



Fifth International **Legitimation Code Theory** Conference – 2024



15–18 January, Johannesburg, South Africa

Hosted by the **Wits LCT Hub**



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Welcome!

The Wits LCT Hub welcomes you to the Fifth International Legitimation Code Theory Conference or LCT5.

We have had three years of sustaining ourselves through meetings online, including the Centre Roundtables, ‘Learning LCT’ sessions and LCT4, a 65-hour marathon online conference. We are extremely happy to be hosting an in-person event once again.

LCT is a practical theory that offers ways of understanding and changing practice to solve real-world problems. Thanks to creative scholars, educators and practitioners, LCT is showing its value across an ever-expanding range of topics and issues. Yet, thanks to sharing the same theoretical language of LCT, we are able to speak across a dazzling variety of topics, methods and data.

- Each day of this conference begins with a “Power-Up” session. These sessions set out the kind of theory that LCT is, how to ‘think LCT’, and introduce a far clearer way of seeing objects of study.
- We end each day with a plenary. These sessions show how LCT shapes and transforms practices in engineering, computer science, academic support and teacher preparation.
- In parallel sessions, you will be able to hear how LCT is being used in a dazzling variety of fields, including nursing, education, law, agriculture, business, politics, sports and computer science. There is no better way of learning about an LCT concept than hearing it being used to explore something far from your own topic.

LCT5 has been designed for knowledge-building and community-building among this warm and friendly group of knowers. We believe we can achieve more together than through individual grandstanding or negativity. The length of sessions ensures ample time for talks and discussion. We also have frequent breaks to provide time to discuss ideas with other members of the international LCT community.

Enjoy this amazing experience!

Professor Lee Rusznyak, Professor Karl Maton and Dr Dale Langsford

LCT5 Organising Committee

Acknowledgements

We are deeply grateful for the generous support provided by our funders without which the conference would not be possible:

- National Research Foundation: Knowledge, Interchange & Collaboration Grant
- The UNESCO Chair in Teacher Education for Diversity and Development
- Faculty of Humanities Research Committee, University of the Witwatersrand
- School of Education, University of the Witwatersrand
- Research Office, University of the Witwatersrand

We are grateful to students and staff at the University of the Witwatersrand for supporting the organisation of the conference. We particularly wish to acknowledge:

- Prof Ruksana Osman, Prof Juliet Perumal, Prof Leketi Makalela, Prof Nicole De Wet-Billings, Prof Maria Marchetti-Mercer, Dr Robin Drennan and Dr Yolande Davids for their enormous support.
- Highfield Dining Hall staff for catering
- Wits School of Education staff who keep our venues clean
- Thapelo Baadjies for assisting with operational matters
- Masebole Mike Motimele for assisting with AV and IT support
- Misheck Ndoro and Jabulani Nkosi for help with financial matters
- Wits ICT for providing Wi-Fi access
- Wits School of Education students Neo Lefora, Sikhumbuzo Bulose, Blessing Mathabela, Nonceba Khuboni and Thabiso Mankge for assistance.
- Chatterhands Café for partnering with us
- PIMD for ensuring we are comfortable and have power
- The Boom Squad for recording and video editing
- Learners from National School of the Arts for sharing their musical talents

Welcome from the Head of School

It is my pleasure and delight to extend a warm welcome to all of you on behalf of the Wits School of Education as we host LCT5. It is an honour and a privilege to bring together scholars, researchers, and practitioners from around the world to engage in discussions and explorations at the forefront of educational theory and practice. In a rapidly evolving global landscape, the role of education has never been more crucial. LCT offers us a unique lens through which we can examine, critique, and enhance our understanding of education and other social practices as dynamic and complex phenomena. This conference provides a platform for us to collectively delve into the intricacies of LCT and its application, paving the way for innovative insights and transformative practices.

As the Head of the Wits School of Education, I take immense pride in our institution's commitment to advancing educational research and practice. LCT5 aligns perfectly with our mission to foster a culture of rigorous scholarship and critical inquiry. We believe that the pursuit of knowledge and the exchange of ideas are essential for driving progress in education, and this conference serves as a testament to that belief. Our distinguished speakers, panellists, and presenters will undoubtedly inspire us with their expertise and ground-breaking research. This conference is an opportunity to engage with cutting-edge theories, methodologies, and empirical studies in education and beyond, allowing us to enrich our collective understanding and explore innovative solutions to the challenges facing educators and students worldwide.

Moreover, the vibrant and diverse academic community that will gather here offers an unparalleled networking opportunity. Collaborations born from this conference have the potential to shape the future of education, making a lasting impact on our field. I encourage all attendees to actively participate in discussions, share their insights, and embrace the spirit of intellectual curiosity that drives us forward. Let us harness the power of Legitimation Code Theory to unlock new possibilities in education and promote inclusivity, equity, and excellence in learning environments.

I would like to express my sincere gratitude to the organizing committee, speakers, sponsors, and all those who have contributed to making this conference a reality. A special thanks to Prof Lee Rusznyak, the director of the LCT Hub at the WSOE, for her untiring dedication and passion for educational innovation and transformation.

May your time together be marked by fruitful exchanges, profound insights, and lasting connections. Together, let us illuminate the educational landscape and pave the way for a brighter and more equitable future for students of all backgrounds.

Prof Juliet Perumal, Head of School



Message from the UNESCO Chair in Teacher Education for Diversity and Development

The Chair is excited to be associated with the *Fifth International LCT Conference* hosted by the Wits LCT Hub. The Chair operates as a transcontinental community of researchers that seeks to:

- promote socially just pedagogies in education
- draw global attention to scholarly work on education
- produce knowledge that is globally relevant and locally responsive
- lead research initiatives that are grounded in the concerns of educational practice

Five priority themes drive our research are :

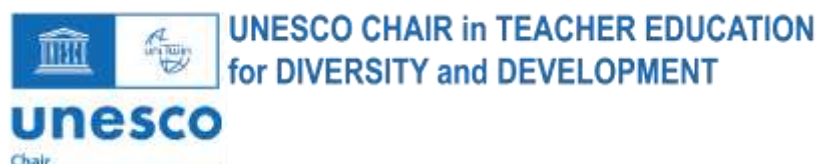


Some members of the Chair Forum have used LCT to rethink teacher preparation, inclusive education, and school-based learning. It is therefore appropriate, and with great pleasure, that the UNESCO Chair is supporting sessions that focus on preparing quality teachers for the classroom.

It is my hope that LCT5 will be a valuable and productive conference. Enjoy this time of learning, connecting and sharing.

Professor Ruksana Osman (Chair)

Senior Deputy Vice-Chancellor (Academics), University of the Witwatersrand



Conference details

Chairing of sessions and timekeeping

When presenting, please introduce yourself and stick to the time. A person attending the session should watch the time and alert the speaker/s using the coloured time-keeping cards in each venue.

Wi-Fi

The University of the Witwatersrand will provide all delegates free wireless internet access in the conference venue.

Network: Wits-Guest

Username: 843768

Password: ~4qFc5t6e

OR

Network: WSOE

Username: WsOE

Password: wsoe2022

Social media

Hashtag #LCT5

Twitter [X] https://twitter.com/LCT_conf

Website <http://lctconferences.com/>

Email lctconferences@gmail.com

Need help?

LCT5 Conference Assistants are students at the Wits School of Education wearing colourful red T-shirts. Ask them for help and they will be happy to assist.

Photography and filming

Delegates are advised that segments of the conference may be filmed or photographed. If you do not wish to be filmed or photographed, please advise the operator and move out of camera range.

Please send us photos that you take during the conference: lctconferences@gmail.com.

Water

LCT5 aims to minimise plastic waste, so we recommend delegates bring a reusable water bottle to stay hydrated during the conference. Water dispensers are available on the ground floor of Bohlaleng Block. Tap water in Johannesburg is safe to drink.

Meals and refreshments

Morning and afternoon tea are in the Staff Lounge. Lunch is in the Highfield Dining Hall (see map). Each main course is served with juice and a variety of salads.

Chatterhands is a coffee bar run by members of the d/Deaf community, associated with the Wits Centre for Deaf Studies. Place your orders and make payments every morning at the Chatterhands table.

Fast food, snacks and a variety of coffees are available at the canteen on the Wits Education Campus, next to the **Linder Auditorium** (see campus map), from 7:30 am.

Dinner Wednesday 17 January

At 6:30 pm, we'll meet for dinner at the nearby popular restaurant, **Mike's Kitchen Heritage House, Parktown**. The menu offers a variety of delicious food at reasonable prices, from light snacks to meals with a South African tradition.

You will be responsible for covering the cost of your meal. Please add a 10% service fee to the bill.

Gorgeous venue with generous-sized helpings of delicious food... it only needs you there to make it a perfect evening out!

Keeping safe in Johannesburg: Being vigilant

South Africa is a country struggling to overcome its vast inequalities, and there are still high levels of unemployment and poverty. In general, the people of Johannesburg are friendly and willing to assist. However, criminal elements seek opportunities to engage in petty theft. For these reasons, you are advised to take the following precautions to ensure your personal safety and that of your belongings:

- Ensure that you have a lock on your check-in luggage.
- Keep your valuables out of sight and avoid carrying large sums of money around.
- Do not leave your bags, mobile devices and laptop unattended.
- It is advisable to lock vehicle doors when travelling and keep bags out of sight (e.g. store them on the floor or in the boot of the car).
- Avoid walking in the streets at night, and when needed, rather walk in a group.
- Shopping malls are safe spaces, but keep your bag closed, avoid storing your phone in the back pocket of your trousers, and don't leave a bag in a trolley while browsing.

Emergency contact numbers

- Campus Protection Services (for assistance on campus): 011 717 4444
- Ambulance: 082911 or 10177
- Fire brigade: 10177
- Police: 10111
- 24-hour helpline for international calls: 10903

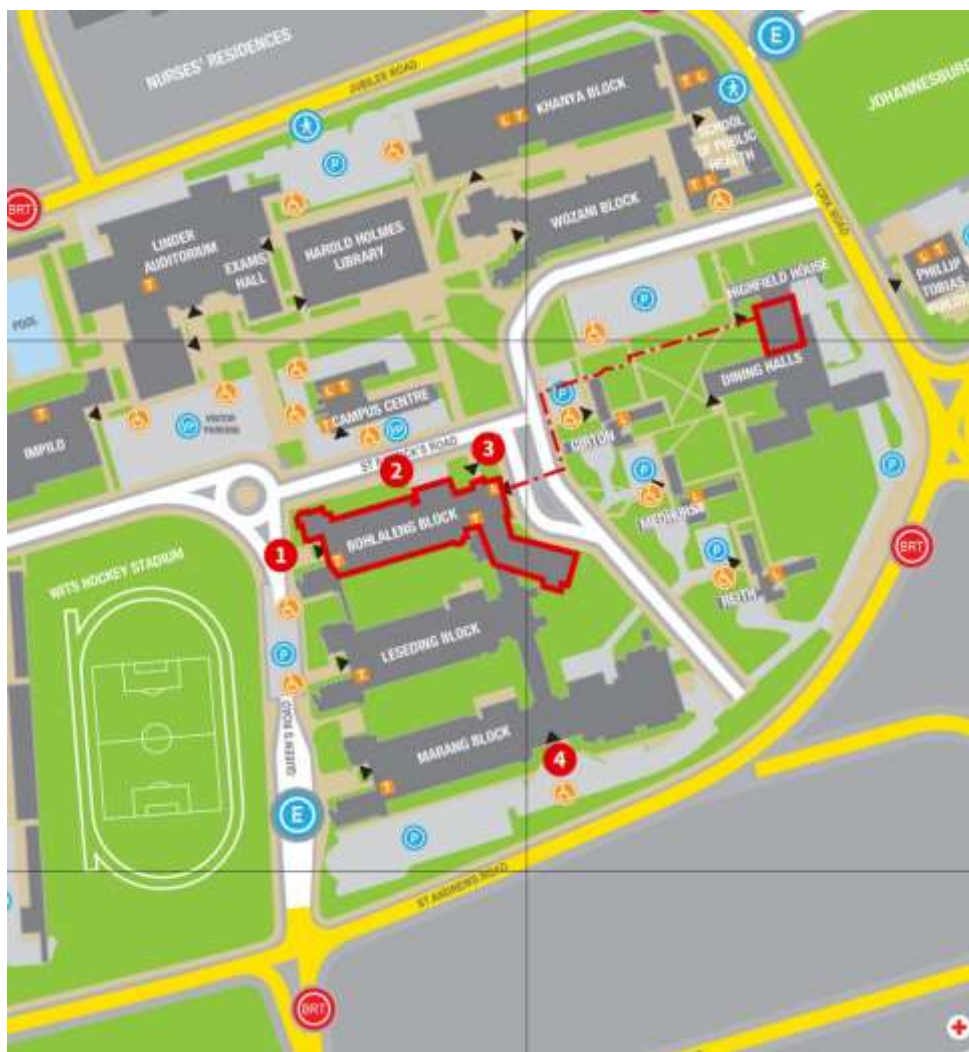
Map of Wits Education Campus

School of Education, Wits Education Campus, 27 St Andrews Road, Parktown, Johannesburg. The main entrance is on the corner of Queens Street and St Andrews Road, Parktown.

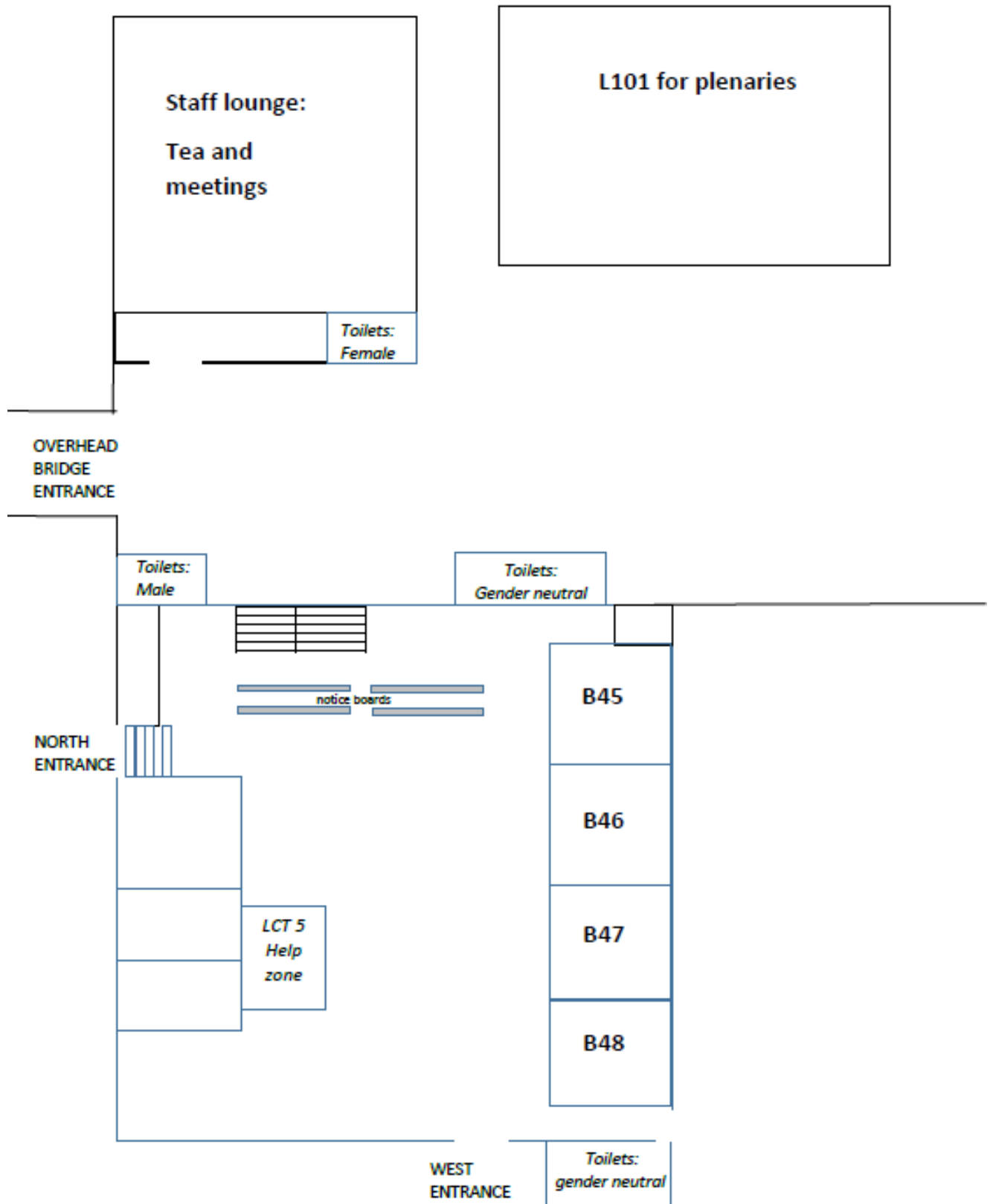
There are several entrances to Bohlaleng Block:

- *Entrance 1:* Near the athletics field, on the right-hand side, just before the traffic circle.
- *Entrance 2:* Turn right at the traffic circle to reach a parking area between Education Campus Centre and Bohlaleng Block. A small side door on the northern side of Bohlaleng Block leads to LCT5 venues.
- *Entrance 3:* An overhead walkway links Campus Centre and Bohlaleng Block and leads to an entrance with the Staff Lounge on the left and Bohlaleng Block on the right.
- *Entrance 4:* Alongside St Andrews Road is the South entrance to the Marang Block. Walk the length of the concourse, which ends between Bohlaleng Block and the Staff lounge.

LCT5 venues are on the ground floor of Bohlaleng Block, with plenaries in L101. We'll have tea in the staff lounge. A short walk along the dashed line takes you to the Highfield Dining Hall for lunch.



Map of Bohlaleng Block



MONDAY 15 JANUARY 2024

8:30 – 9:10	REGISTRATION – Foyer L101			
9:10 – 9:40	WELCOME TO LCT5 – L101			
SESSION 1 9:40 – 10:40	POWER-UP 1 – L101 Now that's what I call theory! What is LCT? – Karl Maton			
10:40 – 11:10	TEA – Staff lounge			
	Room B45	Room B46	Room B47	Room B48
SESSION 2 11:15 – 11:55	Gazes in engineering practice Nathi Khoza & Nicky Wolmarans	Using Semantics to explore the involvement of patients in digital learning practices on pain management Anette Lykke Hindhede, B Dybdal, KL Lassen, Christina Andersen & T Møller	‘Navigating the real world’: Semantic shifts in the nursing practices of Honours students Cecilie Betzer & Kristian Larsen	Preparing English home language teachers to assess students Maryna De Lange, Hanlie Dippenaar & C Winberg
SESSION 3 12:00 – 12:40	Opportunity and outcome in higher education: What specialization profiles reveal Marnel Mouton	Design thinking and project-based learning: The importance of semantic shifts Shoba Rathilal	Co-evaluating higher education curriculum with Autonomy Jo Kukuczka	Building musical knowledge: Lessons learned during the pandemic Marcus Medeiros
12:45 – 13:45	LUNCH – Highfield Dining Hall			
	Room B45	Room B46	Room B47	Room B48
SESSION 4 13:45 – 14:25	A Specialization analysis of students’ conceptions of mathematics and its pedagogy Zaheera Jina-Asvat, Brogin Fiddes & Tonia Dzai	Using semantic gravity to connect theory and practice in second language texts Arne Håkansson	Autonomy analysis of cross-curricular teaching: Turning LCT into pedagogy Paul Curzon & Jane Waite	Using Specialization to develop workplace competences for Environmental Health studies Louella Daries
SESSION 5 14:30 – 15:10	Using LCT to support pre-service teachers’ critical stance on their practice Rolene Liebenberg	Explicitly teaching physics students to ride semantic waves Jennifer Williams	Journeys to teaching: Autonomy shifts in why preservice teachers pursue teaching qualifications Vanessa Matlala, Fatima Mahlangu, Kwanele Makama	Constellations, pedagogies and knowledge composition in accounting modules Janét West
15:10 – 15:40	TEA – Staff lounge			
SESSION 6 15:45 – 16:45	PLENARY – L101 Exploring the national academic development landscape in South Africa: A Specialisation analysis Karin Wolff, Jo-Anne Vorster, Nalini Chitanand, Kibbie Naidoo & X Cupido			

TUESDAY 16 JANUARY 2024

SESSION 7 9:00 – 10:35	“POWER-UP” 2 – L101 Extra-ordinary vision: How to think with LCT- Karl Maton & Lee Rusznyak			
10:40 – 11:10	TEA – Staff lounge			
	Room B45	Room B46	Room B47	Room B48
SESSION 8 11:15 – 11:55	Using Specialization to enhance student success in a nursing program Shoba Rathilal, Themba Nxumalo, Nokhuthula Mavela, Nomusa Zikalala, F Ntombela, Thembinkosi Kalanga & Livingstone Makondo	Applying Specialisation and semantic waves in an academic literacy intervention Nathi Madondo	Semantic tours as instructional design in computing education Dorian Love	It’s just complicated’: Constellating cultural identity. Erika Matruglio, A Baker & N Weatherby-Fell
SESSION 9 12:00 – 12:40	Exploring the development of the critical legal gaze in a Jurisprudence course Olebogeng Mokgantshang	An SFL and Semantics analysis of the cell in Biology secondary school texts Leah Tompkins & A McCabe	Autonomy and the challenges of interpreting a decolonial African Bible Billy Meyer	Constellations at play when new teachers join a union Philip Hlatshwayo
12:45 – 13:45	LUNCH – Highfield Dining Hall			
	Room B45	Room B46	Room B47	Room B48
SESSION 10 13:45 – 14:25	Using Specialization to improve training for Learning and Teaching Assistant Rita Kizito	Using semantic density to find PCK in lesson observations Dominque Peixinho, Thobile Nyandeni, Sweetness Ngqoleka, Buhle Mncube & Lindokuhle Sithole	Exploring multilingualism for epistemic access: Semantics and Autonomy as tools for analysing multilingual pedagogies Sisonke Mawonga	Constellating facts and values: Cosmological analysis of China’s judicial judgments Wentao Xu & Chuanyou Richard Yuan
	Room B46		Room B47	
SESSION 11 14:30 – 15:10	The absenting of knowers in instrumentalist conceptions of higher education Sioux McKenna		Moving from student to staff development: Reflections on recontextualization Steve Kirk	
15:10 – 15:40	TEA – Staff lounge			
SESSION 12 15:45 – 16:45	PLENARY- L101 Understanding professional engineering practices: Insights from LCT Nicky Wolmarans, Nicholas West, Nathi Khoza & Karin Wolff			

