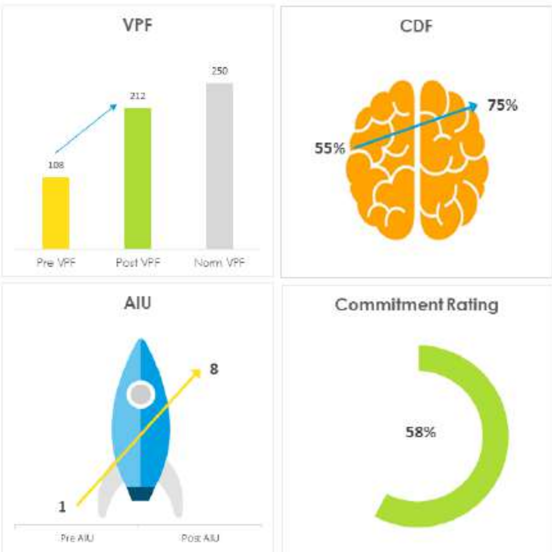
Tertiary institutions

Stellenbosch University 2019 LAB-on-line Results

WalterSisulu University 2019 project



University of the Freestate 2019 LAB-on-line Results



University Pretoria 2019 LAB-on-line Results

JrTukkie – project

Outcomes achieved at the JuniorTukkie project from 2008 – 2017. Grade 10 students from across South Africa are prepared at the university for further studies. The Lectorsa team worked with the university to empower these students with the skills that they will need to be successful in working with their study materials. Table 1 indicates outcomes achieved from 2008 – 2017.

Table 1

Group		**Pre-evaluation**			**Post evaluation**		
Year	Students	VPF	CDF	AIUF	VPF	CDF	AIUF
2008	74	149	69%	3	273	80%	12
2009	99	120	70%	2	375	80%	13
2010	160	165	68%	4	285	85%	13
2011	181	145	59%	2	337	70%	13
2012	164	137	67%	2	353	69%	13
2013	170	151	73%	3	328	72%	13
2014	195	115	73%	1	255	71%	12
2015	230	116	68%	1	273	64%	11
2016	211	131	51%	1	289	67%	11
2017	270	125	67%	2	303	68%	13