

Title of the Impact Case Study: Life Sciences teaching and learning workshops

Faculty: Medicine and Health Sciences

Department: Human Biology

Submitting University: Walter Sisulu University

Project Leader: Dr. Mathulo Shauli

Summary of Impact

Rural educational institutions in South Africa frequently experience significant deficiencies in the pedagogical skills and resources required to adequately support their student populations. In response to this challenge, the Department of Human Biology at Walter Sisulu University (WSU) has initiated a series of workshops aimed at equipping educators with effective teaching strategies and resources to bolster academic outcomes. Additionally, high school students are afforded the opportunity to engage in practical experiments within WSU laboratories, thereby deepening their comprehension of theoretical constructs. The overarching objective of this initiative is to enhance the educational quality within underprivileged and resource-poor communities.

The project specifically targets Life Sciences, offering comprehensive training to Grade 10 educators in contemporary teaching methodologies that prioritise interactive and experiential learning. A structured year-long plan has been designed to provide learners with practical exposure to experimental practices. Notably, three schools, A.V. Plaatjie Senior Secondary School, Dalukhanyo Senior Secondary School, and Zwelodumo Senior Secondary School, were selected for this initiative based on their performance metrics in Life Sciences, as identified by the O.R. Tambo District Municipality science coordinator. In the year 2024 alone, 50 teachers received instruction, and 366 Grade 10 learners completed a total of six experiments as part of this program.

Underpinning Academic Work

The Life Sciences Teachers' Workshops and related Brain Awareness initiatives serve to extend the department's academic expertise in Human Biology and Neuroscience into the surrounding community by integrating essential academic concepts, such as brain anatomy, neuroscience, microscopy, and biological processes, into teacher training and student engagement. These activities align with the department's educational objectives while providing a practical pedagogical platform where innovative instructional approaches, encompassing interactive and experiential learning, are disseminated among educators and learners.

WSU students collaborate in the training workshops alongside faculty from WSU and partner institutions, including Wits University and Stellenbosch University. In addition to the Life Sciences workshops, the department has instituted brain awareness activities aimed at high school learners, which introduce key concepts related to brain anatomy and promote the importance of brain health, notably in the context of substance abuse prevention. Engagement from university staff and

students enhances the interactive quality of these sessions, ultimately contributing to increased scientific literacy and the promotion of healthier lifestyle choices among youth.

Narrative Description of the Impact

Following the workshops conducted in the initial term of 2024, a discernible enhancement in the preparation and delivery of lessons on topics covered in terms 2 and 3 was observed among participating educators. These teachers exhibited heightened confidence in their instructional practices and successfully integrated practical skills into their teaching, thereby facilitating improved comprehension of life sciences processes among learners.

Significant advancements were particularly evident in the areas of plant and animal tissue, transport mechanisms, and structural support in both flora and fauna. For the first time, rural schools engaged in practical investigations such as food tests and heart dissections. The hands-on activities not only heightened learners' interest in the subject matter but also stimulated enthusiasm among both educators and students to participate in additional workshops. The delivery of abstract concepts, such as animal tissues, markedly improved following targeted training in microscopy, which equipped educators to present more engaging lessons. The resulting learner performance reflected a substantial enhancement, demonstrated by an increase in average exam scores from 48% in June 2023 to 68% in June 2024.

Evidence and Sources to Corroborate the Impact

To substantiate the reported impact of the program, photographic documentation illustrates the initiative in practice, featuring teachers engaged in classroom training and learners performing experiments in university laboratories. These images effectively showcase the innovative teaching methods introduced during the workshops and highlight the active involvement of learners in practical activities.



Furthermore, an official letter from the O.R. Tambo District Department of Education corroborates the improvements in learner performance, detailing the registers of participating schools and educators. To protect privacy, personal information such as phone numbers and email addresses has been redacted. Collectively, these evidentiary sources provide robust support for the impact reported from this invaluable educational initiative.