WEDNESDAY 17 JANUARY 2024

SESSION 13 9:00 – 10:15	POWER-UP 3 – L101 Power to the people! What's legitimation got to do with it? - Karl Maton			
10:20 – 10:40	LCT5 Group Photo - Ground floor Bohlaleng Block			
10:40 – 11:10	TEA – Staff lounge			
	Room B45	Room B46	Room B47	Room B48
SESSION 14 11:15 – 11:55	Preparing insurance brokers: Insights through university coursework and on-the-job training Agata MacGregor	Semantic waves for helping teachers teach science to second language students Anna-Vera Meidell Sigsgaard	Clarifying bases of achievement in Content and Language Integrated Learning Leah Tompkins	Building diplomatic knowledge in Zimbabwean news articles Emaculate Mvundura
SESSION 15 12:00 – 12:40	Tracing specialization codes of English Language Teaching professionals in Mexico Vicky Ariza Pinzón, Rosalba Leticia Olguín Díaz & Elba Méndez García	Gravitating from the abstract to formulating contextual understanding of Jurisprudence concepts Olebogeng Mokgantshang	Bridging the gap between theory and practice: What LCT brings to academic literacies Kirstin Wilmot	Talking teaching and educational reform: Constellating how new teachers interpret lessons Dale Langsford
12:45 – 13:45	LUNCH – Highfield Dining Hall			
	Room B45	Room B46	Room B47	Room B48
SESSION 16 13:45 – 14:25	Unleashing silenced voices: Singing in tune as a cultivated gaze Marcus Medeiros Pereira & Débora Andrade	Observing literacy teaching: A Semantics comparison of what student teachers notice Lindy James	Cultivating critical citizens through English literary studies Retha Knoetze	Using constellations to understand political stances: Positioning SA's Democratic Alliance Ian Siebörger
	Room B46		Room B47	
SESSION 17 14:30 – 15:10	Supporting student learning through feedback: How LCT can help Lee Rusznyak		Demystifying Graduate Attributes using LCT: The case of engineering Karin Wolff & R Potts	
15:10 – 15:40	TEA – Staff lounge			
SESSION 18 15:45 – 16:45	PLENARY – L101 The LCT Magic Show: Improving classroom practice using Semantics Paul Curzon & Jane Waite			
18:30 – 20:30	DINNER OUT – Mike's Kitchen, Parktown			

THURSDAY 18 JANUARY 2024

SESSION 19 9:00 – 9:55	POWER-UP 4 – L101 Reach for the stars! Constellation analysis – Karl Maton			
	Room B45	Room B46	Room B47	Room B48
SESSION 20 10:00 – 10:40	Advancing professional learning: Using Specialization to compare teachers' and lecturers' feedback to student teachers E Mushayikwa & Ngoni Mushayikwa	Using Semantics to understand how teachers manage meaning in feedback Andrew Scott	Building disciplinary literacy: Autonomy trips in teaching multilingual students Camilla Håkansson	A sustainability cosmology: A “green” company’s knowledge–knower structure Vanúbia Moncayo
10:40 – 11:10	TEA – Staff lounge			
	Room B45	Room B46	Room B47	Room B48
SESSION 21 11:15 – 11:55	Selecting textbooks: How Semantics empowers Economics lecturers to choose appropriate texts Sharon Tessendorf & S Mishi	Tear and share: Lessons in explaining LCT to practitioners Jane Waite & Paul Curzon	Automating an analysis for semantic density: Using AI to code data Thato Senoamadi & Dale Langsford	Successful literacy practices and their relation to building a disciplinary identity as a nurse Vicky Ariza Pinzón
SESSION 22 12:00 – 12:40	Learning professional practice through supporting courses: How Specialization can help Tanusha Dukhan	Looking for PCK in classroom practice through observation and self-reflection Sweetness Ngqoleka	Mapping a postgraduate transition pedagogy using Autonomy Sharon Aris & C McCulloch	What musical symbolic systems say about conceptualisation in education Mandy Carver
12:45 – 13:45	LUNCH – Highfield Dining Hall			
SESSION 23 13:45 – 14:45	PLENARY - L101 Changing practice with LCT: Preparing teachers for an education system in crisis Lee Rusznyak, Dale Langsford, Preya Pillay, S’negugu Madlala & Sikhumbuzo Bulose			
14:45 – 15:30	COMMUNITY TIME – L101 Announcements, prizes, fun!			
15:30	TEA – Staff lounge			

Power-Ups

Each day starts with Prof Karl Maton sharing insights into parts of LCT that have not yet been published.

POWER-UP 1: Now that's what I call theory! What is LCT?

15 January, Session 1

One side-effect of knowledge-blindness is that scholars use words like 'theory' and 'concept' to refer to all kinds of different practices, creating confusion as to the role and purpose of a 'theory' and how to use its concepts. In this session I address the questions: What kind of 'theory' is LCT? What kinds of concepts does LCT offer? The answers to these questions will not only give you a better understanding of how LCT relates to other sets of ideas but also provide you with tools for making sense of why some concepts in social science seem different to others.

POWER-UP 2: Extra-ordinary vision: How to think with LCT

16 January, Session 7

Theories do nothing by themselves – they need you. To make the most of a theory, you need to have the right mindset to unlock its potential. In this session I'll take you through the ways of thinking embodied by LCT and which you need to grasp to unleash its power. LCT offers a vision that will change the way you see the world. I'll explain that vision. Prof Lee Rusznyak will then discuss studies that exemplify these ways of thinking and show what is gained by adopting this vision.

POWER-UP 3: Power to the people! What's legitimation got to do with it?

17 January, Session 13

Until now, LCT has been little used to explore questions of social power and how they relate to practices. We are adept at analysing practices themselves, but yet to grapple with how they relate to people's dispositions to explain why some succeed and others struggle. This session will set out how we get to grips with notions like 'field' and 'dispositions' without the impenetrable complexity of Bernstein's 'pedagogic device' or slippery vagueness of most uses of Bourdieu's 'habitus'. I will discuss 'legitimation' for the first time and how it offers the key to unlocking this issue.

POWER UP-4: Reach for the stars! Constellation analysis

18 January, Session 19

Practices are incredibly complex and changing, yet most attempts at grasping their forms offer simple, static typologies. Constellation analysis offers a revolutionary way of mapping practices, one whose game-changing potential has yet to be even begun to be explored. A key reason is that they have yet to be introduced properly. In this session, I'll explain these concepts in a way that does more justice to their radical flexibility and eye-opening capacity to embrace diversity and change. Once constellated, you won't want to go back.

Abstracts

SESSION 2 (B45): Gazes in engineering practice

Nathi Khoza & Nicky Wolmarans

Vaal University of Technology, South Africa

Engineering is seen as a strong technical knowledge field. Growing research reveals that successful engineering practice requires technical knowledge and social interactions. The social interactions highlighted by other researchers as necessary for successful engineering practice include good written and spoken communication skills, multidisciplinary teamwork, coordination of engineering activities, conflict management, and many others. The Engineering Council of South Africa introduced the graduate attributes in engineering curricula, which are skills that engineering students must have when they graduate that address technical knowledge and knower attributes. The introduction of graduate attributes in engineering curricula highlights the increasing importance of social interaction. Legitimation Code Theory offers a conceptual framework to investigate the relationship between epistemic relations and social relations. The challenge for this study is to link social interaction in practice to the relationship between knower attributes and knowledge as the basis of performance.

Several research studies have been conducted on insights into engineering curricula and practice, focusing on knowledge. Due to an understanding of engineering practice as a technical field, there have been minimal studies on gazes in engineering curricula and practice. However, there are some anecdotal indications that professional practice may be more legitimated on the basis of knower than assumed. This study focuses on knower attributes using gazes. This study is critical because it will be able to develop a fine-grained analysis of knower attributes to investigate the extent to which they legitimate the engineering practice. This study will contribute to a better understanding of knower relations in engineering practice.

The study is based on the two data sets from different engineering practices collected by final-year civil engineering undergraduate students for their capstone research projects. The first data set was collected in a small residential structural engineering consultancy. The second set of data was collected in the transport division of a large engineering consultancy. Both data sets consist of field notes from observations collected by the student researchers while participating in engineering work at different engineering consultancies over two weeks. The results of this study will be used to develop observation and interview protocols for further studies in engineering practice.

SESSION 2 (B46): Using Semantics to explore the involvement of patients in digital learning practices on pain management

Anette Lykke Hindhede, Bitten Dybdal, Karsten Lomholt Lassen, Christina Andersen & Tom Møller

University of Copenhagen/UCSF Center for Health Research, Denmark

Health policies in the developed world, including the Nordic countries, encourage patients to take greater responsibility for their healthcare. Patient participation involves planning care, exchanging knowledge, setting goals, and carrying out self-management activities. However, patients may find themselves in a precarious situation with the responsibilities delegated to them. In this paper, we focus on how apps help patients manage their pain after discharge from hospital. One issue is inadequate knowledge dissemination and integration into patients' daily routines. We use Semantics to reveal the underlying mechanisms that hinder or facilitate this process.

Digital health technologies increasingly reconstitute patients as rational and reflexive agents that weigh up available knowledge, make choices about their healthcare needs, and competently engage in digital health management. The specific pain-assistant app offers surgical patients opportunities to participate in the production of pain-related knowledge post-surgery. The app asks them to watch videos, e.g., pain

management, nausea, and obstipation. Furthermore, they are asked to assess pain intensity daily using a score and report pain directly to the hospital's e-health platform.

Building on health literacy as social practice, a praxeological understanding of knowledge and human action and the notion of cumulative knowledge-building in education developed in Legitimation Code Theory, we analyse the design of the pain management app as an example of how knowledge is built and disseminated. Specifically, based on the semantic profiles identified in the videos, we examine the forms of expression in terms of their contribution to educational strategies and how these strategies are organised to support patients' knowledge accumulation effectively.

The videos will be analysed regarding their expressive modes of communication, such as verbal and written language, visualisation, etc. We explore how compact medical knowledge on pain is unpacked for patients' context-dependent meanings. We then analyse interviews with 20 patients one-week post-surgery, where we inquire about their opportunities to engage with the meaning being made in the app. Additionally, we investigate patients' new role as producers of health-related data and knowledge and how the deployment of this app relates to patients' pain management practices.

This research contributes to understanding how patients learn to become 'digitally engaged' in their medical care practices. Furthermore, it adds to the use of LCT in new educational contexts. Our research provides new insights into how patient education practices may or may not create affordances that enable them to be "translated" or "transferred" into new sites (such as patients' homes) where they can be integrated, rather than competing, with other practices.

SESSION 2 (B47): 'Navigating the real world': Semantic shifts in the nursing practices of honours students

Cecilie Betzer & Kristian Larsen

UCSF/University College Copenhagen, Denmark

The global nurse shortage presents a critical challenge in the healthcare sector, demanding innovative solutions. Education emerges as a promising avenue for addressing the recruitment and retention of nurses. This abstract provides insights from an extracurricular undergraduate honours program at University College Copenhagen, specialising in elderly patient care, specifically focusing on COPD and type 2 diabetes. This program not only provides motivated students with a distinctive opportunity for academic excellence but also addresses healthcare system challenges. Furthermore, it introduces honours students to the complex terrain of nursing education.

Guided by Legitimation Code Theory (LCT), this study explores how and whether students manage to position themselves within this complex educational context, marked by diverse perspectives on the 'ideal knower' and the 'right knowledge' to learn. Qualitative methods, including observations, interviews, focus groups, and document analysis, are employed to unveil students' strategic positioning within the program. LCT's Specialization dimension and gazes offer a nuanced perspective on student positioning within the evolving Honours program landscape. By providing the analytical framework, this research aims to advance our understanding of the intricate dynamics students navigate as they position themselves amidst varying conceptions of knowledge and the 'ideal knower, by conceptualising how students attempt to adapt the sometimes conflicting languages of legitimisation within the field, in line with the focus of the program and knowledge assessment.

The study reveals that honours education introduces a new code (elite) for students to navigate, leading to struggles not only between established codes but also the 'new' honours code. Specialization codes and gazes shed light on students' strategies in navigating the real-world challenges of the honours program, occasionally leaving some students in a legitimacy quandary.

The study elucidates that honours education not only builds upon existing 'knowledge' and 'knower' codes but also introduces the 'elite' code for students to deal with. This introduction results in conflicts not only between the established codes but also with the emergent 'honours code.' Specialization codes and gazes shed light on

how students navigate the existing codes while concurrently contributing to the formation of the legitimation language themselves, influenced by their individual dispositions. This process of identity formation poses an identification dilemma, one that is resolved more easily by some students compared to others.

The results of this study contribute to a deeper understanding of nursing education's internal negotiation struggles in the preparation of a new educational program and how the overall generative mechanism that underlies social fields of practice – including nursing – has an impact on the students' ability to and general socialisation into the field.

SESSION 2 (B48): Preparing English Home Language teachers for the practice of assessment

Maryna De Lange, Hanlie Dippenaar & Chris Winberg

Cape Peninsula University of Technology, South Africa

A theory/practice divide is a challenge in many fields. It can potentially lead to graduates being unable to complete their core tasks competently once in the workplace. To be adequately prepared, they must realise that theory informs practice and vice versa. One example is preparing teachers who can effectively assess their students' language development. By the time pre-service teachers (intermediate phase) qualify, they are expected to be well acquainted with the policies governing the assessment of English as a Home Language. However, there is a widespread perception that many are not 'classroom ready', which affects their ability to monitor and assess the language development of primary school children.

This study aimed to understand the nature of the theory/practice divide in teacher education at a university in the Western Cape, South Africa. It explores how pre-service teachers are prepared to implement assessment strategies as required by the national policy for language teaching at the primary school level. The study draws on Legitimation Code Theory's Semantics dimension. Semantic gravity is used as an organising concept to track the context dependence in a language teaching curriculum of the teacher preparation programme and the policy documents. A specific translation device defines eight strengths of semantic gravity. This was used to code the data to identify possible gaps and weaknesses regarding the theoretical and practical underpinning of the assessment. Areas of focus were the principles of assessment policies, pre-service teacher education, classroom practice, and school management. A semantic analysis reveals changes between stronger and weaker forms of semantic gravity and the relation between them. A comparison of their semantic waving shows convergences and discrepancies between teacher preparation and the demands of policy.

The study found that there was more that constrained than enabled novice teachers' preparation for assessment practice. An imbalance between theory/practice in the teacher education curriculum and policy expectations was revealed. Examples of findings include novice teachers' and final-year students' limited understanding of assessment principles, the purpose of assessment, their uncertainty about being assessors and their inability to implement policy. School managers were not aware of the lack of assessment knowledge of novice teachers. They did not provide the necessary support for assessment practices once these novice teachers entered the workplace.

Several recommendations arose from this study. It was recommended that policy documents clearly explain the assessment theory and principles on which the policy is founded, be less prescriptive, and use precise terminology. Lecturers must ensure that teacher educators in the English Home Language are exposed to effective pedagogy and reflection in assessment literacy and accreditation. Collaboration is necessary between higher education institutions and the National Department of Basic Education to address and strengthen the linkages between conceptual and contextual forms of assessment knowledge in the preparation of pre-service teachers to ensure that they become competent practitioners. The "missing curriculum" was a term created and used in an open discussion involving lecturers and education officials to generate a solution for bridging gaps between teacher training and the education system.

Researching the "missing curriculum" was identified as a lack of practical knowledge on assessment, which is essential to creating a balance between teacher education and teaching practice. Further research is needed

on assessment policy, teacher education curricula, classroom practice, and assessment management underpinned by a principled account of practical and theoretical knowledge. Without a thorough understanding of practice-based and contextual knowledge, there is a danger that theoretical knowledge itself will be undermined. The tools provided by semantic gravity laid the groundwork for an understanding of practical assessment knowledge and its relation to theoretical assessment knowledge, and it was illustrated that a deep understanding of both conceptual and contextual assessment knowledge is necessary to prepare novice teachers for assessment practice.

SESSION 3 (B45): Opportunity and outcome in higher education: What specialization profiles reveal

Marnel Mouton

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This paper explores the narratives of opportunity and outcome offered by an Extended Curriculum Programme at Stellenbosch University in South Africa. The main contribution to the research is evidence of a thematic Specialization profile associated with academic success in this group. Academic success is one of the most desirable and prominent concepts in educational research and assessment in higher education. After a thorough review, York and colleagues suggested a theoretically grounded definition of academic success with six constituents: academic achievement, satisfaction, acquisition of skills and competencies, persistence, attainment of learning objectives, and career success.

Extended Curriculum Programmes create a curriculum space where talented students who may be underprepared for the challenges associated with studies in higher education can achieve solid foundations and skills for academic success. The goal of this systemic intervention is thus to facilitate equitable access (opportunity) and academic success in higher education. Former Extended Curriculum Programme students, both graduates and non-graduates (2010 to 2016 cohorts), were randomly invited to participate in online interviews to share their lived experiences during their foundation and subsequent undergraduate years and the influences of the intervention on their lives during and after university. We were interested in gaining insights into possible themes associated with academic success. Twenty-five students responded and agreed to participate in the online conversations, which were recorded and transcribed. Inductive thematic analysis of the 25 interview transcripts led to a host of themes emerging across the data set. Interestingly, some themes were more likely to be associated with graduates and thus academic success, whereas the absence or weak representation of some themes was more prevalent among non-graduates.

The Specialization dimension of Legitimation Code Theory was employed to conceptualise the emerging themes from the interview transcripts. We found certain themes on the Specialization plane of graduates – a type of profile associated with academic success. These students embraced the foundation year's fundamental disciplinary knowledge and extensive skills development, positioned in the knowledge codes. Non-graduates' profiles lacked some themes, and their foundational science knowledge and skills had consistently weaker epistemic relations than the graduates. There were also meaningful differences in the knower code themes of the graduates and non-graduates, e.g., support in various forms, which emerged as a prominent theme among graduates, suggesting a specific type of knower for academic success.

We concluded that students need to learn how to “be” and function in higher education and thus become the right kind of knowers for academic success. Additionally, their foundational science knowledge needs to develop to a certain level, bridging previous knowledge gaps, to achieve academic success in subsequent academic years. The evaluation also brought some strengths of the Extended Curriculum Programme to the fore and some aspects needing attention or further development. The study further highlighted the capacity of the programme to facilitate access and academic success for many students who would not have had an opportunity to study in higher education by general mainstream admission criteria.

SESSION 3 (B46): Design Thinking and Project-Based Learning: The importance of semantic shifts

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High unemployment rates and a shortage of experienced and qualified employees appear to be a paradox that currently plagues most countries worldwide. Employers report that graduates are very rarely able to meet the demands of the job as there are gaps in their knowledge and conceptual understanding and other 21st-century competencies, attributes, and dispositions required to successfully negotiate the multiple responsibilities of employees in organisations. This paper draws on Semantics to gain insights into the challenges of conceptualising and implementing Project Based Learning and Design Thinking modules that seek to address this challenge. At a particular Higher education Institution in South Africa, Design Thinking and project-based learning are being adopted as two approaches that aim to enhance the student experience through the provision of a “distinctive education” that brings together disciplinary knowledge, professional engagement, technology, innovation, and entrepreneurship. In principle, both these approaches are extremely impactful. However, at the institution in this study, the implementation of the Project Based Learning and Design Thinking was not as “smooth” as anticipated. This presentation reports on the analysis of the implementation of these two approaches within this specific institution.

The study adopted a qualitative case study design. Data were generated through the use of surveys, evaluation feedback at workshops, and content analysis of project proposals and reports. Data were analysed using document analysis, content, and thematic analysis. Initial analysis showed that the availability of additional funding and capacity development workshops enhanced the implementation. However, the findings suggested that there is a “gap” between the theoretical principles and processes of Design Thinking and Project-based learning and the implementation practices that can be adopted.

The analysis showed activities in projects that tried to address real-world problems after focusing on theoretical concepts in the classroom. However, these activities had limited opportunities for students to navigate between them. The shifts from weaker semantic gravity to a stronger semantic gravity that is required in application of theory to practice were not sufficiently scaffolded and modelled. In addition, there are very few structured interventions that provide the opportunity for students to weaken semantic gravity and move beyond the context of a problem toward generic principles.

Using semantic density, the analysis showed that while the teaching included the unpacking of dense concepts for enhancing understanding, not much was planned that moved from contextual problems towards condensing the meaning of concepts towards further complex concepts.

This analysis informed the developmental support for project teams to enhance their projects. The successful implementation of innovative learning and teaching practices within higher education curricula depends on structured, substantial, and continued staff development.

SESSION 3 (B47): Co-evaluating higher education curriculum with Autonomy

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Typically, the purpose of higher education curriculum evaluations is to judge the extent to which intended learning outcomes are achieved, and this is commonly measured through learner feedback, attainment/progression data, and the alignment of the above with the curriculum convenor’s expertise. However, while such evaluations often remain uncontested, they are not without limitations (the main one being constraining integrative knowledge-building), and the problems arising from such approaches are multi-fold.

Firstly, those evaluations still often happen in silos, with single, rather than diverse, perspectives and

interpretations of what worked, what did not work, for whom, and why. Secondly, such ‘surface level’ evaluations only reveal what learners (and teachers) think of the course and how they progress their knowledge but fail to address the fact that ‘they don’t know, what they don’t know’ (e.g., knowledge building practices and alignment with disciplinary/institutional/societal values and requirements). Moreover, when such evaluations are primarily concerned with judging the extent to which outcomes are met (extrinsic evaluation), they often omit to ask explicit questions about the worth of the outcomes themselves (intrinsic evaluation). Finally, in terms of the evaluation process itself, thorough and diverse data analysis approaches (including theory and research-informed conceptual frameworks) are often limited in quality and/or scope or ignored altogether, resulting in less effective evaluations leading to ineffective curriculum (re)development and, ultimately, constrain student success.

As those limitations reflect the obstacles to understanding integrative knowledge-building – namely, knowledge-blindness (obscuring different forms of knowledge), essentialism (constructing knowledge practices as self-evident and unchanging), and typologizing (segmented models of knowledge) as highlighted in LCT Centre Occasional Paper 1 – and autonomy codes serve to overcome such constraints, I have used the Legitimation Code Theory concept of autonomy tours to guide the design of and run a higher education curriculum co-evaluation intervention.

By tracing shifts in autonomy codes along different pathways, autonomy tours bring together and repurpose diverse forms of knowledge, enabling integrative knowledge-building. It can be argued that this is needed to support effective curriculum evaluations. It can take shape through the engagement of extrinsic and intrinsic evaluation approaches, in-depth theory and research-driven data analyses, and collaborative evaluation.

I first plotted a typical series of evaluation activities on the Autonomy plane to test this theory in the higher education curriculum evaluation context. I discovered that such a practice would likely stay in the sovereign code, resulting in limited knowledge-building and ineffective evaluation. I then planned and plotted my collaborative evaluation activities on the Autonomy plane: an explicit aim of the intervention (sovereign code), an ice-breaker game focused on identifying talent in the room (exotic code), the conceptualisation of the evaluation process itself and how it fits within the ‘bigger picture’ of the curriculum development process as a whole (projected code), collaborative data analysis activity including considerations of different stakeholders and application of diverse analytical lenses (e.g., semantic waves) (introjected code), and evaluation activity aiming at the ultimate co-judgement of the investigated curriculum (sovereign code).

I then ran collaborative evaluation sessions based on that design and ensured that co-evaluators had opportunities to critique the approach, but no issues were raised. Instead, they commented on how much more enlightening than the usual analysis of student feedback the approach was, allowing them to spend ample time on meaningful multi-lens and multi-stakeholder analyses, all the while remembering how it all (dis)connects with each other and the overarching purpose of the evaluation (in-depth judgement of the outcomes, practices, and the effectiveness of the curriculum as a whole).

Moreover, it became evident that this intervention profoundly impacted the co-evaluators themselves, broadening the purpose of this evaluation beyond the informed judgement of said curriculum and into integrative knowledge-building of its co-evaluators. Further feedback from the co-evaluators revealed that this approach helped them go deeper into the evaluation process and better understand what was happening in the curriculum. Subsequently, many reported planning to use or already using the approach to co-evaluate their own curricula.

To build on this work, I would like to ask the LCT community to critique the approach to see whether it has the potential to ‘change’ the typical ‘surface level’ higher education curriculum evaluation practice. Furthermore, I plan to use this approach to develop a pilot Curriculum Evaluation module for my Postgraduate Award in Curriculum Development in Higher Education programme.

SESSION 3 (B48): Building musical knowledge: Lessons learnt during the pandemic

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A long-standing concern has been the effectiveness of music knowledge-building within Brazilian schools, emphasising the need for music to be recognised as a substantive academic discipline rather than solely recreation and leisure. Semantics provides a valuable framework for scrutinising the organisation of knowledge-building in music, offering insights into whether instructional practices are cohesive or fragmented. Concrete engagements with sound and music are pivotal in comprehending abstract musical concepts, aligning with the authentic essence of music creation (Swanwick, 1994). Hence, tracing semantic gravity waves over time, facilitating transitions between contextualised, concrete experiences with music and more integrated, profound abstract concepts, is fundamental for continuous and cumulative musical knowledge-building.

During the pandemic, Brazil's music education researchers seized the opportunity to investigate knowledge-building by conducting an empirical analysis of textbook materials authored by music teachers. This research delved into the music activities outlined in the tutored study plans for Elementary School, employing the concept of semantic gravity to observe variation in levels of abstraction. Semantic gravity is relatively stronger when concepts are approached concretely through direct sound experiences, contrasting with relatively weaker gravity when concepts are presented more abstractly verbally. The investigation entailed a meticulous document analysis of 41 volumes designed for Elementary School (years 1 – 9), wherein music proposals were individually selected and classified into distinct moments. Each moment was evaluated using a translation device that organised the continuum of strengths into empirically observable levels. Subsequently, activities were assessed longitudinally to discern knowledge-building progression over the school years, ultimately enabling the creation of semantic gravity profiles for the music lessons on a weekly, yearly, and Elementary School-wide basis.

The findings revealed high fragmentation in the proposed music activities, often introducing different concepts only once, without revisitation, and lacking direct experiential engagement with sounds. When concepts were reintroduced in subsequent years, their definitions remained largely repetitive, accompanied by activities often disconnected from the initial presentation (such as colouring pictures) and did not involve direct sound experiences. Consequently, music lessons seldom exhibited discernible semantic gravity waves. These results are of paramount significance, demonstrating that music education in Brazilian schools during the pandemic did not align with an effective approach to fostering musical knowledge-building. As teachers developed these activities from the Department of Education, questions arose regarding whether this fragmentation is specific to remote teaching materials or indicative of broader trends in school music education. In regions like Minas Gerais (and much of Brazil), where music studies are integrated within the discipline of Art, encompassing Visual Arts, Dance, and Theatre, this organisational structure may inadvertently contribute to knowledge fragmentation due to the substantial content to be covered in a limited timeframe. Thus, it is imperative to critically evaluate the format of Art education in Brazilian schools and invest in a deliberate approach to musical knowledge-building that aligns with the unique demands of the educational context, distinct from the practices established in specialised music institutions. Lessons from this research offer valuable insights for shaping future approaches to music education in similar contexts.

SESSION 4 (B45): A Specialization analysis of students' conceptions of mathematics and its pedagogy: The impact of teacher preparation

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University of the Witwatersrand, South Africa

The South African Mathematics curriculum endeavours to produce learners who can identify and solve problems, making decisions using critical and creative thinking. These goals align with what is valued by mathematicians. However, the practice of mathematics in typical school classrooms differs from the mathematical activity of mathematicians. Pre-service teachers aiming to become mathematics teachers have

had experiences during their own schooling that shape their preconceptions about teaching and also their beliefs about the nature of mathematics. These preconceived notions influence how they choose to teach the subject and impact their teacher efficacy and confidence. Mathematics teachers need to cultivate an appreciation for mathematics related to that of mathematicians to better understand the significance of mathematics. Specialization offers suitable concepts for analysing social and knowledge practices in both mathematics and mathematics education, revealing changes between groups. Our paper uses Specialization to analyse the conceptions held by different cohorts of pre-service teachers about the roles of mathematics teachers and mathematicians. The objective is to explore whether teacher training has any influence on how they perceive themselves in becoming mathematicians. This investigation is crucial for understanding the impact of teacher training on pre-service teachers' conceptions and aligning them with the broader goals of mathematics education. Our presentation comprises three parts. Zaheera will provide context to the study. Brogan will delineate the problem and elucidate the research design. Tonia will delve into the analysis and present research findings. Brogan will subsequently conclude the presentation by elucidating its significance.

Students studying a four-year Bachelor of Education degree specialising as secondary school mathematics teachers completed two open-ended questions that probed their perceptions of teaching mathematics and their expectations of working as qualified mathematicians. The participants were drawn from two groups: first year, and second year pre-service teachers. These two groups of students have different contexts which are important to consider:

- First-year pre-service teachers had just begun a first level mathematical theory course. They had not yet had introduction to a mathematics specific pedagogy course.
- Second-year pre-service teachers had successfully passed the first level mathematics course, the general pedagogy course and were doing a second level mathematics course and a specialised mathematics pedagogy course that seeks to provide a comprehensive learning experience, integrating theory and practice, developing mathematical knowledge for teaching, and fostering competence as reflective mathematics teachers. The course emphasizes lesson goals, learner participation, and mathematical content exploration.

Using Specialization, our study considered the strengths of epistemic relations and the strength of social relations of the responses provided by participants from the first-year cohort. We compared their responses to those from the second-year cohort. The analysis revealed what pre-service teachers, at different points in their preparation regard as special when describing their roles as mathematicians and mathematics teachers. This offers valuable insights into their perceptions of the distinctiveness of these roles. The conceptions of first-year pre-service teachers lean towards weaker epistemic relation and stronger social relations, reflecting mainly knower codes which valued personal attributes over specialized knowledge. Their stances seem to have been influenced by their own experiences of learning mathematics at school. In contrast, the responses of second-year pre-service teachers had stronger epistemic relations, weaker social relations, and were dominated by knowledge codes. Analysing epistemic relations reveals a deeper understanding of the nature of mathematics developed through university courses, indicating a shift in conceptions influenced by the level of tertiary education experience.

The study reveals shifts in the conceptions of pre-service teachers during their tertiary education. Initially, first-year pre-service teachers focus on personal attributes for teaching, while second-year pre-service teachers prioritize specialized knowledge. Elite codes, indicating a strong emphasis on both knowledge and knower, are more prevalent in second-year pre-service teachers. The findings align with the goal of teacher education in influencing pre-service teachers' conceptions. The correlation between pre-service teachers' conceptions of mathematicians and mathematics teachers suggests a potential influence, supporting the importance of aligning conceptions for consistent teaching choices. The study underscores the impact of tertiary education in shaping pre-service teachers' conceptions.

SESSION 4 (B46): Using semantic gravity to connect theory and practice in second language texts

Arne Håkansson

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In higher education, writing elaborated and coherent texts that connect theory and practice is crucial for a student to pass course assignments and to be seen as a legitimate knower. Shaping theory-practice connections is a big challenge for students in linguistically heterogeneous student groups and for their teachers scaffolding the students' academic writing. In Sweden, academic writing courses in higher education are rare, and the teaching of academic writing is part of what the subject teachers at the university are expected to provide. This study focuses on academic writing in the research field of Swedish as a second language. It uses the LCT concept of semantic gravity to analyse the students' texts to make visible how the connection (or not-connection) of theory and practice looks in the students' course assignment texts.

The students in Swedish higher education have Swedish or one of several other languages as their first language. The study aims to analyse texts written by student teachers with Swedish as their second language, a very heterogeneous group of students with different competencies and needs. The analysed texts are the final version of the students' assignments about solving a pedagogical case using different pedagogical theories. Different ways of presenting knowledge through the connection of theory and practice can result in different text structures visualised in different patterns of semantic waves. A translation device has been developed based on the features of student assignments. The text features focusing on the case to be solved are coded as more dependent on the context of the school practice, representing stronger semantic gravity (SG+). The text features focusing on the theories used to guide the solution of the case are coded as less dependent on the context, representing weaker semantic gravity (SG-). The text features connecting theory and practice through generalisation are coded as middle-range semantic gravity (SG0).

Preliminary findings suggest that connecting theory and practice is challenging for the students, resulting in student texts presenting the theories but only sometimes connecting them to the analysed case. These challenges primarily manifest as weaker semantic gravity, which tends to prioritise the theoretical aspects less reliant on the context. Consequently, the connection between these theories and the contextually stronger dependent problem-solving remains to be seen. Although this study is limited to the analysis of texts written by students with Swedish as their second language, similar challenges in connecting theory and practice could be expected in texts written by students with Swedish as their first language. A conclusion that can be drawn is that further scaffolding of the students' academic writing is needed in their writing process. This research about how theory and practice are connected in students' texts could provide knowledge about semantic waving that can be used to enhance the scaffolding university teachers, and academic writing advisors can offer the students. For subject teachers and academic writing advisors in higher education, well-working and less well-working student texts explained and visualised through different semantic gravity patterns could be used to teach academic writing explicitly. The subject teachers could achieve a metalanguage for oral and written feedback to the students' texts that address both the connection of theory and practice and the use of the Swedish language to express this connection.

SESSION 4 (B47): Autonomy analysis of cross-curricular teaching: Turning LCT into pedagogy

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How can LCT be used to develop pedagogy for cross-curricular teaching? Cross-curricular teaching is often argued for as an essential teaching approach. How to do it well is an important open question. We used the Autonomy dimension of LCT to help understand the knowledge practices we use in our own work teaching magic and computer science together. Our primary school workshops, for example, involve the presenter first doing a magic trick, with the children trying to work out how it works. They are taught the trick, and their newly developed understanding of its principles is used to explain linked computer science. The intended

learning outcome is for the students to learn both magic and computing concepts. However, could the knowledge practice described above be improved upon, chosen to do this dual teaching?

To explore this, we used Autonomy to analyse our approach to cross-curricular teaching in primary workshops and a book chapter using the same approach for older readers. We did a coarse-grained analysis based on the workshop's overall plan and the book's coarse section-based structure. We analysed both with respect to the aim of teaching computer science and separately to teach magic.

The analysis was strengthened by two authors discussing and agreeing on codes before data analysis. Both are experienced computer science educators; the first author is an experienced amateur magician. The first author did the initial analysis, creating translation devices to base coding on. Importantly, the translation devices were modified as the analysis progressed. The results were then discussed and justified step by step with the second author. This led to some changes in both the translation device and the coding.

Autonomy plane diagrams were produced for the workshop and the book chapter, and the analysis suggests that the approach used could be improved, especially concerning teaching computer science topics. In particular, adding a computer science introduction before the trick, rather than only after, would serve to turn a one-way trip from magic to computer science into an autonomy tour, thus, at least in theory, improving the knowledge practice.

Autonomy analysis could be used similarly to analyse other interdisciplinary teaching: computing is often advocated as best taught at the same time as other subjects or by solving a problem in a particular domain. This is particularly important in primary school (K-5 students), such as learning history by writing a history quiz program. However, how to do such interdisciplinary teaching well needs to be clarified. Similar analyses using autonomy with parallel focuses could help cast light on this.

SESSION 4 (B48): Using Specialization to develop workplace competencies for Environmental Health students

Louella Daries

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Learning that extends beyond technical and theoretical content should form part of a holistic assessment of the competence of workplace-based learning. This study proposes that the duration of the environmental health undergraduate work placement and the student portfolio of evidence may not be the ultimate determinants of the student's competence in practice. The competencies acquired and/or developed during workplace-based learning must be clearly described and made explicit so that a holistic framework is developed to assess competence for the environmental health profession. In the real-world context, students learn hard and soft skills during workplace-based learning to establish a professional identity. The learning acquired by the student is recorded in a portfolio of evidence, but students frequently underreport the full range of competencies acquired, as its focus is limited. Due to these limitations in the portfolio of evidence, many workplace-based learning competencies are missed in the current competence assessment. This research aimed to determine the competencies developed by undergraduate students during workplace-based learning in the Bachelor of Environmental Health degree as viewed through the LCT dimension of Specialization.

The Specialization dimension proved the most relevant LCT dimension to use for determining the strengths of epistemic relations and the strengths of social relations in the competencies. As revealed through this research, the LCT Specialization dimension further guided the orientation of the respective competencies on the Specialization plane.

A qualitative research design was used for this study as part of a broader study. An interpretivist research approach underpins the study. Purposive total population sampling was used, collecting data through individual in-depth interviews of senior students (N=15) and alumni (N=6) who have completed workplace-based learning during the new Bachelor of Environmental Health degree. Document analysis was undertaken

of interviewees' reflection journals, which they compiled during their work placement. Member checking was done informally during interviews and formally after audio-recorded data was transcribed to check for the accuracy and validity of transcripts. The qualitative data analysis software ATLAS.ti was used for coding and analysis. Analysis was undertaken by iterative readings of transcripts, inductive open coding, uncategorised coding, and focused categorisation. Subsequently, a process of descriptive and interpretive categorisation was followed. A Specialization translation device was used to guide the analysis of themes and subsequent plotting on the Specialization plane. This aids in establishing the orientation of competencies toward a particular Specialization code.

Students reported vast knowledge, skills, attitudes, and values developed and/or acquired during the supervised work placement. The students' competencies are oriented towards the élite code of the LCT Specialization plane (ER+, SR+). This means that students legitimised competence developed through 'specialised knowledge' and being the right kind of 'knower'. Our current assessment of workplace-based learning emphasises epistemic relations, which is an assessment of 'specialised knowledge' as documented in the portfolio of evidence and completion of the minimum prescribed number of days in the workplace. A code shift discovered confirms that the attributes of the knower are not acknowledged or assessed despite being emphasised by the students. Thus, for the assessment to be holistic, the students' knowledge (or epistemic relations) and knower attributes (or social relations) must be included in the holistic assessment of competence to practice as an Environmental Health Practitioner.

The study's outcomes may inform a framework for holistic assessment of student competence other than the current measure of competence. This holistic model of assessing competence (knowledge, skills, attitudes, and values) attained during workplace-based learning may be shared and adopted by similar programmes.

SESSION 5 (B45): Using LCT to support pre-service teachers' critical stance on their practice

Rolene Liebenberg

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Supporting pre-service teachers in taking a critical stance on their practice is important in developing a professional learning disposition. This pilot study explores whether the semantic dimension of legitimation code theory in which semantic profiles of pre-service teachers' lessons and their pedagogical reasoning for decisions can be of value in supporting them in developing a critical stance on their practice.

A qualitative research methodology is used in which data is collected through lesson observations and post-lesson interviews. The research participants are two final-year pre-service teachers specialising in mathematics. The data collected is one video-recorded mathematics lesson and one audio-recorded semi-structured interview of each pre-service teacher. Both pre-service teachers taught the same mathematical concept. The semi-structured interview focuses on the pre-service teachers' reasons for how they structured their lessons and the way in which they engaged the learners.

The concepts within the translation device for measuring the four strengths of semantic gravity in the development of the mathematical concept in the lesson are SG-2(Principles); SG-1(Patterns/Generalisation); SG+1(Simple Connections); and SG2+(Specific Examples). To analyse the degree of complexity in engagement with the mathematical concept in the lesson, the four strengths of semantic density are SD2+(Elicits justification); SD1+(Elicits Interpretation); SD-1(Provides minimal variation); SD-2(Provides information). The mapping of semantic pathways on the semantic plane provides pre-service teachers with a view of their practice and to critically reflect on changes to develop their practice. The first stage of analysis of the semantic pathways shows a movement predominantly across the rarefied and prosaic codes.

The translation device of pre-service teachers' pedagogical reasoning for decisions made during lessons is in development. The aim is to map the semantic pathways of pre-service teachers' pedagogical reasoning about their practice and to explore a relationship with the semantic pathways of their practice (the lesson) as part of developing a critical stance on their practice.

SESSION 5 (B46): Explicitly teaching physics students to ride the semantic waves

Jennifer Williams

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Learning physics is notoriously hard. It is often thought that this is largely due to the need for physics students to be proficient in a multitude of different problem representations, such as textual problem statements, various forms of diagrams, physical laws, and algebraic mathematical statements. The LCT concepts of semantic gravity and semantic density are a powerful way of explaining the difficulties students have in translating between these representations.

Beginning with a discussion of what physics is and, therefore, what physics students are required to be able to do to be successful, I proceed to give examples of areas of student difficulty that my colleagues and I have observed and how these fit into the explanatory framework of the LCT Semantics dimension.

Over the years, I have increasingly found it helpful in my teaching to explicitly talk to my students in lectures about the difficulty of moving between these different representations and to signpost to them which representational region we are in. I do this from the very first lecture, where we discuss what physics is and what doing physics entails. As we proceed in physics, the translations between regions of different semantic gravity permeate every aspect of physics. I give examples of where students struggle for different reasons and how I try to help them, ranging from topics including introductory mechanics, waves, special relativity, and quantum mechanics to their difficulties as tutors attempting to explain what they know to others.

I have long been aware of the Semantics dimension and how it relates to the multiple representations required in physics, but I have more recently become more aware of the concept of semantic density and that this is also strongly present in physics. This has given me ideas for how to be explicit about this going forward, which I will share.

SESSION 5 (B47): Journeys to teaching: Autonomy shifts when students pursue teaching qualifications

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There have been recent calls to test the commitment of students wishing to enrol for a teaching qualification before they are accepted into the program. These calls are made because of perceptions that too many qualified teachers are not committed to the profession and that the students who are enrolling are doing so by default, rather than because of an innate desire to teach. These calls assume that the future commitment of teachers can be determined from the outset. This assumption has no empirical basis, and Autonomy provides the conceptual tools needed to interrogate the journeys of preservice teachers into teaching, and through teacher education programmes.

We present our findings of a qualitative study of the knowledge and benefits that students seek when they register for a teaching qualification. We use Autonomy to compare their positions before registering to their positions during the teacher preparation programme. The data comes from the large-scale South African research project associated with the Teacher Choices in Action (TCIA) module. During the module, students were asked to share their journey into teaching by describing how they perceived teaching before enrolment for the degree, and by the end of the TCIA course. This study shows the results from three cohorts of participants:

- Students completing a one-year PGCE teaching qualification following a bachelor's degree
- Students completing a four-year Bachelor of Education degree, specialising in secondary school teaching
- Students completing a four-year Bachelor of Education, specialising in primary school teaching

Autonomy is used to analyse the journeys that participants take. We use strengths of positional autonomy to analyse whether students seek knowledge for teaching, or other kinds of knowledges. We use relational autonomy to analyse whether the benefits the students envisage are those that come from within or beyond the teaching profession. This analysis enabled us to trace how students' motivations for becoming a teacher shift over time. We used the analysis to draw autonomy pathways that trace the journeys that PGCE pre-service teachers take into a teaching qualification, and their intentions during their studies. A comparison of the different cohorts shows vastly different autonomy pathways. PCGE students were far more likely to undertake shifts from exotic codes to the sovereign, whereas a much larger proportion of B Ed students specialising in the primary school remained in the sovereign code. Where their journeys shifted from one code to another, we were often able to identify the mechanism for the code shift. In many cases, these shifts were prompted by an experience of mentoring others; their interactions with practising teachers, and new insights from coursework.

The findings of our study suggest that initial motivations are not a reliable indicator of long-term commitment to the teaching profession. We show that for nearly all participants, their positions on the autonomy plane change over time. Understanding the mechanisms for code shifting is crucial for understanding why students come into teacher preparation programmes, stay to complete and go on to be committed teachers regardless of their initial reasons for enrolling.

SESSION 5 (B48): Constellations, pedagogies, and knowledge composition in accounting modules

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Higher education has to do with access to knowledge around the world. Students enter universities with the intention of obtaining a qualification that is required for a specific career. Although this may be true, the purpose of higher education is much broader than preparing students for the workplace. In a fast-changing world, with new technologies impacting how we live and work and diverse student bodies, the focus should be on access to knowledge that builds over time. With this, students must become lifelong learners who can transfer knowledge over time and across contexts. However, higher education, such as accounting education, is often criticised for not fulfilling its purpose.

For many years, accounting education has been criticised for its strong focus on technical content and for failing to keep up with the changing world. There is thus a need to ensure that accounting qualifications are relevant and that students gain access to knowledge that will help them to adapt to a changing world.

Based on the literature, several things are important for knowledge-building and preparing students to become lifelong learners. This includes access to certain kinds of knowledge that focuses on how to perform a specific calculation, as well as why the calculation is important and how the business will use the calculations. In addition, students need to understand how knowledge is structured, the relation between various concepts and calculations, and how knowledge is built on in various modules. Here, one must remember that not all subjects have the same knowledge composition (structure, relations, and kinds of knowledge). Lecturers must make the knowledge composition explicit to students to help them build their knowledge and understanding of the module.