Iphondo leMpuma Kapa: Isibhe leMfundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

OR Tambo Inland District * Zamukulungisa Industrial Heights * Amendu Road * Private Bag X5089 *
Mthatha * 5099 * REPUBLIC OF SOUTH AFRICA * Cell * 0726170773 * email *
phumzile.dlamini@ecdoe.gov.za * Enquires * Dlamini .Phumzile* 1/09/2025 *

REPORT ON GRADE 10 LEARNER PERFORMANCE AFTER TEACHERS ATTENDED CONTENT TRAINING ORGANISED BY WSU BIOLOGICAL SCIENCES DEPARTMENT

There was a drastic improvement in the quality of lesson preparation and delivery on term 2 and 3 topics. Teachers were more confident in terms of the content taught. They were ABLE TO INCORPORATE PRACTICAL SKILLS thus further promoting conceptualization of life sciences processes.

There was an improvement especially on plant tissue, animal tissue, transport and support in plants and animals. For the first time even rural schools conducted hands on practical's on food tests, dissection of the heart and identification of different parts. Learner's interest in the subject was also promoted after attending practical sessions. Both learners and teachers were keen to attend a repeat sessions.

Teaching approach on abstract content like animal tissue and plant tissues improved since teachers were exposed to microscopy work and shown slides of the different tissues, they were able to teach these topics in a more interesting way.

As reflected on the responses above all respondents agree that the workshop capacitated them and that they would recommend and are interested to future workshops. A few teachers felt that the resources were not adequate to allow the practical component to be conducted for their learners due to high learner enrolment and crowded classrooms.

COMPARATIVE ANALYSIS OF LEARNER PERFORMANCE FOR 2024 TERM 2 AND 2025 TERM 2

	Report mark Pass%	Practical task pass%	Average Performance
Term 2 -2024	37%	49%	26%
Term 2-2025	48%	60%	30%



**TEACHER EVALUATION OF THE CONTACT SESSIONS FOR CONTENT
WORKSHOP AND EXPOSURE TO PRACTICAL WORK.**

Completion time	School Name	Surname and name	Was the practical activity and content relevant to the Life Sciences curriculum you teach?	Did you gain new content and skill from this practical session	Did the workshop improve your understanding of experimental design and scientific investigations?	Were the materials and equipment provided sufficient and realistic for school settings?	Would you recommend future workshops on practical skills and content for grade 11 and 12 content
9/2/2025 20:48	Zwelodumo sss	Bumc [redacted] uniwa Yes	Yes	Yes	Yes	No	Yes
9/2/2025 20:49	Qingqolo SSS	[redacted] Mkhoma A [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:51	Bazindlovu s	[redacted] Dik [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:53	Umtata International	[redacted] Mx [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:53	Zingisa CHS	[redacted] Gq [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:53	Attwell Madala High	[redacted] Zanele [redacted] N	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:54	Excelsior S S S	[redacted] Th [redacted]	Yes	Yes	Yes	No	Yes
9/2/2025 20:55	SEA VIEW SSS	[redacted] KH [redacted] Ph [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:56	Jumba SSS	[redacted] N [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 20:59	Umtata High	[redacted] X [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:09	Qokolweni sss	[redacted] [redacted] ULO	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:10	EN SEKU SS	[redacted] [redacted]	Yes	Yes	Yes	No	Yes
9/2/2025 21:11	Umtata International	[redacted] N [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:15	Khanyisa High	[redacted] R [redacted]	Yes	Yes	Yes	No	Yes
9/2/2025 21:16	Hlabatshane SSS	[redacted] [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:19	Sinolwazi S.S.S	[redacted] [redacted]	Yes	Yes	Yes	No	Yes
9/2/2025 21:28	Mpeko SSS	[redacted] [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:28	Jongintaba Secondary	[redacted] [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:29	Southernwood High School	[redacted] N [redacted]	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:31	Dumrana s.s.s	[redacted] G [redacted] N	Yes	Yes	Yes	Yes	Yes
9/2/2025 21:49	Leslie Nkala SS	[redacted] Mav [redacted]	Yes	Yes	Yes	Yes	Yes