This paper focuses on how the pedagogies used in a third-year Cost and Management Accounting (a sub-discipline of Accounting) module enabled students to build the constellation of the module. I start by illustrating the knowledge composition of the specific module as a constellation. Semantic gravity was used to establish how cumulative knowledge building was enabled or constrained through the pedagogies used. Put differently, semantic gravity helped to show how the links between various parts of the constellation were made explicit (or not) to the students.

Using constellations and semantic gravity, we see that doing calculations (context-dependent knowledge) is

foregrounded, while the more abstract theoretical knowledge is backgrounded. In addition, the pedagogies used could result in segmented knowledge building as the relations between theory and calculations and various concepts are not made explicit. The implication is that students could struggle with cumulative knowledge building and might be unable to transfer knowledge to different contexts over time.

SESSION 6 (Plenary): Exploring the national academic development landscape in South Africa: A Specialization analysis

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The work of academic developers includes student and staff development initiatives aimed at addressing the persistent unequal patterns of student success along race and class lines. Academic staff development initiatives remain fragmented, while perceptions of the value of academic development vary across and within institutions. The reasons could be linked to different institutional structural and cultural conditions, how academic developers understand their roles, and how they conceptualise and implement staff development projects. In this paper, we report on the findings of a research project examining the national academic development landscape (NADL) in South Africa.

This national project aims to provide a theoretically- and empirically informed understanding of the field in South Africa to develop strategies for collaboration and national capacity-building, policy, and planning. Data were generated via a Google survey administered to practitioners and leaders of units from 25 of the 26 HEIs in South Africa. Eighty-five academic development practitioners and 41 academic development leaders responded to the survey. Respondents indicated an average of 7.5 years of experience in academic development.

We employed a social realist approach to examine potential causal relations of the domains of structure, culture, and agency in the field of academic development in different institutional contexts that emerged from the data. This was combined with the concepts offered by the LCT dimension of Specialization. Specialization allowed us to explore what is valued in, and to analyse the principles underpinning, academic development work based on the salient features of the structural, cultural, and agentic conditions evident in the data.

We enquired about respondents' and institutions' perceptions and the impact of academic development work, and we asked respondents to suggest ways to improve academic development practices in their contexts. We analysed responses to questions about academic development activities, the principles underpinning them, and enablers and constraints in relation to academic development practices.

A translation device where epistemic relations are understood as the focus on scholarly and educational principles underpinning academic development work, and social relations refer to the foregrounding of stakeholder dispositions and development processes guided our analysis. We analysed the responses from academic development leaders and academic development practitioners separately. We grouped the respondents according to institutional type, i.e. whether they work in a traditional or comprehensive university or a university of technology. Our analysis enabled us to generate a specialisation orientation according to respondents' roles and institutional type.

For the leadership data set, the dominant relativist orientation to the culture questions suggests a greater focus on alignment to generic 'strategic goals.' There also seems to be a pervasive sense of resource constraints. These responses are relativist in that they foreground neither specific forms of educational knowledge, principles, nor particular knower dispositions as the basis of academic development work. The intense focus on the knower quadrant from respondents from traditional universities points to a more holistic focus on socially just pedagogies and student success. In referring to the agency, there tends to be a greater focus on social relations from leaders in traditional universities. In contrast, there tends to be a relativist focus driven by resource and managerial concerns in the universities of technology and comprehensive universities.

The analysis of practitioner responses is, by and large, aligned with the leadership orientations. An interesting difference emerges in the practitioner responses around the concept of agency. Practitioners from

comprehensive universities demonstrate strong social relations in their description of personal, knower-orientated values in their work, strong awareness of their discipline-based academic colleagues' workload, and their collective mandate to enable student success. Practitioners from traditional higher education institutions demonstrate a broader range of responses in relation to the perceptions of their value, with comments focused on holistic, theoretically informed personal development (élite) to concerns about status and possibilities for ad hominem promotion (relativist).

We noted that the higher the level of appointment, the stronger the knower orientation with respect to agency. The lower the level of appointment, the more relativist the orientation tends to be. There seems to be some indication of a more elite orientation (in other words, holistic), the more experienced the practitioners. There appear to be diverse approaches to and varied bases of legitimacy for academic staff development across institutional types. Neoliberal, performative and managerial cultures seem to permeate the field, as illustrated by the stronger relativist framing from both leaders and practitioners. This suggests a need for more coherent and critical approaches to academic development work in South Africa.

SESSION 8 (B45): Using Specialization to enhance student success in a nursing programme

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Higher education continues to face the challenge of low success rates in many qualifications at the undergraduate level. Practitioners and stakeholders within and outside the higher education sector are leaving no stone unturned in their quest to get to the bottom of the challenge by providing well-thought-out interventions that will translate to student success. Due to historical and legacy issues, the sector enrolls students who are differently prepared for higher education studies. Almost all higher education institutions in South Africa and beyond have introduced different transition initiatives for easy adaptation from basic education to higher education to curtail low success rates. These transition initiatives avail simultaneous student support programs designed to unlock student potential by enhancing their mastery of academic discourses of their programs of study. Mastery of academic discourses is pivotal as these are gateways to educational success in higher education. The successful implementation of such noble initiatives, amongst others, entails ensuring that teaching and support staff are prepared adequately for their roles of finding pragmatic ways of helping undergraduate students to access, shape and change the powerful disciplinary knowledge. Success is partly defined by the extent to which students master and become members of the 'knowledge societies' in preparation for their working life in diverse 'knowledge economies'. This foregrounds the centrality of teaching as a science and art in the higher education landscape that unlocks diverse student potential. Within this context, this ongoing Siyaphumelela-funded pilot project examines how using the Specialization dimension of Legitimation Code theory would help foster a contextualised, systematic understanding of access and success in a nursing program at a university of technology in South Africa.

The Nursing program has been chosen because many nursing students are reported as not completing the qualification in the required minimum time. A mixed methods study was undertaken that used surveys, cohort analysis, semi-structured interviews and focus group interviews for data production. In terms of preliminary findings, this study reports on discoveries from focus group interviews with staff from the Nursing department that adopted a Design Thinking approach to redefine the problem of low student success rates. A thematic analysis of the interviews highlighted multiple factors that influenced student performance, such as challenges with academic literacies, psycho-social factors, and the influence of the habits of senior staff in clinical practice. Broadly, most of these factors revealed a lack of student agency that allowed external forces to influence them and negatively impact their success. An initial exploration of the curriculum revealed that there was limited focus on the development of this knower and on developing student agency. Although clinical practice provided an opportunity to observe other professional nurses, students were easily influenced by "bad practices" that they lacked the confidence to challenge.

SESSION 8 (B46): Applying Specialization and semantic waves in an academic literacy intervention

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Teaching students academic literacy must offer much more than a generic ‘study skills’ course. Literacy practices in different disciplines vary drastically. Although a generic course would be easier to deliver in a context of massification of higher education, it would be ineffective for empowering students to work with literacies in their own disciplines. This paper shows how Specialization was used to design and evaluate a new academic literary preparation program at Mangosuthu University of Technology (MUT).

Specialization provides crucial insights in reconceptualising an academic literacy programme. It helped us move away from a generic study skills model and showed us how to think about providing academic support that works with the knowledge-knower structures. We used Specialization to understand how different disciplines and fields work differently with knowledge.

We analysed study guides from a Chemistry and Business Administration module. Using Specialization, we saw these study guides are governed predominantly by knowledge codes, which emphasise the mastery of content knowledge. Our intervention then looked at the semantic waving to see how students are expected to build knowledge over time. The new academic literacy module begins by using an example of a phenomenon from the world with which students are familiar, described in ordinary, everyday language. It then moves into a more theoretical explanation of that phenomenon, abstracting it from the everyday world and ‘condenses’ meanings into more complex terminology. We have deliberately constructed semantic waves that support students as they develop mastery of the complex concepts necessary to move through the levels of the programme.

Empowering students through academic support initiatives can no longer be based on knowledge-blind ‘study skills’ where writing and literacy are perceived as an individual and cognitive skill outside their intellectual field. Such approaches focus on characteristic surface language forms, which are assumed to be transferable unproblematically from one context to the next. Addressing the problem in the ways discussed above has the potential to ensure that becoming academically literate is not rested on the shoulders of students but is enabled through supportive structures. Both disciplinary experts and academic support adepts can help students to engage with the questions of what can count as knowledge and knowing in different disciplines, and together, they can work out how these can be made available to students explicitly. We hope that through this intervention, we can begin to reconceptualise how students’ academic support is offered and, in the process, influence teaching and learning in the departments offering mainstream courses.

SESSION 8 (B47): Semantic tours as instructional design in computing education

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Computer Science is often viewed as an overly difficult and abstract subject at school, a perception which appears to prevent many students from taking it. While there appears to be broad agreement on the need for the inclusion of computing education within the core curriculum, what to teach and how to teach it remains heavily contested. The LCT lens of semantic tours offers a way for assessing the efficacy of different teaching methods, but it also potentially offers an approach for designing powerful learning paths and perhaps a way to overcome the overly abstract nature of the subject.

Semantic waving has been shown to be an effective pedagogical approach in computing education. Semantic waves, however, tend to track the strengthening or weakening of semantic gravity and semantic density together. Effective teaching of computer coding implies the scaffolding of students’ ability to bridge the gap between simple and complex, concrete and abstract. But what appears concrete and simple to an experienced coder may well be very abstract and complex to a novice, as concepts and skills have not yet effectively been

constellated. This is evident in the errors made and in the ability to bridge the zone of proximal development and consolidate and master concepts and skills over time. It makes common sense to argue that semantic gravity and density should be foregrounded at different moments. But is this so?

In this action research, we seek to answer two key questions using the lens of semantic tours. What does the lens of semantic tours tell us about how students' learning paths diverge from the instructional design? What can we learn about the use of semantic tours as deliberate instructional design?

In this study, grade 8 students were given two physical computing tasks designed to scaffold concepts and skills necessary for completing a major open-ended term project. Each scaffolding task was taught using a different pedagogical approach. The tasks were designed to try and help students develop their understanding of a range of computing concepts and skills. Both tasks rehearsed movements to weaken or strengthen semantic gravity at one moment and to strengthen or weaken semantic density at another. These lessons were analysed in terms of the semantic tours taken by the teacher and then compared with the tours taken by students in their submissions. This delivered useful insights into the ways in which students followed different learning paths and the extent to which flatlining was avoided.

The cohort was then set a Problem-Based Learning style task to investigate a serious issue facing the world and design and build a prototype that addresses the problem. Student code was analysed in terms of the semantic tours taken by different students. These tours were used to understand how semantic tours as conscious instructional design articulated with different teaching methods and, what this could tell us about the teaching and learning process and how effectively coding concepts and skills had been internalised.

SESSION 8 (B48): 'It's just complicated': Constellating cultural identity

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Cultural Identity is an integral aspect of how we exist in the world. However, it is a concept that can be fraught. One challenge is that individuals have different beliefs about what constitutes cultural identity and can also differ markedly in their awareness of their own cultural identities. Another issue associated with cultural identity is that it can be a site of struggle when cultures clash. In workplaces with large workforces the possibilities for cultural clashes can be amplified, and mechanisms for dealing with difference become critical.

In this paper, we engage with this issue through the example of two contrasting perspectives on cultural identity in an Australian University. In this particular university, there has been a recent focus on matters of Equity, Diversity and Inclusion (EDI) to improve representation and participation for all employees, regardless of differences in gender and sexual identity, ethnic and cultural background, disability, age, family/carer responsibilities, economic background, political affiliation, and religious belief. Part of this focus has been the provision of funding to encourage research into EDI. Reporting on preliminary findings from a university-funded cultural EDI project, this paper contributes to the discussion around diversity in cultural identity by investigating the differences between how a male research participant conscious of his privilege and a female research participant from a minority group talk about their cultural backgrounds. The differences in how these two participants talk about their cultural backgrounds bring to light important and unresolved issues around how cultural identity might help or hinder individuals working in the Academy in Australia.

In this paper, we show how constellations are built differently by the research participants around the concept of 'cultural background'. Beginning with the signifiers that cluster around the notion of 'cultural background', we demonstrate how one participant builds a simpler, more taken-for-granted constellation while the other builds a complex constellation, which she then charges axiologically, problematising the notion of 'cultural background'. The analysis focuses on two transcribed interviews taken from the corpus of 13 interviews in the larger research project. Participants were asked about their cultural background and how they perceived this as a benefit or a hindrance to their position at the university. During an initial thematic analysis, the two accounts of cultural background, which form the basis for this presentation, were chosen for closer detailed analysis due to the contrasting perspectives they present on the issue of 'cultural background'.

For this paper, analysis of the transcribed interview data uses the LCT dimension of Specialization to show how the participants identify themselves as belonging to particular social categories and their understanding of how others might categorise them. The LCT concept of constellations is then used to demonstrate how the participants cluster and charge these categorisations of themselves into axiological constellations around the notion of ‘cultural background’. To demonstrate how values become loaded differently into each participant’s constellations some linguistic analysis is also used. Analyses of ATTITUDE, a system which shows evaluation in language, and GRADUATION, a system which shows how evaluations are either ramped up or toned down, are used to identify how participants evaluated elements of cultural background and either emphasised or downplayed these evaluations. This analysis demonstrates how research participants accomplish axiological charging of particular clusters of meanings associated with ‘cultural background’. The associated clusters are then arranged around the central signifier of ‘cultural background’ to illustrate each research participant’s constellation.

Results demonstrate how the female participant from a minority ethnic group constructs cultural background as a highly problematic concept, fraught with uncertainty and blurred boundaries, while the male participant presents categories as largely taken-for-granted, only problematising the cluster around ‘ethnicity’. The findings suggest large disparities still exist in the institution with regard to both gender and ‘cultural background’. The confidence and economy with which the male, privileged participant expresses his cultural identity and the complex, messy and extended account given by the female from a minority group bring into stark contrast the experiences of different groups despite the lip service paid to Equity, Diversity and Inclusion at the university. Findings indicate that there is still extensive work to be done in this area to understand the problems before they can adequately be addressed.

SESSION 9 (B45): Exploring the development of the critical legal gaze in a Jurisprudence course

Olebogeng Mokgantshang

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This presentation is derived from ongoing doctoral research, a qualitative Critical Realist case study of the Jurisprudence course at Rhodes University, which explores the legitimation and integration of student voice in the curriculum. Student voice is defined in relation to two issues: students having access to powerful knowledge and challenging the nature of powerful knowledge. Jurisprudence can be defined as the philosophy of law. Document analysis and semi-structured interviews were used to gather data.

The South African Bachelor of Laws (LLB) standard foregrounds the importance of knowledge and appreciation of legal principles by graduates. By employing the concepts of epistemic and social relations to analyse data, the main finding from a knowledge perspective is that the course leans towards an elite code, with both specialised knowledge and knower dispositions equally valued. From a knower perspective, the findings are that students are valued as knowers when they possess critical literacies and that most students came into the field already having been immersed in critical literacies from an early age at home. These findings are interesting, given that the development of both knowledge and knowers is important in the development of legal professionals, and jurisprudential thought is at the centre of such development.

Mapping the social relations onto the social plane revealed that the lecturer develops critical literacies by immersing students in ways that enable them to relate to abstract concepts of the law. Moreover, the development of these critical literacies enables access to powerful knowledge and offers possibilities for transformation through students’ challenging the nature of powerful knowledge. The significance of this study arises from the need to transform the law curriculum and pedagogy for reasons including but not limited to that firstly, law as a field is grounded on the ability to take ownership of the knowledge and take a position of criticality. Secondly, most students in South African higher education come from impoverished backgrounds, and a law degree may be seen as a way out of poverty. Last and most importantly, the developments from the Fallist movements (i.e., #Rhodes Must Fall, #Fees Must Fall, etc) where students demanded decolonised, free quality education.

SESSION 9 (B46): An SFL and Semantics analysis of the cell in Biology secondary school texts

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Systemic Functional Linguistics (SFL) has carried out close dialogue with Legitimation Code Theory (LCT) for several years, providing a theoretical linguistic underpinning to LCT's sociological categories. Given that SFL is a meaning-based theory of language, the dialogue can sometimes become confusing, blurring distinctions across the theories. For example, in analysing texts along LCT's semantic dimension, the entry point for LCT is through semantic gravity or semantic density, where the analyst looks for instances of greater/lesser context independence of terms with high condensation of meaning. It can be tempting for the linguist, from a meaning-based approach, to follow this path of analysis. However, SFL has its own rich terminology for analysing the lexicogrammar and discourse semantics of texts, which provides a way in, to move from the language choices made by text producers to the LCT categories indexed by those choices.

In this paper, we report on an SFL-based analysis of the semantic dimension of LCT to elucidate differences in writing about biology, on the topic of cells, between students in the first year of obligatory secondary education in a bilingual program in Spain (ages 12-13) and students in the fourth and final year (ages 15-16), where students are learning through English. The notion of semantic gravity, as operationalised by the SFL concept of *presence*, is used to uncover the linguistic resources available to students of different ages to encode greater or lesser degrees of abstraction and explicitness in a second language. The notion of semantic density, as operationalised through the SFL concept of *mass*, is used to provide a window onto the resources for creating greater integration and condensation of meanings. Both presence and mass can be viewed through the textual, interpersonal and ideational metafunctional lenses of language, as theorised by SFL. Here, we analyse the textual and ideational linguistic representations of *presence* and *mass* as they are used by the students to express the specific cognitive discourse function (CDF) of *explore*, which involves speculating on past or future events, imagining a different situation than that which exists.

In a comparative cross-sectional analysis of presence and mass within the CDF *explore*, we used the UAM Corpustool to examine 100 texts from 12 schools, 50 from each year, first and fourth. The results show significant differences across the years; in terms of presence, the year four texts demonstrate less exophoric reference on the textual plane and more grammatical metaphor on the ideational. In LCT terms, this indicates weaker semantic gravity in Year 4.

With respect to results for mass, on the textual plane, students in Year 4 used more endophoric reference and did not present as many new entities in thematic position of the clause as their first-year counterparts did. Within the ideational metafunction, the Year 4 group used more terms imbued with the technicality of the field in writing about cells and fewer everyday encodings of phenomena than did the Year 1 students. In LCT terms, this indicates stronger semantic density in Year 4.

As would be expected, skills related to tasks requiring more abstract and higher-order thinking are developed throughout the students' compulsory schooling, thus accounting for the overall more frequent and discipline-specific negotiations of hypothetical meanings by year 4, including greater success in weaving academic meanings together with more everyday ones, particularly using *reference* and *abstraction*. At the same time, we observed inter-group variation in students' success in this regard, which points to a need for future teacher-researcher collaborations and pedagogical interventions targeted at making such cognitive and linguistic resources transparent and available to all students.

In terms of implications for LCT research, this first attempt at applying Martin's concepts of *mass* and *presence* to developmental texts in a bilingual educational context reveals the utility of the framework for identifying the precise linguistic formulations involved in learners' construal of more/less abstract and condensed scientific meanings. It also illuminates certain difficulties in translating between SFL and LCT since individual phrases may differ in their strength of *mass* and *presence* across the lexicogrammar; for example, within the nominal group, *reference*, depending on the type, can index either semantic density or semantic gravity. Thus, we believe the model's empirical validity would benefit from future collaborations among SFL and LCT scholars to outline more precise criteria for translating between the two frameworks.

SESSION 9 (B47): Autonomy and the challenges of interpreting a decolonial African Bible

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A decolonial approach to the Bible asks about the position of Biblical wisdom and authority and how it relates to all the possible knowledge, wisdom, and authority resources at the disposal of African readers and interpreters. If it is right that the Bible remains “meaningful, powerful and true” for African communities, what other resources should stand alongside the Bible to facilitate its interpretation in the future? What tools can interpreters use to unlock and apply the meaning of scriptural texts to new situations? Should Africans read and interpret the Bible in Africa through African lenses and read with the concerns of Africans at heart? Is it legitimate to ask whether biblical interpretation is helping to make the Bible relevant to the plight of contemporary Africans? Has it addressed issues which affect Africans at the grassroots, such as the plight of the poor, oppressed and suffering? These questions in the debate on deconstructing a more Eurocentric approach to biblical interpretation have emerged in recent decades. The paper will use the tools of Legitimation Code Theory and focus on the dimension of Autonomy.

In this paper, we propose to investigate

- Positional autonomy. As the relationship between knowledge of and about the Bible, its literature and context and other sources of meaning such as identity, culture, and the contemporary context, and
- Relational autonomy. As the relationship between the purpose of biblical interpretation for disciplinary purposes and interpretation of contextual and other purposes.

We will use Autonomy tours to illustrate the difference in the content of African interpretations aiming at a broadly decolonial contextual purpose and the bulk of Euro-American interpretations with a more inward purpose focussed on literature, text, and a broadly disciplinary context. With this in mind, we will test a translation device for the target concerns of the discipline of biblical studies by which non-target knowledge, like an ancient or modern context, is taken up, repurposed, and applied to a target purpose, such as interpreting a sacred text. The paper will analyse three groups of interpreters of the Bible in their enactment of this “target” for the discipline. Firstly, Jonathan Draper and Gerald West pioneered what they named the tripolar method of Contextual African Hermeneutics. A heuristic or template for interpretation, whereby they attempted to bring the concerns of the African context, the theological concerns of the interpreter and the biblical text into a creative “conversation.” Secondly, postcolonial feminist hermeneutics from Musa Dube and Madipoane Masenya (Ngwan’ a Mphahlele): These interpreters bring the concerns of African women into the centre as the target of the conversation. Finally, a new generation of decolonising African interpreters like Hulisani Ramantswana have centred the target on African heritage and tradition, inviting the Bible alongside as a conversation partner. For each of these scholars, I analyse how their Autonomy tours, in selected papers, move from the social context to the text, the reader and application to a new context and how these moves map onto the Autonomy plane. In the process, I show how they seek to shift the target and purpose of the discipline of biblical studies from the more inward literary textual focus to the African context.

SESSION 9 (B48): Constellations at play when new teachers join a union

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The decision to join a union carries immense significance for new teachers entering the education field. A union can offer them protection against perceived dangers, professional learning opportunities, and a means to align with powerful members of their school community. This abstract delves into. I use constellations to analyze the intricate web of factors that influence new teachers’ decision-making process when choosing whether to join a union, and if so, which one to join. By exploring their motivations, challenges, and potential benefits, we aim to uncover the interactions between new teachers and teacher unions, revealing the intricate relations between values, ideas, and existing practices within and outside these unions.

In this mixed-methods research, data was collected through a survey of 101 South African newly qualified teachers, and follow-up individual interviews with ten participants. The findings reveal a diverse range of motivations driving new teachers to consider joining a union. The analysis focuses on four constellations that capture the array of notions that impacted the reasoning of new teachers when choosing whether to associate with a teacher union in the South African context. Through a constellation analysis, I explore the reasoning of new teachers' stances towards unions, providing a valuable thinking tool to understand their viewpoints. I demonstrate four dominant constellations at play: Firstly, new teachers join unions as they perceive the role that unions play in protecting their rights. They see the unions as allies in improving working conditions and job security. Second, new teachers are attracted to the collective power and support offered by unions, assisting them in navigating the overwhelming nature of their new profession. Thirdly, some seek union membership as avenues for professional growth, mentorship, and networking, which prove particularly valuable for new teachers starting their careers. Fourthly, some seek unions that are aligned politically with their own ideals or that are affiliated with their own political organization. I show that within each constellation, there are numerous nodes and new teachers adopt different stances with positive or negative charging.

The factors influencing each new teacher's choice of a union are unique and diverse, with some placing more emphasis on epistemic relations while others prioritize social relations, and vice versa. For example, there are instances where NQTs make decisions in which they emphasize strong social relations, such as when they express that the union's campaign message 'captured' their heart. This variability in factors results in different decision-making processes, which may be influenced by knowledge codes, knower codes, relativist codes, and in certain cases, elite codes. The entrance of NQTs into an education system facing a crisis offers hope for transformative change. It is important to consider the diverse backgrounds of NQTs, as they consist of former student activists and those who were not, and how their positioning within the transformation agenda may influence union engagement and teaching professionalization. The future of teacher unions' activities and the commitment towards professionalizing teaching depends significantly on the factors that attract NQTs to different unions. Examining these decision-making processes, we can assess the alignment between NQTs' motivations and the recruitment strategies employed by teacher unions.

SESSION 10 (B45): Using Specialization to improve training for Learning and Teaching Assistants

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A long-standing problem for training Learning and Teaching Assistants is that most of the courses offered teach generic teaching skills far removed from the field of practice, such as Science and Engineering. Although generic courses can provide foundational knowledge that can be valuable in many situations, specialised courses can offer learning content and examples directly relevant to the tasks and challenges that learning assistants face. Consequently, they can immediately apply what they have learned in their roles, which can lead to enhanced job performance.

In a Liberal Arts, Science and Technology programme in a Netherlands university, we identified a need to make the learning assistant training closer to actual practice. This programme aims to develop creative, critically aware, and multidisciplinary engineers who can effectively engage with and address societal challenges. Although the programme utilises personal approaches to learning development underpinned by principles of self-directed learning and reflective practice, not enough has been done to examine what form the activities for learning assistant training should take.

Should the focus be on introducing foundational theories, principles, and facts within the disciplinary domains or developing the teaching assistants' personal attributes and practice-based learning experiences? How do we re-examine what is being offered and adapt it to the assistants' contexts?

This study sought to establish a solid foundation for improving assistant training provision to ensure that trainees could develop the necessary "gaze" (knowledge, dispositions, and competence) essential for fulfilling

their roles. Two central concepts from the Specialization dimension of the Legitimation Code Theory guided our exploration: Epistemic Relations (ER) - which focus on the relations between knowledge and its objects of study, and social relations (SR) - concerning the links between ways of knowing and the individuals who know. Epistemic relations foreground what learners know and can do, while social relations address who they are and how they see themselves.

Two teachers and three learning assistants participated in this study to evaluate and then re-design a 3-credit training program. Data sources included an initial survey and recorded session discussions. A Miro board was used to record and map teacher and learning assistant inputs. A translation device using “Specialization Codes” was used to identify and analyse occurrences of epistemic and social relation manifestations within the training materials and recorded discussions and to inform learning activity design decisions.

From the analysis, we can now prioritise tasks and activities requiring assistants to draw on specific disciplinary knowledge using knowledge codes. This is balanced with a selection of activities that accentuate personal experience and intuition so that there is acknowledgement and integration of personal ways of understanding using knower codes. By applying these codes, we gain a nuanced approach to training, allowing us to cater to the specific needs of the Sciences and Engineering disciplines while ensuring that teaching assistants bring their unique strengths and perspectives to the table. We see the importance of not only supporting the growth of knowledgeable individuals but also fostering a space where teaching assistants can develop as unique knowers. Ensuring a balance between knowledge and knower codes can help produce teaching assistants who are not only well-versed in their subject matter but also attuned to the diverse needs and backgrounds of the students they assist.

By recognising both what students know (epistemic relations) and who they are (social relations), we pave the way for a richer, more holistic teaching and learning environment. We have used the knowledge gained to develop hybrid and fully online courses for future learning and teaching assistant training.

SESSION 10 (B46): Seeking PCK in lesson observation reports: How LCT helps to reveal the invisible

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Observing the practice of experts is not easy for students learning a new, specialised practice. Learning a practice depends on students noticing how practitioners work and making sense of what is happening and why. Semantic density provides a powerful tool to analyse the complexities of what students see and the complexity in their interpretations. This study uses semantic density to analyse how student teachers observe and interpret complexity in classroom practices at specific points in their preservice preparation.

It is important for student teachers to notice how teachers enact a specialised form of teacher knowledge called pedagogical content knowledge (PCK) in their classroom teaching. Pedagogical Content Knowledge (PCK) has been described as the blending of knowledge of content and pedagogy. Despite being a cornerstone idea in teacher education, it is “fuzzy” and “difficult to understand” and has been elusive in empirical data. Yet, seeing how teachers make pedagogical choices about representing knowledge is fundamental to their professional learning.

The data for this study comes from observation reports written by five cohorts of teacher trainees from different South African universities. Participants were all in their final year of study, undertaking either a four-year Bachelor of Education or a one-year postgraduate certificate in education. Participants formed part of the 70 000 South African teacher trainees who have completed the Teacher Choices in Action as a part of their work-integrated learning. During the module, teacher trainees observe what teachers do (why and how) in several recorded lessons and write a report of their observations.

We used semantic density to explore the complexity with which participants analyse two different

components of PCK: (i) how teachers work with content knowledge and (ii) teachers' pedagogic choices. Using a translation device for semantic density, we could allocate a strength of semantic density for the complexity of students' descriptions of the lessons' content knowledge and a strength of semantic density for their interpretation of the teachers' pedagogy. Our analysis shows when trainee teachers kept their discussions of content and pedagogy separate and when they brought them into relation with one another. Our finding can be depicted on a two-dimensional plane of different types of semantic density.

Each research team member analysed a different cohort of students and will briefly share the results of their analysis. Overall, only about 15% of participants provided both complex observations of teachers' content and brought these in relation to a complex consideration of pedagogic choices. Participants more frequently commented on a lesson's content with the briefest mention of pedagogy or alternatively described the teacher's pedagogy with scant reference to the demands of the knowledge to be taught. This means that these participants did not focus their observations on how the teachers work to consider their pedagogy in relation to the knowledge to be taught.

To develop as thinking intentional practitioners themselves, students need to learn to see beyond the visible routines of practice and to notice how knowledge and context inform decision-making. The findings of this study suggest that despite knowing about PCK from their coursework, few pre-service teachers focused on the manifestations of PCK when observing lessons. The challenge to teacher educators is how to set up explicit tasks where pre-service teachers can recontextualise the concepts they learnt in the lessons they observe.

SESSION 10 (B47): Exploring multilingualism for epistemic access: Semantics and Autonomy as tools for analysing multilingual pedagogies

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Rhodes University, South Africa

This study investigates how students' primary languages have been used to facilitate epistemic access. Students' primary languages, including isiXhosa, isiZulu, SeSotho, SePedi and Afrikaans, which form the basis for communicating their lived experiences, are used as a scaffold to access academic learning through multilingualism. Drawing from the prevailing research and my experiences as a student and teacher in a classroom with students who predominantly speak English as a second language, I explore using languages other than English (LOTE) as a catalyst to mastering effective learning. This follows from the view that achieving critical thinking in the mother tongue is crucial for epistemic access and, consequently, for success in higher education for students who speak LOTE as their primary language. Semantics and Autonomy are used to analyse multilingual classroom engagements, and these dimensions of LCT are paired up with multilingualism as tools to facilitate epistemic access. Semantic waves were used to analyse classroom engagement and pedagogical processes, while semantic gravity and semantic density were applied to multilingual learning processes and unpacking discipline-specific concepts. Using Autonomy, the study drew on pathways to illustrate how students' languages and knowledge are used to make sense of new knowledge. The study design is action-research oriented as the data was collected from classroom recordings in the Extended Studies Programme classes at a South African university where most students speak English as a primary language. Follow-up interviews were also conducted with students to measure the effectiveness of multilingualism in the classroom. The paper underscores how LCT can be applied as a toolkit to analyse the enhancement of multilingualism in education and highlights the importance of students' own languages for learning. Whereas semantic waves illustrate the importance of students' primary languages for learning, we note that semantic gravity and semantic density can be used to trace shifts in LOTE. Yet another finding is that students can draw from their ontological outlooks to access new knowledge, which can be achieved using autonomy pathways. The paper thus highlights the importance of a systematic approach to teaching, which can culminate in achieving epistemic access.

SESSION 10 (B48): Constellating facts and values: A cosmological analysis of adjudication in China's judicial judgements

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In China, Judicial judgements are important in informing the parties involved and educating the public. The success in fulfilling the functions through judgements depends on the organising principles underlying the practice of judicial adjudication. In judicial judgements, what one knows is as important as how s/he feels about what s/he knows, which means both case facts and values from the evaluation of facts are essential. In judicial judgements, facts and values constellate around the defendants and their acts, and constellations of facts and values form.

This paper aims to reveal the organising principles (or cosmology) underlying constellations of facts and values by analysing Chinese judicial judgements using LCT cosmological analysis. Ten judicial judgements from cases concerning judge malfeasance are collected as data since, in such cases, the parties involved are all judicial professionals (the defendants are former judges), and thus, the judgements are of high quality and better reproduce the judicial practice due to supervision both from the prosecution and the defence.

Constellations are created through associating different ideas, practices or beliefs. The collocation/co-occurrence network in corpus linguistics is built from the association between different words or word groups. There are great similarities between LCT constellations and the collocation network/co-occurrence network. Based on preliminary pilot studies, constellations of facts and values in this study are constructed with the help of the co-occurrence networks.

On the one hand, for the judicial judgements from cases concerning judge malfeasance, the comparison of constellations of facts and values in judicial judgements with facts and values in legal provisions reveals that the legal provisions guide constructing constellations of facts as well as constellations of values. Thus, it can be said that law, including the general facts and the values in legal provisions, serves as shared pre-existing knowledge for all the participants in the judicial process.

On the other hand, a cosmology is conceptualised by “varying strengths of relations” in LCT codes. This paper further reveals the cosmology by varying the epistemic relations and the social relations in specialization codes. For this purpose, SFL discourse semantic systems – Ideation and Appraisal – are adopted as a language of description to enable the analysis of Specialization in the data of judicial judgements.

Regarding epistemic relations, Ideation analysis of representation of facts reveals types of processes with the defendants taking on different roles. Facts thus constructed are further projected through some process types, reflecting the procedures of judicial adjudication. What happened and how the happenings are found out are emphasised in judicial adjudication. To what extent the emphasis is achieved reflects the strengths of epistemic relations in other words, what facts and how they are ascertained serve as the basis in this section of judicial adjudication.

In terms of social relations, Appraisal analysis of values from evaluation of facts shows the ways and the sources of positive and negative attitudes toward the defendants and their acts adjust the social relations between the judicial adjudication and different knowers. This is achieved given the value system established in law. So, in terms of social relations, law as a criterion underlies judicial adjudication.

The preliminary analysis reveals that general facts and values in law play a guiding role in constellating specific case facts and values from evaluation of the facts, and that the judicial principle of “facts as the basis and law as criterion” is well practiced. Judge writers affiliate the public with the legal community by varying the epistemic relations and the social relations. This study expands the use of LCT in the judicial practice. Practically, this study can help improve the writing of judgements, especially regarding its educational and informational function.

SESSION 11 (B46): The absencing of knowers in instrumentalist conceptions of higher education

Sioux McKenna

Rhodes University, South Africa

This presentation uses the Specialization dimension to look at how utilitarian understandings of higher education serve to absent the knower in ethically problematic ways. The increasingly utilitarian understanding of higher education is evident in the ways that universities market themselves as industry training centres, promising future employment and, thereby, social mobility in an insecure and unjust world. It is hard to argue against such understandings given stark unemployment rates and massive social inequality, whereby attaining a higher education qualification is seen to be the only means of attaining a good life.

The context for this utilitarian conception of higher education is one of neoliberalism, whereby all activity is measured for its economic merit. Neoliberalism positions people as human capital, and education is perceived to be a powerful means of enhancing one's capital. Education thus becomes seen primarily as a means of acquiring the accreditation that can be exchanged for decent employment.

These conceptions are pervasive and incredibly difficult to challenge. Why would one study further if not to attain a better chance of employment in a world where wealth is unevenly distributed and most people must hustle to survive in the gig economy? Why would one invest enormous amounts of time and money if not to acquire the skills that might open the door to an interesting work life and prevent one from having to undertake mind-numbing work to survive?

But we must push back against such narrow conceptions because such understandings of higher education have had enormously negative effects on all curricula, the value of the university in society, and the futures of the graduates we produce.

This presentation argues that one of the many negative effects of the instrumentalist understanding of higher education is that there is insufficient consideration of the knower in the curriculum. While the dimension of specialisation within Legitimation Code Theory allows us to map both the knowery (SR+) and knowledgy (ER+) aspects of any curriculum and allows us to identify different codes for different fields of study, it also demands that we understand that there is always knowledge and always knowers. The instrumentalist focus on how knowledge will be applied in the workplace arguably absents the moral, ethical and philosophical aspects of the knowers.

Curriculating to cultivate the disposition of knowers as compassionate or critical or environmentally aware, for example, is seen to be too political a project, with too many deliberations as to what an appropriate disposition for the graduate knower might be. The technician focus on educating for the workplace not only makes such deliberations seem radically political but it also renders them irrelevant. There is little space to discuss how to cultivate dispositions if the legitimate focus of the curriculum is reduced to the development of high skilled labour for industry. The normative educational project of developing specialist knowers for society at large is thus largely absented by instrumentalist understandings of higher education.

This is not to say that there is no normative project embedded in the vocationalism that occurs in a curriculum developed entirely to produce human capital for the knowledge economy. There are, after all, always knowers as well as knowledge. But the cultivating of the knower becomes tacit, a part of the hidden curriculum. The unspoken knower is one who can perform, one who can contribute to the economy through their skilled actions and application of knowledge. The extent to which such a knower is aware of their responsibilities to people and the planet is neither interrogated nor deemed pertinent to the academic project.

In rare cases where the normative project is acknowledged, and attempts are made to specify its nature, this is typically done in the form of graduate attributes. But such graduate attributes are usually written in a language so neutral as to seem banal. Indeed, many of the graduate attributes have more to do with knowledge and skills (ER) than with being a particular kind of knower (SR).

This presentation is a tentative exploration of these issues. It posits a few consequences of instrumental

understandings of higher education by drawing on several previously published LCT studies that demonstrate a problematic absenting of knower disposition development across a range of curricula. It ends by briefly suggesting that the “existential threats” posed by AI and the extent to which higher education graduates contribute to the public bad rather than the public good are both examples of consequences of instrumentalist approaches.

SESSION 11 (B47): Moving from student to staff development: Reflections on recontextualisation

Steve Kirk

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Many studies now demonstrate the value and power of LCT enacted for educational practice. However, individual practitioners may face significant challenges when the particulars of their context change or evolve, forcing re-evaluation of enacted concepts and redesign of materials and pedagogy. This talk reflects on the shift from recontextualising semantic gravity with students to enacting a broader toolbox of LCT concepts for academic development work with disciplinary staff. I report on early successes and frustrations, insights gained from community conversations, and offer thoughts on the re-enactment process.

The talk centres around an initiative that aims to scaffold the success of underrepresented students at Durham University in the north of the United Kingdom. The collaborative project seeks to encourage embedding academic skills in educational practices across disciplines. The work, still very much in its embryonic stages, has two related streams: the development and piloting of a Postgraduate Certificate in Academic Practice and a case study project with the Department of Sport and Exercise Sciences. However, these early explorations are not without challenges and are proceeding with very limited staff resources.

The new work around academic skills with disciplinary staff has emerged from the university’s Access and Participation Plan, highlighting an attainment gap for certain underrepresented student groups. In response to the strategic call to close this attainment gap, colleagues collaborated to review, rethink and relaunch existing student-facing academic skills provision within a new Academic Skills Centre. The core offer remains direct delivery of classes on, for example, essay writing and academic discourse, assignment clinics and one-to-one writing consultations. The provision of academic skills work with staff represents a venture into new territory for the English for Academic Purposes and Foundation Programme colleagues involved and constitutes an addition to the existing academic staff development offer.

In this talk, I reflect firstly on lessons learned from enacting semantic gravity with students across disciplines to teach academic writing, as well as with teachers of English for Academic Purposes. I then report on early conceptual development of the academic development interventions for departmental staff. I draw on both Semantics and Specialization, together with influences from Systemic Functional Linguistics and Talmy’s model of genre. This development work is emerging in the space between repurposing my own student-facing practitioner experience and conversations with more expert AD practitioners working with LCT. I present early experiences from the chalkface, feedback from participants and collaborators, and reflect on lessons learned so far. Questions shaping my explorations include: What happens to the enactment of LCT concepts when you shift audiences? In what ways does the form of recontextualisation need to change? And how far must the tacit enactment of concepts become explicit or vice versa? The talk will thus be of interest to anyone who has experimented with enacting LCT concepts for educational practice.

SESSION 12 (Plenary): Understanding professional engineering practice: Insights from LCT

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University of Cape Town, South Africa

As with most professions, the relationship between education and professional practice is fraught. For more than 100 years reports on engineering education have bemoaned that graduates are underprepared for practice. Over the years, numerous educational interventions have been tried with varying success. More recently, there is a growing recognition that most academics have significant misconceptions about engineering practice that they carry into the classroom and, with it, an increasing interest in qualitative research studies in and of practice to build a better understanding of engineering practice and how these insights might better inform education reform. LCT brings a battery of conceptual tools to explore and describe what really matters in practice in ways that might help understand why these things don't transfer directly into the classroom.

There are questions of how social attributes and technical knowledge are intertwined in particular ways in practice that lend themselves to analysis using the Specialisation dimension. There are questions about how knowledge works in practice, which can be explored using the Semantics dimension, the Autonomy dimension, and the epistemic plane. In this group of four papers, we explore the different insights that different dimensions of LCT bring to bear on engineering practice. The intention is to analyse the same data set using different LCT tools to compare the findings across papers and build a rich picture of engineering practice.

Each paper will describe the key organising principles that a particular LCT dimension reveals and a critique of the data in terms of how useful it was for that tool. A panel discussion on a comparison between the results of each paper will follow this. Beyond contributing to a richer understanding of engineering practice, this study forms part of a pilot study for a larger collaborative study of engineering practice in South Africa. This study is particularly important to evaluate each tool's possibilities and assess the data needed for each analytical tool. For example, the data was initially collected with a particular focus on knowledge; the social relation is less easy to track. How much of the social relation can be seen? And what data would be needed to investigate the social relation in more detail?

Introduction:

A brief overview of the data will be presented before the findings of each study are presented:

Final-year civil engineering undergraduate students collected data for their capstone research projects. They consist of field notes from observations collected by the student researchers while participating in engineering work at two different engineering consultancies over a period of two weeks. The use of two datasets was to increase the pool of available data. The anonymised data was analysed by four researchers, each using a different LCT tool.

Paper 1:

Nathi Khoza (VUT) uses Specialization: The introduction of graduate attributes in engineering curricula highlights the increasing importance of social interaction. Legitimation Code Theory offers a conceptual framework to investigate the relationship between ER and SR. The challenge for this study is to link social interaction in practice to the relationship between knower attributes and knowledge as the basis of performance. (See Abstract: 'Gazes in Engineering Practice' submitted separately)

Paper 2:

Nicky Wolmarans (UCT) uses semantic gravity: There is a clear shift across a wide range of semantic gravity when engaging in engineering work. But always, the project is rooted in real contexts (very strong semantic gravity); the reasoning starts with very strong semantic gravity. While there are traces of abstract technical knowledge (very weak semantic gravity) in the reasoning, it tends to be implied rather than explicit. For example, the use of codes of practice plays an important mediating role between theory and context. Still, when pressed, engineers did indicate that they do draw implicitly on the underpinning theory. The knowledge that the practitioners valued most highly came from their experience of the practical realities of past projects (strong semantic gravity). But the most significant finding is how the semantic gravity of the trajectory of

reasoning shifted continually and in unpredictable paths, often bringing elements of both stronger and weaker semantic gravity together.

Paper 3:

Nicholas West (Wits) uses Autonomy: Practising engineers are called to draw on knowledge from different sources and brought to bear on the particular problem to be solved. This knowledge can be practical, procedural, or principled. The study shows how standardised industrial codes of practice hold a stronger positional and a stronger relational autonomy than they do in the academy. In other words, different sources of knowledge hold different positional autonomy depending on whether they are operationalised inside or outside the academy.

Paper 4:

Karin Wolff (SUN) uses the epistemic plane: The standard for an engineering graduate is intended to enable graduates to solve complex problems in unfamiliar contexts. Previous research has highlighted that educators tend to focus on fundamental principles and known phenomena (what) in relation to more fixed approaches (how), while industry has increasingly been calling for more open-ended, contextualised problem-solving competencies. The epistemic plane is useful for illustrating the movement between the 'what' and 'how' of any particular knowledge practice, giving us four different insight quadrants, which experienced engineering practitioners navigate iteratively. The data demonstrates ongoing shifts predominantly between doctrinal and situational insights as standard principles and procedures are modified in relation to specific requirements.

Panel discussion and conclusion:

The panel concludes with a discussion between authors that compares the results from the different analyses towards building a richer picture of engineering practice and an illustration of the power of LCT.