School Name	School name	Cell number	Email address	grade 10 EXP
Upper Mpako S.S.S.	Mphahlele	063	mphahlele@gmail.com	2 years
Kings Commercial College	King	078	king@gmail.com	15
Umtata High School	Lynette	072	lynette@yahoo.com	21 years.
Bazindlovu SSS	iphumeze	073	iphumeze@gmail.com	1 year
Sinolwazi	zeka	072	zeka1@gmail.com	1
Milton Mbekela		07	mbekela@gmail.com	2 years
Excelsiour	umol	06	umol@yahoo.com	20 yrs
Holy Cross High school	F. xolobeni	08	xolobeni@gmail.com	15
Zwelodumo SSS	Ngile	07	Ngile@gmail.com	6
Ngubeszwe	M	07	Ngubeszwe@gmail.com	6
St John's college	Mphahlele	07	mpahlele1@gmail.com	11
Menziwa	Mphahlele	07	mpahlele@gmail.com	8
KwaNobuhle	Mphahlele	07	mpahlele@gmail.com	2
Holy Cross High school	L. L.	07	l.l@gmail.com	3
Sinolwazi	N. TYWA	06	tywa@gmail.com	9
Sinilwazi	N. diso	083	diso90@gmail.com	5
Hlabatshane	M. ngeziwe	078	ngeziwe@gmail.com	5
Kulanathi	S. amakhosi	0783	amakhosi@gmail.com	8
Manzolwandle	N. ndi	064	ndi@gmail.com	5
Qingqolo	M. Asanda	08	asanda@gmail.com	10
Leslie Nkala	M. nikelo	07	nikelo3@gmail.com	10
Holy Cross High school	Xh	07	Xh@gmail.com	18
Umtata High	G. Sheila	07	sheila@yahoo.com	5
Dinizulu	M. asanga	07	asanga@gmail.com	1
Atwell Madala	Z. pdli	07	pdli@gmail.com	8
Dalibaso	K.	07	dalibaso@gmail.com	6
KwaNobuhle	B.	07	nbuhle@gmail.com	12
Gobinamba	V.	07	gobinamba26@gmail.com	14
St John's college	N. bulelela	07	stjohns75@gmail.com	20
Trinset	D. umzile	072	umzile@ecdoe.gov.za	24

Ngangelizwe High School	Mthembu Bongeka	063335720	Bongekambande819@gmail.com	7
Bazindlovu SSS	Mthembu Tombekaya	063335738	pmtombekayampofu@gmail.com	8
Umtata High School	Xhaxha Lekha Lynette	063335744	lynettelxhaxha@yahoo.com	15 years
SPHEFUNDEVU SS	Cebisa	0633357382	cebisajamini43@gmail.com	First time
JUMBA S.S.S	Nkomo Lusindiso	0633357219	Lusindiso@nanosi@gmail.com	8
Umtata HIGH	Thomas	06333570	ds@mtata@gmail.com	18
Chief NZ Mtirara SSS	Magazi	063335723	sigamagazi7@gmail.com	5
St John's college	Nkomo DH	0633357010	nykdh1@gmail.com	12 years
Attwell Madala High School	Ziboni Mabodli N.	063335786	fabodli@gmail.com	12
Leslie Nkala SS	Nkomo Nomnikelo	0633357144	nkomo3@gmail.com	10
Zwelodumo SSS	Bongile	0633357435	Aluraxoti@gmail.com	10
NOZUKO S.S.S	Muthala	0633357835	Kisakula5@gmail.com	6 years
KHANYISA	Jamini	06333571837	jojamini@gmail.com	5
Attwell Madala High School	Nkomo Zolisa	06333576795	mzombengula@gmail.com	2
Attwell Madala high school	Peleka	0633357572	phleka@gmail.com	1 year
Mpeko S.S.S	Mabana Lukhanyo	0633357091	Qxkukhanyo@gmail.com	2
Joyi SS	Nkomo	0633357889	Vhokukutu@gmail.com	3 years
Bambilanga s.s.s	Xhaxha Kuzola	06333575733	nkomo@xam@gmail.com	13
Khanyisa High School	Akoko Rolo	06333570010	akoko45@gmail.com	3
A.V PLAATJIE S.S	NGA SIBILE	063335725	disibile@gmail.com	9 years
Milton Dalasile S S S	Nkomo Indlwe	0633357112	disibile@gmail.com	10
Menzies sss	Nkomo	0633357422	pkomo@gmail.com	30
EN SEKU SS	Nkomo Likhona	063335727	disibile72akula@gmail.com	2
Zingisa Comprehensive High School	Makosonke	0633357849	disibile784ailosonke@gmail.com	1

DATABASE OF THE ORTID LIFE SCIENCES TEACHERS WHO HAVE ATTENDED LIFE SCIENCES WORKSHOP SESSIONS AT WSU ORGANISED BY THE DEPARTMENT OF BIOLOGICAL SCIENCES

Yours in education services



1/09/2025