SESSION 14 (B45): Preparing insurance brokers: Insights through university coursework and on-the-job training

Agata MacGregor

University of the Witwatersrand, South Africa

The South African insurance industry is currently experiencing a critical skills shortage as older skilled workers retire, and newer employees take over their roles without the same level of skill or knowledge. The skills gap is difficult to address because the bodies of knowledge needed to prepare insurance brokers is highly contested. The Epistemic plane provides the tools to compare and consider what insights are being offered through on the job learning when compared to those offered through university coursework. The analysis aims to scrutinise the affordances of each and see how each fits the needs of the industry. This study explores *what* type of knowledge is being valued together with *how* insurance practitioners are expected to engage with that knowledge.

The data analysed comes from two modules offered on life insurance. One forms part of a three-year degree offered by a university, whereas the other is a self-study module available to working insurance brokers, should they require upskilling on that topic. I use the epistemic plane from the Specialisation dimension to evaluate how specialised and procedural knowledge are being valued to teach life insurance. Unveiling the type of knowledge being emphasised provides insights into what is needed for success in the industry.

Preliminary findings suggest the university module predominantly emphasises specialised and procedural knowledge that is directly related to the topic being taught. Whereas the industry module places more emphasis on general knowledge more broadly applicable to all of insurance, together with general procedures applicable more broadly within the insurance industry. Highlighting disparities in the type of knowledge being emphasised can initiate conversations about the educational needs of the industry and possible solutions to the skills shortage.

SESSION 14 (B46): Semantic waves for helping teachers teach science to second language students

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Students learning science have difficulty learning to do, talk and write scientifically. For students learning in a different language, these challenges are multiplied as they are learning both new scientific concepts and using the language of instruction. When teachers don't see knowledge and language as fundamentally connected, they may not provide the necessary language support in their lessons. This study shows how semantic waves have helped science teachers build both students' scientific understandings and help them acquire the subject discourse together.

A research and professional development project called "Semantic Waves and Linguistic Snails" was done with middle school teachers in Denmark. Teachers from three different schools worked collaboratively with teacher-educators to plan and reflect on their science lessons. Data from the project includes video of classroom observations, voice-recorded interviews and planning/reflection meetings with teachers before, during and after interventions, as well as group interviews with students after each intervention.

The shifting of semantic gravity provided a common framework for discussing lessons in a principled way. By 'roughly' analysing excerpts from the teachers' own science lessons together with the involved teacher-educators, the participating teachers became aware of the different kinds of knowledge (using three strengths of semantic gravity) with which they and their students engage in various activities throughout a unit of study. The concept of semantic waves turned out to be immediately useful for helping teachers see the differences between the ostensibly learned knowledge of doing science (i.e., when engaging in hands-on activities and doing experiments) and the scientific concepts that inform principled knowledge in textbooks.

Developing teachers' understanding of semantic waves helped them to determine how to plan shifts with science knowledge in their lessons. The 'rough' semantic gravity analyses also provided the teachers with evidence for the need to include a more explicit focus on scientific language and to highlight for their students how scientific language differs from everyday language, allowing them to plan activities throughout their science lessons on a macro-scaffolding level. Using the systemic functional linguistics pedagogic model known in Denmark as the Snail Model (the register-model of language) as a point of departure, the teachers were inspired to include meaningful science-language lessons, allowing their students to become aware of and practice using scientific language. As such, the rough semantic gravity analyses lay the foundation for teachers to redesign their lesson plans to support students with more written language work while also helping them to support students' scientific language production in group activities and classroom conversations.

Findings suggest that introducing teachers to semantic waves while also helping them develop knowledge about language allows them to better support their students in making shifts 'up the wave'. Interview data with students and teachers suggest that integrating language work in middle-school science lessons supports students' development of scientific understandings and allows them to 'sound smart'. Semantic waves proved to be a powerful tool for increasing teachers' awareness of the epistemology of science, making it clearer for them why doing an experiment is often insufficient in ensuring students' ability to demonstrate scientific understandings. With semantic waves, the participating teachers developed a mutual language for communicating what knowledge is valued in science while providing them with new perspectives on teaching middle-school science lessons. This, combined with growing knowledge of a functional model of language, provides ideas for instructional approaches integrating reading and writing activities in science lessons without losing focus on the content knowledge being taught. The results from the project will be a collection of inspirational cases and examples of activities that demonstrate how integrating a focus on 'science language' in middle-school science lessons serves to develop all students' scientific understandings.

SESSION 14 (B47): Clarifying bases of achievement in content and language integrated learning

Leah Tompkins

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When the bases of achievement in educational contexts are unclear or implicit, those students who are already familiar with them (e.g., due to their upbringing or previous educational experiences) are better positioned to succeed, thus potentially privileging certain social groups of learners over others. Students with different ideas from their teachers about what matters for achievement may engage with subject content in devalued ways, in which case academic, social and psychological consequences may follow.

One educational initiative where unclear assessment criteria have been identified is that of Content and Language Integrated Learning, a popular approach to mainstream education in Europe. In this approach, non-linguistic subjects are taught through an additional language, mainly English. Researchers observe a lack of consensus among educators regarding how and when to integrate content and language in pedagogical and assessment tasks. This leads some educators to establish subjective criteria and place inconsistent emphasis on linguistic aspects in their evaluations of learners. In this scenario, the present study turns to the Specialization dimension of Legitimation Code Theory to compare teachers' and students' understandings of the bases of achievement in a Content and Language Integrated Learning program in public Spanish secondary schools to pinpoint where they may diverge and, in the longer term, to help establish more transparent and better-integrated assessment criteria.

To this end, and as part of a larger study, Likert-type questionnaire items measuring participants' perceptions of the relative strengths of epistemic relations and social relations in diverse subject areas were adapted to reflect three subjects taught through English in year 10 in Spain: English/Literacy, Biology/Geology, and History/Geography. The items, originally designed by Maton and Howard, were translated into Spanish and exemplified to facilitate their comprehension by teachers and students in this context. They ask respondents to evaluate the importance of four aspects of knowledge practices (representing subjective relations, interactional relations, ontic relations and discursive relations) for success in a given subject, on a scale from "Not very important" (1) to "Very important" (4). They appear in longer questionnaires designed for each group: students were asked about all three subjects (in separate questions), and teachers were asked only about the subject they taught. In subsequent short-response items, students were also asked to justify their selections briefly, and teachers were asked to describe their evaluation practices. The questionnaires were administered to 91 teachers and 775 students in year 10 in 20 high schools across Spain.

Responses to the Likert-type items were then analysed by (1) comparing teachers' and students' median scores for each aspect in each subject, and (2) determining the specialization code of each subject as perceived by students and teachers. Specialisation codes were identified by calculating the mean score of epistemic relations (comprising ontic relations and discursive relations) and social relations (comprising subjective relations and interactional relations) according to each group of participants and then subtracting it from their "grand mean" calculated across subject areas.

Results show that, across subject areas, students emphasised ontic relations ("learning content, theory and concepts") to a greater extent than teachers, while teachers emphasised discursive relations ("learning skills and procedures") to a greater extent than students, as well as interactional relations ("learning to think like experts by interacting with them or their ideas") in History and Biology. Both observations are reflected in participants' short responses, where many students highlighted the importance of memorising information, and many teachers referenced "task-based," "participative", and "cooperative" learning, as well as the cultivation of dispositions such as "creativity" and "teamwork ability." These differences in the strength of each relation led to different specialization codes being perceived by each group for each subject: English was an elite code for students but a knower code for teachers, History was a relativist code for students but a knowledge/elite code for teachers, and Biology was a knowledge code for students but a relativist code for teachers. Together, the findings suggest some degree of "code clash" between students and teachers in these subjects. Potential reasons are manifold but include two possibilities for further research: (1) that teachers' awareness of the strong emphasis on "task-based" and "cooperative" learning in the literature on methodology for Content and Language Integrated Learning (which would emphasise discursive relations and

interactional relations more than ontic relations) is not yet being translated into classroom practices perceived by students “on the ground,” and (2) that students place greater value on the more “knowledge code” linguistic aspects of demonstrating content knowledge in the target language, such as accurate use of subject-specific terminology.

SESSION 14 (B48): Building diplomatic knowledge in Zimbabwean news articles

Emaculate Mvundura

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In news coverage, different publications are concerned with the types of values they communicate to their readership, and the most striking feature is how news articles report and evaluate the same story differently. Media coverage of Zimbabwe and the UK’s diplomatic relations needs a closer examination, considering the relationship between the two countries, which has been strained, with the UK implementing some sanctions against the Zimbabwean government. LCT Semantics can be enacted to describe what is causing disagreements and souring diplomatic relations between Zimbabwe and the UK.

LCT is used to explore the meanings beyond the surface and understand the language used to portray diplomatic relations between countries or individuals. This paper examines how Zimbabwe and the UK are positioned in one sample article from *The Standard*, an influential independently-owned Zimbabwean newspaper, and how the article contributes to readers’ knowledge about Zimbabwe and the UK’s diplomatic ties. The article was selected as a representative example from a corpus of articles on diplomatic relations between Zimbabwe and the UK between 2016 and 2020.

The article, “Allies tell [Zimbabwean president] Mnangagwa reforms only choice”, was analysed to answer the question, How does this article contribute to readers’ knowledge about Zimbabwe and the UK’s diplomatic relations? The analysis helps us understand how news articles position countries and individuals in relation to particular sources or targets to construe meanings. This has implications for debates and discussions in the Zimbabwean public sphere about government policies and democracy.

I enact the concept of constellations to describe how diplomatic knowledge is reproduced in the news article to establish Zimbabwe and the United Kingdom’s positioning in relation to each other. This study employs LCT and Systemic Functional Linguistics (SFL) to analyse the article. The paper analyses axiological constellations about how the media depicts the UK and Zimbabwe bilateral relations. The use of language in the news article produces positions regarding Zimbabwe and the United Kingdom’s involvement in normalising or ruining their bilateral relations. The main aim of using SFL and LCT is to show how linguistic resources are utilised in knowledge-building in the article. I consider how Attitude, Graduation and Engagement from the Appraisal framework are expressed to show how these resources interact with the formation of constellations in the news article.

I describe five sets of constellations built by different sources in the news article: the UK government, the US Treasury Department, a group of opposition politicians named the Political Actors’ Dialogue (POLAD), the Zimbabwean government spokesperson Nick Mangwana and *The Standard*. The multiple constellations help us understand what is happening between the two countries and how they are positioned concerning their relations.

The constellations also help map the representations of the UK and Zimbabwe regarding their stances on sanctions, human rights violations and Zimbabwe’s reform agenda.

SFL explains how the language choices made by the news reporter function to make meanings, and LCT describes the underlying principles of the knowledge built into this article. The significant constellations show divisions regarding alignment and affiliation. The analysis also reveals that the Zimbabwean government is unfavourably positioned by the US Treasury Department, the UK and the POLAD Report because of human rights violations and non-implementation of reforms. It shows that the US Treasury Department, Britain’s Defence Minister Earl Howe and POLAD all agree that Zimbabwe must implement reforms before the UK reconsiders its sanctions against the country. In contrast, Mangwana favourably positions the government of

Zimbabwe and aligns with the idea of removing sanctions against Zimbabwe. Even though POLAD is a group of opposition politicians, it was established by Mnangagwa to assist in solving Zimbabwe's difficulties and so is broadly seen as aligning with him. However, POLAD disagrees with the Zimbabwean government regarding the speed of the reforms' progression. POLAD criticises the non-implementation of reforms while notifying readers of the errors committed by the Zimbabwean government.

The study is significant because it is an example of the analysis of a knowledge practice containing multiple sets of constellations positioned in relation to each other in complex ways. The Semantic dimension is used to probe the constellations to establish the nature of the relationship shared between the two countries. This has implications for debates and discussions in the Zimbabwean public sphere about government policies and democracy. My analysis could assist ordinary citizens in comprehending the diplomatic relations between Zimbabwe and the UK and facilitate a constructive dialogue to influence the policies of the Zimbabwean government through activism and democratic participation. Citizens' participation in these discussions equips them to contribute to public discourse on the country's relations.

SESSION 15 (B45): Tracing specialization codes of English language teaching professionals in Mexico

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Determining what it takes to be an English Language Teacher is an issue of constant debate. Generally, when explaining the profession, the qualities and abilities of the teacher, as well as their implicit bodies of knowledge, are put upfront, leaving aside other underlying practices essential to becoming a successful professional. Although research on English Language teacher training does shed light on a number of effective teacher strategies and different types of teachers' knowledge, the school context, the social space, and the differing idiosyncrasies in the ELT field have received little attention. Understanding those aspects is relevant as this can offer insights into how English language teachers are professionally perceived and how this can impact the design of teacher training programs.

This research aims to explore the perspectives and practices of English Language Teacher Trainers that are valuable in the English Language Teaching (ELT) field. The following questions address this issue: a) how do teacher trainers describe their profession in the ELT field? b) what qualities are necessary in order to be an English Language Teacher? and c) what specialised knowledge is valuable and legitimate in this field? The Specialization dimension was helpful to shed light on the knowledge and dispositions that teacher trainers hold. Plotting the diversity of views into the specialization plane made it possible to trace the configuration of both the English Language profession as well as the English Language professional. The participants in this study are nine teacher trainers from a BA program in ELT in a public university in Central Mexico with 8 to 30 years of experience. Additionally, they have worked in a variety of contexts –urban, public, private – and diverse educational levels that represent the educational system in Mexico –basic, middle and higher education. Participants were interviewed to provide accounts of their experiences in the field and their perspectives on what being an English Language Teacher means. Following a grounded theory approach, a thematic analysis was done to identify knowledge practices. Then, a Specialization translation device was created to identify the organising principles of knowledge practices underlying this disciplinary field. The identified themes were assigned a strength of epistemic relations (ER) or social relations (SR), whose intersection resulted in particular specialization codes. The Specialization dimension also allowed us to see data and teachers' dispositions relationally. When looking at findings globally, the ELT field is portrayed as a practical, homogeneous and robust field whose epistemological base is composed of disciplines such as psychology, pedagogy and linguistics, while the English professional is portrayed as a subject specialist, collaborative, reflexive and ethically and socially responsible. However, when looking at participants' specialization planes individually, the epistemological base of the ELT field diversifies while the dispositions of the English language professional are packed together. This means that different bodies of knowledge underpin teacher trainers' practices, but there seems to be an agreement on the dispositions an ELT professional should have. The results have implications for teacher training programs. We argue that recognising these practices and understanding how they manifest and interact in a critical social space such as the ELT field is a first step to grappling with the 'rules of the game' of the teaching profession.

SESSION 15 (B46): Gravitating from the abstract to formulating contextual understanding of Jurisprudence concepts

Olebogeng Mokgantshang

Walter Sisulu University, South Africa

Curriculum transformation is belated in South African higher education, especially in legal studies. This is more so after the Rhodes Must Fall (#RMF) movement, which, from a decolonial perspective, was a movement against the colonisation of the mind, which continues to be present in the classroom. Through this movement and one of its mutations, i.e., the Fees Must Fall (#FMF), students illuminated the need to rethink curriculum by demanding decolonised, free, quality education. Proponents of student voice in South African higher education assert that it offers opportunities to humanise pedagogy and improve student success, quality, and teaching and learning. This presentation reports findings from ongoing doctoral research that investigates the legitimation and integration of student voice in the Jurisprudence curriculum at Rhodes University. The research focuses on how pedagogical practices in the Jurisprudence course work to include or exclude student voice. Jurisprudence can be defined as the philosophy of law, and the purpose of the Jurisprudence course at Rhodes University is to provide students with a basic grounding in the central themes of legal philosophy. Legitimation Code Theory's (LCT) concept of semantic gravity was used to analyse curriculum documents and lecturer and student interviews.

The findings are that there is an attempt to enable access to knowledge by the lecturer by strengthening the semantic gravity of the Jurisprudence curriculum, a Critical Realist approach to teaching enables effective ways to provide access to knowledge, and lastly, that student voice is indeed legitimated, and integrated, but it is seen more as students being critical about the law and legal systems but less about students making sense of powerful knowledge as well as challenging the nature of powerful knowledge. These findings and the coding process were influenced by the natural structure of the Jurisprudence course, which follows a natural strengthening of semantic gravity starting with discussing abstract concepts and then towards application of the concepts in cases to students formulating their contextual knowledge of Jurisprudence.

The main argument is that student voice in Jurisprudence and the LLB must be inclusive of students challenging the law, which is the content of the curriculum and the curriculum itself. Much as the pedagogical shifts in the Jurisprudence curriculum intended to encourage students to take a position of criticality, currently, there's less of this, if any at all, on the curriculum aspect, and a result could be two possibilities: there is an absence of student criticality about the curriculum, and/or there's resistance to bringing student criticality about the curriculum. Data shows that it is more the former than the latter, but both were considered comprehensively. Therefore, cumulative knowledge building must include the lecturer making this distinction explicit to students, calling for their voice on both aspects. From the analysis, the strengthening and weakening of semantic gravity prove to be one effective way that the lecturer can use to achieve this explicitness and the integration of their voice.

SESSION 15 (B47): Bridging the gap between theory and practice: What LCT brings to academic literacies

Kirstin Wilmot

Rhodes University, South Africa

Since the emergence of New Literacy Studies in the 1990s, there has been growing recognition that academic literacies – that is, reading and writing in higher education – are social practices. In this understanding, academic writing cannot be extricated from the disciplinary context in which it is produced, as it is through writing that disciplinary norms and values are expressed, replicated and sustained. Academic writing, then, is more than just a matter of English language proficiency; it is integrally connected to disciplinary knowledge-building.

The academic literacies approach, stemming from New Literacy Studies, has been influential in the UK, South Africa and Australasia since the 1990s. It has provided practitioners in higher education with a sociocultural understanding of literacies that pushes back against autonomous models that privilege English language

teaching to at-risk students. Conceptually, therefore, it has offered a powerful lens through which to reconceptualise academic development in relation to disciplinary knowledge. In practice, however, it has been critiqued for its lack of pedagogical application, particularly in resource-poor contexts. This paper shows how LCT can be used to bridge this gap between theory and practice.

Due to its social realist ontological positioning, as well as its capacity for creating practical tools, LCT is well-placed to expand the conceptual work of the academic literacies approach. To showcase how this paper enacts concepts from the dimension of Specialization in an analysis of doctoral writing to reveal the nature of disciplinary knowledge and associated ways of knowing that are enacted in writing. Due to their size, the analysis focuses on one aspect of the doctoral dissertation: establishing a rationale for the study.

In order to offer a nuanced understanding of disciplinary knowledge, the 4K model is used to analytically distinguish a more delicate set of relations within epistemic relations and social relations. As such, ontic relations and discursive relations are used to analyse different ways of building a rationale about a new object of study (e.g., a topic that has never been studied before) or a new approach to studying an object (e.g., a particular theoretical lens or methodological tool). Likewise, interactional relations and subjective relations are used to analyse the ways in which authors establish a rationale based on legitimate ways of knowing or acting (e.g., how one has come to know an object) or based on knower attributes (e.g., how one's race, gender, age etc. have afforded them legitimacy as knowers of a topic).

By analysing the texts with the 4K model, the analysis reveals what the socio-cultural nature of writing looks like in practical terms. It thus provides the practical insight that the academic literacies approach fails to offer. In doing so, the paper shows how LCT contributes useful, practical insights into how writing pedagogy can be more effectively developed. It therefore argues that there is value in bringing these two frameworks together when conceptualising academic literacy support interventions, as without the practical insight LCT affords, academic literacies approaches will remain a conceptual ideal.

The findings of the paper are significant as they offer the field of higher education studies and academic development, more specifically, a more conceptually sophisticated and practically useful understanding of the socio-cultural nature of academic writing. It also demonstrates how LCT can effectively extend and enhance existing conceptual frameworks in the field.

SESSION 15 (B48): Talking teaching and educational reform: Constellating how new teachers interpret lessons

Dale Langsford

University of the Witwatersrand, South Africa

When the schooling system is in crisis, it is important that new teachers do not merely reproduce the status quo. The challenge for teacher educators is to prepare students who can recognise what teachers are doing, and why they are doing it one way rather than another. Ideally, they should have the critical sensibilities to see alternative, possibly more effective options. Existing research suggests that pedagogically focused conversation – done right – can potentially improve teachers' practices. In this presentation, I use constellation analysis to investigate what pedagogically focused conversations reveal how preservice teachers observe and evaluate the lessons of other teachers. However, to enable these conversations, trainee teachers need a shared complex, conceptual language to have deep, meaningful discussions about practice.

Participants in this study are two groups of students who had recently completed their initial teaching qualification. Four participants had just completed a full-time 4-year bachelor's degree in teaching, while the other three had completed a teaching qualification through distance learning while working as an assistant teacher at a school. Participants watched the recording of a lesson, examined the teachers' planning documentation and resources, and then were invited to discuss the lesson in a semi-structured focus group discussion.

I used constellation analysis to cluster the focus of their discussions into themes, and then I allocated strengths of semantic density to each of the constellations. When more formal, teaching-specific ideas are networked with each other, the semantic density is relatively stronger. The semantic density is relatively weaker when more everyday ideas are presented as discrete, atomistic statements. Comparison of the two groups' conversation constellations shows that one group's conversation formed a more complex, integrated network of practice whereas the other group's discussion formed a series of disconnected nodes. My findings suggest that preservice teachers who can draw on a shared conceptual language are better able to describe teachers' classroom practices and discuss salient aspects of where the lesson could be revised or developed. Although both groups presumably had access to sets of concepts from their teacher preparation programme, those in the school were less versed in participating in pedagogically focused discussions. This may be a result of teachers' tendency to perform practice rather than talk about it analytically. Those participants who had come through a full-time, contact programme demonstrated both access to shared conceptual language, as well as the ability to recruit relevant concepts and use it to interpret and appraise the lesson they had developed.

The experiences of delivering teacher education through the pandemic has led to increased calls for online or hybrid learning as an effective and efficient way to prepare teachers for practice. However, the findings of my study raise a caution. The importance of preservice teachers developing the capacity and critical sensibilities required to analyse and appraise teaching gained through lectures, tutorial interactions in a contact programme should not be underestimated. The findings suggest that access to teaching- and learning-specific ideas, theories, and principles – a conceptual toolkit – enables them to imagine more effective, responsive, and just teaching practices. This creates conditions of possibility for transforming practice in a schooling system in crisis.

SESSION 16 (B45): Unleashing silenced voices: Singing in tune as a cultivated gaze

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How do we teach in a field when people believe that what matters for achievement are naturally occurring talents? In this study, we use LCT concepts to challenge a pervasive view related to music: the belief that singing in tune is innate. The underlying assumption is that if a skill is considered innate, then it is often perceived as unteachable. Conversely, if a skill is seen as acquirable through instruction and practice, then it holds the potential for a broader audience to enjoy and excel in it. This distinction is crucial in reshaping pedagogical approaches and expanding access to musical practices for a wider population.

This belief is enacted in singing auditions that restrict access to choral practice. Drawing upon the Specialization dimension, we present an analysis of speeches and practices related to vocal tuning and selecting members for school choirs. We argue that learning to sing in tune can be attained through music education, facing this as a matter of knower cultivation.

We first examine pedagogical instructions published in a government-issued guide for teachers' practices used in Brazil between 1925 and 1961. These instructions fostered a collective belief that persists and continues to influence teachers who work with school choirs. Additionally, we conducted interviews with nine current school choir teachers to explore their beliefs and practices regarding vocal tuning and selection.

Our findings reveal that their practices in music education are dominated by a knower code. They are based on stronger subjective relations that limit who can be regarded as a legitimate knower. Historically, musical practice was exclusively offered to those believed to be "born in tune", resulting in limited access. Presently, vocal selection practices continue, implicitly or explicitly, with children who are deemed to be out-of-tune being silenced by excluding them from participating in voice training opportunities. What is particularly notable is the dearth of knowledge concerning the musical-vocal development of children, which hampers the teacher's ability to perceive vocal tuning as an attainable skill that can be cultivated through pedagogical interventions.

Our study shows that teacher practices are still influenced by long-standing beliefs that have been reinforced by institutional conditions. Consequently, many individuals are deprived of their right to music education and effective participation in musical practices. LCT tools offer valuable insights that empower us to show that singing out of tune is not a predetermined destiny but rather a skill that can be cultivated. Emphasising this particular kind of knower cultivation becomes crucial for democratising access to choral practice.

SESSION 16 (B46): Observing literacy teaching: A Semantics comparison of what student teachers notice

Lindy James

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South Africa is facing a literacy crisis. The Progress in International Reading Literacy Study 2021 found that 81% of the country's 10-year-olds cannot read for meaning. If students do not acquire literacy competence in elementary grades, the rest of their schooling will be adversely affected.

Future teachers must do more than replicate ineffective practices to improve literacy outcomes in South African schools. They need to notice and interpret the literacy pedagogies used and be able to think about their effectiveness. In this paper, I will show how Semantics provides conceptual and analytic tools to reveal the shifts in how teacher trainees at different stages of a teacher preparation programme notice and interpret the literacy pedagogies that teachers use.

This study looks at different cohorts of South African elementary school pre-service teachers at the start and end of a four-year teaching degree. All participants in this study watched and commented on the same recorded lesson. The data is drawn from Lesson Observation Reports that students engaging with the Teacher Choices in Action module have produced to reflect on observed practice.

In this study, I have employed a two-layered analytical approach. First, I conducted a content (thematic) analysis to examine the aspects of the lesson that students were describing, evaluating, or interpreting. Second, I utilised tools from the Semantics dimension of LCT to code the data.

I am using the concept of semantic density to compare the complexity of students' observations. Teacher trainees enact stronger semantic density when they connect their lesson observations, interpretations and evaluations to broader theories, frameworks, strategies, and pedagogies related to teaching and developing literacy skills. This is what should (ideally) be reflected in the final-year observation reports. Conversely, weaker semantic density is enacted when simple, everyday observations are made with little to no interpretation or connection to theory.

This study will empirically establish the extent to which South African teacher education programmes are achieving the aim of producing knowledgeable, thinking practitioners who will enact effective literacy pedagogies once they qualify. It should reveal whether, by their final year of study, teacher trainees have a significantly different gaze to that of first-year trainees when observing practice in terms of what they find significant and how they draw on specialised insights to interpret their observations.

SESSION 16 (B47): Cultivating critical citizens through English literary studies

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What is it about studying literature that has the potential to cultivate critical citizens?

With the world facing major challenges such as economic inequality, food insecurity, educational inequality, and the global climate crisis, it is important to equip higher education students with a socially oriented criticality and not merely to provide them with the skills needed for a specific workplace. Arguments for preserving arts and humanities programmes in universities emphasise that these disciplines play an important role in developing the critical thinkers necessary for a healthy democratic society. This paper reflects on issues surrounding the development of socially oriented critical thinkers through humanities curricula. It does so by looking at three years of an undergraduate English literature curriculum at a mega-distance university in South Africa.

English literary studies is usually classified as a cultivated knower code, meaning that students are expected to take on a specific disposition in order to become legitimate participants in the field. This requires an extended period of inculcation into disciplinary practices. Previous LCT studies have looked at first-year undergraduate English literary studies courses. However, I employed the LCT dimension of Specialisation to look at knower development across three years of undergraduate study with the aim of furthering our understanding of the valued 'literary gaze' that must be cultivated systematically over time. The data analysed included curriculum documents and tuition material for the six literature modules that made up the curriculum, as well as interviews with academic staff.

The data analysis revealed two kinds of discursive lenses that were being valued in the curriculum. I found a cultivated gaze with a converging discursive lens that is concerned with developing a better understanding of the object of study (in this case, a literary text, oeuvre and/or genre) and a cultivated gaze with a diverging discursive lens that is concerned with understanding and critiquing the object of study in relation to broader social and ideological issues. In the context under study, the converging discursive lens is demonstrated through insightful commentary on how specific language and literary features create certain meanings or effects in literary texts. This lens develops through immersion in examples of this kind of reading being enacted. Examples can take the form of lecturers modelling close reading during lectures, model essays and/or immersion in scholarly writing that performs close readings of literary texts. The diverging discursive lens is demonstrated by considering texts in relation to ideological and social issues. This often entails reading literary texts through the lenses of social theories such as feminism or decoloniality. The diverging discursive lens is inculcated through immersion in models of these kinds of readings of texts as well as immersion in a social theory until you are able to see the literary texts (and the world beyond it) through its set of lenses. It is this diverging discursive lens that seems to have the potential to fulfil ideals regarding the value of arts and humanities programmes in cultivating critical citizens mentioned earlier.

Interviews with academics suggested that many of them viewed the 'ideal literary knower' as someone who can integrate these two kinds of discursive lenses into their readings of literary texts. In this paper, I reflect on the implications of my findings for knower building.

SESSION 16 (B48): Using constellations to understand political stances:

Positioning SA's Democratic Alliance

Ian Siebörger

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LCT can be used to facilitate civil democratic discussions at a time when politicians and citizens often misunderstand and 'talk past' each other. In this paper, I demonstrate the potential of constellation analysis to show how politicians position themselves in relation to others in the 'field of possibles' drawn by present-day political discussions. As people constellate different facts and ideas together and charge those facts and ideas axiologically, they reveal their political positioning as well as the reasonings behind their stance, or in LCT

terms, their cosmologies.

This research is part of a larger project in which I promote the use of constellation analysis as a tool to facilitate democratic dialogue in South African public spheres. The aim is to enable ordinary citizens to analyse the constellations built by people of other political persuasions and use them to understand their cosmologies better. This can allow for clearer, more constructive discussions of different policy alternatives for South Africa's future.

In the paper, I use the official media statements of the Democratic Alliance (DA), South Africa's official opposition party, as an example to demonstrate how constellation analysis can reveal political positioning.

The DA, South Africa's official opposition party, perennially faces a dilemma. To grow its share of the vote, it needs to reach beyond its predominantly white support base and attract black South Africans. However, in doing so, it needs to be careful not to alienate its current support base. This dilemma has frequently worked itself out as a debate between a classical liberalism that is 'colour-blind' and a support for some affirmative action that might increase the participation of black people in the party. The tension between these two positions manifests in the party's slogan, "One nation with one future, built on freedom, fairness, opportunity and diversity for all". In this slogan, "fairness" and "opportunity" are frequently used to emphasise the desire for an equal-opportunity society with no special favouring of any 'races'. In contrast, "diversity" emphasises the need for representation by people of many 'races'.

Ahead of the country's 2024 elections, the DA has unveiled a plan to form a 'moonshot pact', an opposition party coalition that could replace the ruling African National Congress (ANC). Although such a pact may be attractive to voters from the party's base, it is unlikely that any coalition will succeed without the ANC, given the size of that party's support. Thus, the DA finds itself in a tenuous position, supporting the 'moonshot pact' while having to hedge its bets in case the pact fails.

I report on a constellation analysis of the DA's official media statements between July 2022 and June 2023. These press statements were compiled into an electronic corpus and analysed using corpus linguistics to identify the top keywords and collocations of "DA" in them. These collocations show what words the DA most closely associates with their own name in their self-representations in the statements. Therefore, they indicate what stances are constellated with the DA in the data.

I then report on a constellation analysis of one press statement representing some of the strongest collocations with the DA in the data. This shows how the DA associates specific positively-charged stances with its name in one constellation and other negatively-charged stances with the current South African government in another constellation and how the party uses fluctuations in axiological-semantic density to persuade readers of their favoured stances. This gives insights into the cosmologies which underpin the party's self-representation.

The research shows how the DA clings to its identity as an opposition party by negatively charging the ruling ANC's policies. The party continues to embody its values in a manner consistent with 'colour-blind' classical liberalism, limiting its ability to broaden its support base or attract other parties as possible coalition partners.

The paper concludes by showing how this study fosters an understanding of the DA's cosmologies and so contributes to my larger ongoing project of enabling ordinary citizens to understand the political opinions of others better and, therefore, contribute better to democratic discussions, using constellation analysis. This allows LCT research to influence practice in the realm of South African political discourses.

SESSION 17 (B46): Supporting student learning through feedback: How LCT can help

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University of the Witwatersrand, South Africa

Giving feedback is widely regarded as an effective way of supporting students' learning as they try out a new practice. Feedback from more knowledgeable and experienced mentors can help students understand what they are doing well and what they could do better. They may also receive guidance and ideas to try out. However, not all feedback is equally effective. Feedback in the form of tips or 'tricks of the trade' can be extremely useful in helping students quickly gain confidence and appear competent. However, to deepen their understanding of their practices, they also need to know when to use these tips, when not, and why they may work in some situations but not others. Feedback is potentially transformative when it opens deeper conversations about what they are doing, how it is working and why it achieves its purpose or not. In this paper, I use constellation analysis and Semantics to analyse examples of feedback given to students during work-based learning. I show how feedback can open up or close down opportunities to understand their practices in more specialised ways.

This study analyses the written and verbal feedback given to a group of student teachers during their school-based practicals. The student teachers had all planned and presented a lesson, observed by a university tutor and/or a mentor teacher. After the observation, the student teacher was given feedback on their lesson. The written reports and transcripts from the feedback discussions form the data for this study. First, I use constellations to analyse the feedback given to one student teacher by two lecturers. Although one offers lots of affirming praise and a few tips, the other acknowledges the strengths in her teaching but prompts her to examine the links between her intentions, the classroom activities and the value of the learning experiences she created during the lesson. I show how these two sets of feedback offer the student different insights into her developing teaching practices. I show that they have differently structured constellations underpinned by different semantic codes. These differences are significant for establishing possibilities for shaping the student's gaze.

Next, I consider the semantic range of feedback drawn from a larger group of participants. I share a translation device that enabled us to track how the feedback shifts between stronger and weaker forms of semantic gravity and semantic density. The findings show that when feedback is unspecific and general, it rarely leads to conversations that shift across the semantic plane. In contrast, when the feedback focuses on a particular action, incident or interaction, the conversations that follow often demonstrate larger semantic ranges. I also show that much of the feedback offered to the participants in this study consisted of unelaborated observations and unsubstantiated appraisals. It occasionally offered students explanatory accounts for what worked or did not work as intended. So, a significant strengthening of semantic density was seldom seen in this dataset. As a result, mentors missed valuable opportunities to give students the kind of feedback that would have helped them think about their practices in more specialised ways.

The LCT analysis shows that the potential for supporting students' work-based learning through feedback is not always fully realised. The feedback mentors provide to students is informed by their beliefs about what matters for good practice and for student learning of that practice. Things that are self-evident to a knowledgeable and experienced practitioner are not necessarily apparent to students. The LCT tools developed by this study can empower mentors/supervisors by making their tacit mentoring practices more explicit and intentional. For example, it may encourage them to intentionally use critical incidents or interactions as levers for more complex practice-based discussions. It may prompt them to make strategic choices about the aspects of practice they gloss over and where to elaborate. Although the analysis presented here worked with data from teacher education, the findings may have relevance to other fields that require mentors to provide students with feedback during work-based learning.

SESSION 17 (B47): Demystifying graduate attributes using LCT: The case of engineering

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Professional qualifications which are aligned to international standards generally offer lists of desired ‘outcomes’ or ‘attributes’ as the specifications for certification of graduates. In engineering, these outcomes have been termed ‘graduate attributes’ in the most recent International Engineering Alliance graduate competency profiles publication. A recent review of top ten skills lists across academic publications, Higher Education institutional websites and employer-focused reports over the past 30 years reveals two interesting findings: i) there is a conflation of the terms knowledge, skills, practices, values, and qualities when listing desired/intended outcomes of a professional programme; and ii) there has been a slow and steady shift to more complex dispositional qualities occupying top positions on the lists from employer perspectives, as opposed to the common perception that technical skills are the primary desired quality. The Legitimation Code Theory dimensions of Specialisation and Semantics offer educators the ideal instruments to problematise how the different Graduate Attributes and the increasingly ‘knower’ shift can be approached from both curricular and pedagogical perspectives.

The argument in this paper is that the term Graduate Attribute is poorly conceptualised, and the specifications lists do not necessarily help educators to enable (in real classrooms and in actual curricula) the development of complex psycho-social dispositions (such as empathy, curiosity and flexibility) in order to meet the employability mandate of professional programmes such as Engineering. We return to the origins of the term Graduate Attributes - Simon Barrie (2004) - in which a relational matrix is offered, foregrounding three key Higher Education ‘attributes’: Scholarship, Lifelong Learning and Global Citizenship. Using the LCT Specialisation epistemic plane, for example, the relationship between these three key attributes can be illustrated in the design of learning experiences that enable students to build on a solid foundational grasp of fundamental principles and associated procedures (scholarship) while addressing increasingly open-ended, real world-aligned engineering problems in different contexts (global citizenship) in an iterative and developmental fashion (lifelong learning). Using a holistic educational framework as a starting point (where epistemological, ontological, and praxis dimensions are considered), we unpack the Barrie model to illustrate how students can be encouraged to develop the holistic insights and gazes (LCT Specialisation) as well as increasingly complex problem solving (LCT Semantics) implied by the different Graduate Attributes.

This paper hopes to demystify the term Graduate Attribute by practically unpacking the difference between knowledge and knower elements, visualising the intended outcomes as a function of actual classroom practice and curricula. LCT is a particularly useful tool for this exercise since it makes explicit the types of knowledge/knower and the relation to the knowledge system. The intended outcome of this work is to assist educators (even those beyond engineering fields) in conceptualising (and implementing) curricula to meet the intended graduate attributes and, through that, bridge the ever-widening gap between Higher Education and employer expectations.

SESSION 18 (Plenary): The LCT Magic Show: Improving classroom practice using Semantics

Paul Curzon & Jane Waite

Queen Mary University of London, United Kingdom

How can LCT be used in a simple but practical way to improve your pedagogy? This tutorial explores the practical use of LCT Semantics to quickly and simply evaluate and improve lesson plans. LCT is a very conceptually abstract subject with dense terminology and, as such, can be difficult for novices to immediately see how to use it in practice. However, beneath those terminological and conceptual barriers LCT is both very powerful and can be conceptually simple to use. The aim of this tutorial will be to demonstrate a very simple way LCT Semantics can be used (in particular, heuristic semantic profiles), presented using the fun and accessible setting of a magic show to teach STEM, and particularly computing, concepts.

The session is based in part on a professional development workshop we have run for UK computing teachers to introduce LCT Semantics, particularly semantic profiles and semantic waves, as a practical tool they can easily use. The underlying magic activities are based on ‘Magic of Computer Science’ workshops that we regularly run for school children (primary and secondary) using conjuring to teach computation (and vice versa) and the related book ‘Conjuring with Computation’.

We will give an introduction to Semantics. This will focus on how to create a coarse-grained semantic profile of a lesson plan, together with the heuristic method using a set of simple questions we use to evaluate and so improve such lesson plans. Participants will apply the heuristic method to activities we do with school children, drawing semantic profiles of those activities. As the focus of this semantic profiling, we will perform simple magic tricks as a way to introduce computing concepts. Participants will plot the profiles of these activities and discuss how the profiles might be improved, as well as the extent to which the method helps one to easily improve lesson plans.

SESSION 20 (B45): Advancing professional learning: Using Specialization to compare teachers' and lecturers' feedback to student teachers

Emmanuel Mushayikwa & Ngoni Mushayikwa

University of the Witwatersrand, South Africa

In this presentation, we focus on pre-service teacher professionalization through the medium of teaching practicums or internships. The purpose of the study was to investigate perceived inconsistencies between university lecturers and mentor teacher feedback. Inconsistent feedback during practicums is undesirable as it could lead to uneven development of competencies for both professional and classroom practice of student teachers. The study used the LCT dimension of Specialization to unravel patterns in the way mentor teachers and university lecturers emphasised teaching competencies. The Specialization dimension of LCT was chosen because it provides gazes, namely: epistemic relations and social relations. The relative strengths of epistemic relations (between practices and their object), and social relations (between practice and their subject) allow scholars to analyse and differentiate the nature of knowledge and the knowers in any practice.

Using relative strengths of epistemic relations and social relations codes, together with the self-directed professional development efficacy model, transcripts obtained from six university lecturers and six mentor teachers' reports were analysed. The comments were classified according to whether they emphasized classroom efficacy or professional efficacy. These classifications were then plotted onto the LCT specialization plane.

The findings suggest some synergy between university supervisors' expectations and those of school mentors, resulting in the student teachers acquiring cumulative knowledge about what it means to become a teacher. Arriving at these conclusions pertaining to student-teacher professionalisation, we recommend that a more integrated approach to teaching experience supervision between schools and universities could lead to a strengthened professionalisation partnership.

SESSION 20 (B46): Using Semantics to understand how teachers manage meaning in feedback

Andrew Scott

University of Queensland, Australia

Feedback and its evaluative function are an integral part of teaching and learning. Scholars in Sociology have long recognised evaluation as an intrinsic feature of education, with Bernstein identifying that “the key to pedagogic practice is continuous evaluation” (1990/2003, p. 177). However, feedback practices can present difficulties for inexperienced teachers, particularly given the complex and competing demands of learners and the classroom. This study used Semantics to investigate how and why experienced teachers vary meaning in feedback practices. Semantics enabled me to conceptualise feedback practices in terms of context dependence and density of meaning to understand the process and purpose of teacher feedback.

In this research project, I studied teachers' feedback practices in pre-tertiary language classrooms because giving feedback to English as an Additional Language (EAL) learners on their writing is a crucial part of the learning process. I was interested in how teachers manage meaning to meet course goals while also addressing the needs of the class (and each individual learner). This qualitative study involved classroom observations of four teachers and the recording of lessons, which were then transcribed and analysed. Data sources included classroom observation field notes, photographs, teaching materials, syllabus documents and teacher interviews.

The use of the LCT dimension of Semantics provided an understanding of the different knowledge practices in teacher-led feedback on learners' writing. I conducted the analysis using a translation device (Maton & Chen, 2016; Maton & Howard, 2016). This was developed from both theoretical concepts and my engagement with the data. This provided a connection between real instances of classroom discourse and theoretical concepts. Cycles of analysis led to greater refinement of the translation device. I analysed the same lesson taught by the four different teachers. This afforded me the opportunity to make meaningful comparisons and contrasts. The analysis of the lessons initially took a wide-angle analysis of the lessons before zooming to a telephoto analysis of specific phenomena (Maton et al., 2016, p. 101).

The teachers in this study managed knowledge in the classroom in different ways, involving variations in the context-dependence and complexity of meanings in teacher discourse. This paper reports on these variations by using the concepts of semantic gravity and semantic density from Legitimation Code Theory (LCT). The study found that while the four teachers' classroom practices and classroom discourse initially appeared very different, these differences were superficial; there were underlying similarities in terms of how these experienced teachers varied context-dependence and the complexity of meaning.

The analysis suggests a generic semantic wave of teacher talk. Teachers discuss learners' written responses) and then a semantic shift occurs as teachers directly quote from learners' writing (strengthening semantic gravity and weakening semantic density) before returning to talk about the written response once again. Another semantic shift occurs as teachers discuss language more generally (weakening semantic gravity and strengthening semantic density) before returning to talk about the written work. Similarities may be drawn with the 'bobbing' identified by Matruglio and colleagues in History classes. However, the bobbing refers to the teacher reading aloud a source from ancient history and then explaining it in modern, everyday terms. In the data from my study, the teachers do not explain the text. They evaluate the text positively and negatively, illustrating the evaluation with instances from learners' written work.

The teachers also evaluated the work in terms of the course of study, referring to previous classroom work on relevant areas, e.g., work completed in the previous week's lessons on noun phrases. They looked both backwards and forwards, reflecting on the writing process and making suggestions for future improvements. I interpreted this as the teacher addressing the learners' needs while also meeting the course goals. A learner's writing is taken as a measure of the individual's current meaning-making resources. The feedback lesson is the teacher's attempt to combine learners' needs with course goals through the selection, planning and delivery of classroom tasks.

The significance of this study is that it illustrates how teachers manage meaning in the classroom to achieve their purposes. This adds to the growing body of evidence that examines how educators vary context-dependence and the complexity of meaning to achieve their purposes. The study also identifies certain classroom practices that are not captured by semantic wave analysis. These practices take different paths across the semantic plane. This may be of interest to other researchers using the LCT dimension of Semantics to examine educational practices and could be of use to future LCT research projects.

SESSION 20 (B47): Building disciplinary literacy: Autonomy trips in teaching multilingual students

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In the later years of school, the requirements for subject-specific knowledge, as well as the demands for a developed literacy, increase. To meet these increasing demands, students need access to tools that help them master both subject-specific content and disciplinary literacy. Therefore, explicit teaching that focuses on both subject content and language development is required. Explicit instruction is especially crucial for students who are learning in an additional language. According to statistics provided by the Swedish school authority, these students often struggle to meet the knowledge requirements of the curriculum. The present study aims to enhance the understanding of how teachers, who primarily work with students learning in an additional language, integrate subject-specific content and literacy in two distinct school subjects: Physics and Swedish. By exploring this integration, the study seeks to expand current knowledge on effective teaching practices for multilingual classrooms. The primary research question is: How do teachers develop students' knowledge about subject-specific content and literacy through collaboration between two school subjects?

The study is a qualitative empirical study. Over a period of five weeks, lessons in the two subjects were observed in two different classes in year nine in a compulsory school in Sweden. The purpose of the teaching was to prepare the students to write an argumentative text about nuclear power. The primary focus of the observation was on the teachers' instruction. All lessons were audio recorded and transcribed, first by using automatic transcription and then manually checked for accuracy. The material was then coded and analysed. Various sources of data are used for the analysis, including transcriptions, detailed field notes from the observations, teaching materials, interviews with the teachers, and the final assignment of the students.

This study draws primarily on concepts from Legitimation Code Theory (LCT) to understand the different ways that content knowledge and subject-specific literacy are incorporated into teaching. The dimension of Autonomy is employed to analyse and visualise the two teachers' different strategies. The result demonstrates how the teacher in Swedish succeeded in integrating subject-specific content and disciplinary literacy by taking an autonomy tour and moving across several codes in the autonomy plane. Through the autonomy tour, the connection between content knowledge and subject-specific literacy was clarified. In contrast, the physics teacher primarily made return trips to the sovereign code, which, on the one hand, made the physics content transparent for the students but, on the other hand, left little room for subject-specific literacy.

Through the exploration of the autonomy trips, the two teachers' different strategies and the complexity of teaching were made visible to the researcher. I conclude that LCT can be used to display disciplinary literacy in teaching instruction and, in that sense, can be a powerful didactic tool for teachers.

SESSION 20 (B48): A Sustainability Cosmology: A “Green” company's knowledge-knower structure

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Sustainability has been at the core of worldwide concern. World views often suggest the science of sustainability combines three fundamental principles: environmental health, economic efficiency and social equity. Because of the ways in which natural resources have mistakenly been exploited in the past decades to the point of hindering their supporting capacity in the near future, thus threatening their lifetime on Earth, plenty of public and private institutions, non-governmental organisations and companies claim that they are committed to intelligibly integrating environment health, economic efficiency and social equity. In this paper, I use constellations and cosmology to establish which codes dominate how companies project themselves as being 'green'. Constellations refer to “groupings that appear to have coherence from a particular point in space and time to actors with a particular cosmology.” The latter is defined as “visions of the world embodied by actors' practices, which underline the ways actors create constellations of stances that are shaped by what is viewed as legitimate within a field.” Therefore, this study aims to analyse the sustainability discourse of a

multinational company which claims to be “Green” in order to sketch the company’s knowledge-knower structure and thereby understand if the epistemic and social relations encompassing their discourse suit that of sustainability knowledge.

Of qualitative approach, this study is underpinned by four dimensions: Appraisal Theory within Systemic Functional Linguistics, the Science of Sustainability, Constellations and Cosmologies and Knowledge-knower structure. As regards these dimensions, considering that appraisal theory has to do with “semantic resources used to negotiate emotions, judgements, and evaluations, alongside resources for amplifying and engaging with these evaluations”, this theoretical and methodological framework is used in this study to identify inscriptions of sustainability discourse in the investigated company’s Annual Sustainability Report. By means of the identification of these inscriptions, the company’s constellations are known, and so is their sustainability cosmology. From now on, it is possible to figure out the company’s knowledge-knower structure; that is to say if the epistemic and social relations comprising the company’s knowledge-knower structure resonate with that of the science of sustainability.

With respect to the results, the appreciation-graduation interplay within appraisal theory has enabled the recognition that most stances in the company’s knowledge-knower structure correspond to those of the specialist knowledge. By the same token, appreciation-graduation interplay has given an account of four stances not complying with the science of sustainability, which does not mean to argue that epistemic relations in the investigated company are downplayed or weakened. However, these four stances not related to sustainability signal that there are signs of traditional business discourse within the company’s cosmology under analysis. Hence taking into consideration that most constellations of the investigated company are tailored to specialist knowledge, it is noticed that such knowledge has been privileged over the knowers’ attributes and gaze in the company’s cosmology. In other words, the company’s knowledge-knower structure involves epistemic relations strongly classified and social relations weakly framed. In technical terms, this is to say that the company sustainability discourse, the object of this study, presents the knowledge code as follows: + ER; - SR, strong epistemic relations and weak social relations. In short, in spite of not being the right type of knower (-SR), the inclination of the company towards specialist knowledge is evidenced (+ER).

The patterns from this research is important for two fundamental reasons: 1) Constellation and cosmology studies provide a theoretical and methodological framework whereby interdisciplinary and transdisciplinary dialogues are possible with different types of knowledge ranging from natural sciences to humanities; 2) the principles and criteria through the lens of Legitimation Code Theory, specifically when it comes to constellations and cosmologies, allow profound understanding of the ways in which meanings of a given specialist knowledge discourse is managed and structured. Lastly, LCT represents a wide door open to investigation, providing interdisciplinary and transdisciplinary frameworks through which epistemic foundation rests in the pursuit of scientific truth. In terms of knowledge-knower structure, studies on cosmologies contribute not only to giving some sense of responsibility to social actors when manipulating specialist knowledge but also to free science itself from being blamed for the cause of knowledge blindness. In a nutshell, the knowledge-knower structure is an LCT model which works to make man and society come closer – this is what science is for.

SESSION 21 (B45): Selecting textbooks: How Semantics empowers Economics lecturers to choose appropriate texts

Sharon Tessendorf and Syden Mishi

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Academics are expected to review different textbooks and identify one that best aligns with module content and helps promote learning and teaching. As many textbooks are available, making a choice is increasingly difficult, and to what extent the learning and teaching-enhancing qualities are objectively considered is unclear. This is particularly important at foundational levels when restrictions are placed on the number of textbooks prescribed for a module. We use Semantics to investigate how textbook selection can be more principled and robust. We compare the presentation of the threshold economic concept of “demand” in two introductory Economics textbooks widely utilized at higher education institutions in South Africa. Our research

dives into the potential impact of textbook content on students' epistemological access, particularly those facing socio-economic disadvantages.

Massification of higher education in South Africa has attracted students from different linguistic and socio-economic backgrounds. This includes students from impoverished rural areas and under-resourced schools. Our research aligns the sector's focus, to produce resilient, socially conscious graduates who possess critical thinking skills. Furthermore, the study contributes to inclusive pedagogical strategies that can enhance academic success for a diverse student body.

While the importance of selecting appropriate textbooks is well-established, the assessment of Economics textbooks in terms of their readability and ability to shape students' critical thinking abilities, and economic literacy remains understudied. To address this gap, we turn to Legitimation Code Theory (LCT) for concepts to analyse the semantic structure of economic concepts. We applied LCT to the common and fundamental concept of "demand," presented in two introductory Economics textbooks: Maritz, McGill, Huxtabie, and Storey's "An Introduction to Economics" and Philip Mohr and associate's "Economics for South African Students." The LCT concepts of semantic gravity, which gauges the context-dependency of knowledge, and semantic density, which assesses the concentration of meaning within content, serve as pivotal lenses through which the complexity and accessibility of economic knowledge presented in the textbooks could be examined. Readability statistics of the textbooks' discussion of "demand" provided an objective measure for quantifying and comparing language complexity.

The comparative analysis reveals structural and didactical similarities between the textbooks' presentation of "demand". Both incorporate well-illustrated diagrams and practical exercises, enhancing comprehensibility and engagement. Furthermore, both textbooks' passages represent a journey from concepts with stronger semantic gravity to those with weaker semantic gravity, and back again. However, Maritz et al.'s (2023) textbook appears more accessible for students who are new to Economics, as the relevant passage employs a semantic wave that starts with context-dependent examples that likely resonate with students' experiences, making the concept of "demand" more tangible and easier to grasp. In contrast, Mohr and associates' (2020) textbook initially presents denser and more technical material, potentially posing challenges for students to relate to without additional context. Both textbooks' coverage of "demand" predominantly aligns with neoclassical economic thought. In terms of relatability, the textbooks' extracts are thus found to inadequately address the variety of economic circumstances that exist in South Africa, particularly the rural economy.

Our findings highlight the importance of language complexity, income disparities, and diverse economic contexts in textbook selection. The study advocates for explicitly planned teaching activities that create semantic waves that lead students progressively from more context-dependent simpler meanings to less context-dependent, complex meanings. Significantly, we acknowledge that neoclassical economics represents a specific economic paradigm that has been criticized for its limitations and that this potentially has negative implications for social justice and equity. A more inclusive approach that incorporates a variety of economic theories and perspectives may, therefore, better align with the higher education sector's mission to better prepare graduates for the challenges of a diverse and rapidly evolving economy.

This study contributes to LCT scholarship by demonstrating its applicability in evaluating textbooks and informing pedagogical decisions. It underscores LCT's potential to promote equity in higher education and social justice providing quality education and catering to the diverse backgrounds and needs of students.

SESSION 21 (B46): Tear and share: Lessons in explaining LCT to practitioners

Jane Waite & Paul Curzon

Queen Mary University of London, United Kingdom

As researchers, we investigate thorny problems in our field, from reviewing the structure of feedback to multiple-choice questions in computer science to developing dance and dancers in ballet.

Within these studies, we will likely want to share our findings with practitioners, from teachers to dancers, for our research to inform and influence. But how do we take research to practice? How do we support the

transfer, translation, and transformation of activity beyond our academic context?

In this presentation, we will explore with LCT researchers how they explain the theory of the LCT dimensions beyond their academic work in their research to practice activities. We aim to develop a set of research-to-practice examples with commentary and guidance.

This will be a practical presentation with potential follow-up tasks to develop our collective understanding of how we explain the theory that we ourselves are continually learning about.

To support this, we will highlight a number of knowledge appropriation models and present how we have shared the Semantic dimension of LCT with computing education teachers and researchers as starter examples. Examples of our research to practice include blogs explaining semantic waves, two-page quick reads for teachers to learn about theory, chapters in computing education publications, large-scale online presentations explaining how to profile computing teaching activities using virtual sticky notes and interactive Google slides, face-to-face training with IT industry professionals supporting them to develop a shared vocabulary to talk about training, and mentoring activities (this list is not exhaustive).

As we develop and share our understanding of LCT, we would like to discuss with our LCT colleagues whether we are simplifying too much or not enough and if there are ways to explain LCT in ways that we have not considered and to be creative and playful as reflective practitioners.

We wonder whether the different dimensions of LCT require different ways to explain the theory. We also wonder if there are different barriers or amplifiers to the receptivity and adoption of LCT in different domains and cultural contexts.

Together, we will use knowledge appropriation models and our collective experience of LCT to develop a shared understanding of our research to practice efforts, learn together, and record this so others can build on our new understanding.

SESSION 21 (B47): Automating an analysis for semantic density: Using AI to code data

Thato Senoamadi & Dale Langsford

University of the Witwatersrand, South Africa

Manual coding of empirical data is crucial and labour-intensive. It poses challenges in massive datasets where reliable coding is needed on a large scale. The question that arises is whether recent developments in Artificial Intelligence can be trained using a manually coded dataset to pick up trends and patterns from a far larger dataset. The massive "Teacher Choices in Action" Project provides an opportunity to test this. This paper reports on an attempt to automate the process of analysing semantic density using a huge dataset in which 12 000 preservice teachers observe a recorded lesson. A specific translation device developed in the Teacher Choices in Action project uses four levels of semantic density to look at complexity in the lesson observations of teacher trainees. This translation device and the set of coded data provide an ideal training dataset for state-of-the-art Machine Learning Models, such as BERT (Bidirectional Encoder Representations from Transformers). This model can be used to reveal underlying patterns of knowledge organisation and legitimation within a larger, uncoded dataset.

Data for this study was collected from a massive teacher training module introduced during the COVID-19 pandemic called "Teacher Choices in Action." During the module, teacher trainees watched recorded lessons and wrote their observations and interpretations of the teacher's actions. Semantic density was used to code the extent to which they simply described actions or provided a more complex interpretation of the reasons for the actions they observed. This dataset gives insights into the development of preservice teachers' ability to notice and understand the teaching practices that they observe in work-based contexts.

The process of coding the training dataset involved gathering a large set of lesson reports, dividing them randomly into three datasets.

- The first group is coded by dividing each lesson observation report into smaller subtexts, and then coding each subtext with a strength of semantic density. There were 250 coded lessons in the training dataset used to train a machine-learning model called BERT. The automated classification of the reports initiates with data preprocessing, which involves removing unwanted symbols and tokenising the text into meaningful segments. Subsequently, the BERT model undergoes pre-training on a large dataset comprising subsections of the collected lesson reports. This pre-training captures general language patterns and representations used by the learners to describe a lesson.
- The model is then fine-tuned on a smaller labelled dataset, enabling it to adapt specifically to the text classification task. BERT allocated each bit of data one of four labels, ranging from SD-- to SD++. The BERT is refined by showing it where its coding differs from that done manually by the researchers.
- The third dataset is used to test the accuracy of BERT in recognising different strengths of semantic density on coded data. In this study, the BERT coded data matched the coding done by the researchers with an accuracy of over 75%

This model offers the potential for automating semantic density labelling, faster analysis, consistency, and reliability. Leveraging BERT's remarkable performance in Natural Language Processing tasks, including language understanding and semantic analysis, this function could be used to analyse larger datasets with an established accuracy, and show the likely patterns in an uncoded dataset.

SESSION 21 (B48): Successful literacy practices and their relation to building a disciplinary identity as a nurse

Vicky Ariza Pinzón

Benemérita Universidad Autónoma de Puebla, Mexico

Reading and writing in higher education in Mexico face important challenges. Writing instruction focuses mainly on teaching generic skills that are not easily transposed among the diverse disciplinary fields found in the university. Few studies in Latin America are directing attention to the relationship between literacy practices and the construction of knowledge and the shaping of successful professionals. However, the challenges to teach writing remain if we do not know the forms disciplinary knowledge take and the ways in which professionals develop particular dispositions in specialised fields by means of literacy practices.

This paper aims at understanding the relationship of specialised written practices and the ways of acting, thinking and being of a successful nurse; as s/he forges a disciplinary identity in spaces such as the school, the hospital or at home. In this paper, axiological constellations will be used in order to understand such disciplinary literacy practices and how together they form a belief system. Generally, constellations arrange a network with condensed meanings and are charged with valuations from a particular view of the world. These meanings are attracted or excluded depending on the value that they are given by the community. Particularly, I draw upon constellations to understand how or in what ways a successful nurse learned to identify legitimate practices within the community of nurses, evaluate them to gain membership and build new knowledge within this community.

The following research questions address this concern: What disciplinary literacy practices are evident in the field of nursing? How do they converge towards building a disciplinary identity as a nurse? The participant in this study is a nurse from a rural university in the Southern Mountain range of Mexico. Coming from a disadvantaged and linguistically diverse context, he successfully completed a BA program and a Master's degree. He has published several papers in the field of nursing and currently works as a nurse researcher in a hospital in the South of Mexico.

Data was collected through two semi-structured interviews in two crucial stages of his professional career to identify the development of literacy practices in the field of nursing. The first one was in 2016, when he completed his BA program and started a Master's degree. The second one was in 2022, after getting a position in a hospital and conducting research activities. Data was transcribed and analysed following Doran's method for textual analysis. First, an attitude analysis from Systemic Functional Linguistics was done to identify positive

and negative evaluations in the interviews. This process involved identifying the appraiser, the appraised and the target of the evaluation. Then, those concepts were grouped together to build constellations and find exclusions/associations among them.

Preliminary results highlight clusters of meanings around particular disciplinary texts, such as nursing reports and integral practices. These disciplinary genres bring about associated discourses happening in places in which those texts are used. They also bring about legitimate people from the nursing community with whom these genres are discussed and who expect particular ways of communication. Understanding constellations and their associated discourses is key to cultivating effective ways of being, thinking and acting in the community. Findings have implications for the teaching of particular disciplinary genres in nursing that allow building cumulative knowledge of the discipline as well as developing a disciplinary identity by means of literacy practices.

SESSION 22 (B45): Learning professional practice through supporting courses: How Specialization codes can help.

Tanusha Dukhan

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Preparing students for professional practice requires that the curriculum includes courses in foundational knowledge and give students opportunities to use this knowledge in work-related contexts. However, often, these foundational courses are taught by people who have no experience in the fields of practice in which students will eventually work. Disciplinary experts provide students with a strong foundation in their subject. However, these courses do not always align with what is valued by councils that regulate professional preparation. Tensions between the focus of professionally focused qualifications and foundational subjects that are included in the curriculum affect the preparation of pharmacists. The Specialisation dimension of LCT provides tools that can be used to analyse how the intended goals of a qualification that seeks to prepare pharmacists for practice are achieved (or not achieved) by supporting coursework.

The Bachelor of Pharmacy degree at Rhodes University provides an interesting case study of how differences between the intended and enacted curriculum impact the preparation of students for pharmacy. Human Anatomy and Physiology are two related but distinct disciplines taught in the degree. Each has its own criteria for what counts as knowledge and who can be accepted as a knower within the disciplines. However, the intended curriculum for Pharmacy degrees is regulated by pharmacists and stresses the importance of making disciplinary knowledge relevant to professional practice. This study uses Specialisation to reveal the basis of legitimation in the intended qualification and two enacted curricula of courses included in the B Pharm degree.

The study analyses curriculum documents and undertakes semi-structured interviews with lecturers who teach the Anatomy and Physiology modules. I use Specialization to show that while both Anatomy and Physiology are dominated by knowledge codes, they value different competencies. To become experts in Pharmacy, students would need to undertake code shifts if they are to be knowers who think about how to mimic or alter the structure or mechanisms of the body.

Despite the emphasis of the professional council on preparing students to apply foundational knowledge to the working context, these competencies are not well aligned with the knowledge-knower structures of the respective disciplines. Anatomists value knowers who can dissect, identify structures and make morphological comparisons. Physiology values students' ability to explain mechanisms and what happens when they are disrupted.

My analysis suggests that the enacted curricula of Physiology and Anatomy disregard the council's requirement that pharmacy students learn to apply foundational knowledge in relevant work-related contexts. This effectively establishes a mismatch between the envisaged curriculum and the enacted curriculum and has the potential to restrict the preparation of pharmacists for professional practice.

Although the basis of achievement for the pharmacy degree is well defined, academics who teach service courses align the basis of achievement of their courses to the discipline rather than what is required by the professional field. I argue that making the basis of achievement of their field and their subjects explicit creates opportunities for the lecturers who teach pharmacy students to consider how to create more intentional links to the demands of the practice.

SESSION 22 (B46): Looking for PCK in classroom practice through observation and self-reflection

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One of the things teacher trainees need to learn to prepare them for practice is to notice what practitioners are doing, make sense of it and appraise its effectiveness. An important aspect of teacher knowledge that underpins teachers' pedagogical choices is pedagogical content knowledge (PCK). PCK is a blending of subject, contextual, and pedagogical knowledge that enables teachers to make wise and pedagogically responsive decisions. However, PCK is difficult to observe and pin down.

We use the concept of semantic density, drawn from the Semantics dimension of LCT, to analyse the extent to which, and if so, how a trainee teacher connects knowledge and pedagogy from her reflections to blend PCK. The translation device detangles when the participant reflects on her content knowledge and speaks about her pedagogical knowledge. Each reflection can, therefore, be analysed for the basis on which the trainee teacher reflects on her own teaching – whether she is bringing content knowledge and pedagogical knowledge together in complex ways to develop PCK or not. The conceptual tool used to reveal the complexity of how the participant brings knowledges together to develop PCK, semantic density will make knowledge practices more visible. First, we analyse her written reflections on her OWN teaching for five weeks. The five-week long period enables us to see shifts over time – to what extent is she developing PCK during her school-based learning? Second, we analysed her observations of OTHERS' teaching during the Teacher Choices in Action module, which she completed in 2022. We analysed her observations similarly to see whether she develops PCK differently, if at all, in reflections on her own teaching and observations of others' teaching. Using semantic density to see how the trainee teacher brings pedagogy and content knowledge together has revealed how the participant sees PCK when observing practice and develops PCK when reflecting on her own practice.

SESSION 22 (B47): Mapping a postgraduate transition pedagogy using Autonomy

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Training for a profession requires students to develop a complex set of knowledges, skills and dispositions. However, hidden codes in many professions mean this series of higher-order practices is not readily accessible to many students. This is particularly the case for international students who often enter institutions without a prior grounding in the assumed knowledges and without a familiarity with local contexts used to illustrate the application of these. This dilemma echoes the wider concerns that while bringing knowledge together and integrating knowledge practices are mantras in contemporary education, what isn't as well described are overarching descriptions of integration successfully done.

This presentation uses autonomy codes from Legitimation Code Theory to provide a conceptual framework for illustrating how diverse knowledge practices can be brought together. It takes as a case study two Units in a four-unit preparatory postgraduate certificate program that formed a transition pathway to a Master of Social Work (Qualifying). This enables us to think beyond segmentalism to access real-world integrated practices.

Social work is both a discipline and a practice that draws from a range of schools, including sociology,

psychology, counselling and political science. This preparatory qualification was aimed at international students without prior experience in social work who were preparing to study at a tertiary institution in Australia. Content development in these units focussed two ways, on both foundational disciplinary knowledges and skills, and academic genre skills. This process included backwards mapping from the Masters to understand what precisely which foundational knowledges, skills and academic literacies students needed for later success. Its development was also significantly informed by the struggles of an earlier cohort of international students who directly entered into the Masters and the intervention strategies that were trialled to support them. Because students were learning both content knowledge and genre literacy in classes – dual purposes – staging in lessons was particularly important. Careful lesson planning was also required as the program scaled up and multiple teachers were involved in its delivery, with teachers in the Units either having discipline knowledge or English for academic purposes training but not both.

This analysis provides a useful framework for thinking through how different bodies of knowledge can be brought together in ways that strengthen both the teaching and enactment of disciplinary knowledges and professional skills. Analysis of student results in both the preparatory qualification and later Masters illustrate the efficacy of this approach, with the first two cohorts of students demonstrating good performance results in the MSWQ. Future applications, including how these insights could enable adaptive educational approaches that take into account regional differences, students based outside the Australian context and platforms of delivery are also forecast.

SESSION 22 (B48): What musical symbolic systems say about conceptualisation in education

Mandy Carver

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Music is a universal aspect of human experience, a vital part of every culture. While some traditions are learned in everyday life, others depend on specialist procedures and pedagogies. Many music traditions use special symbolic systems to support musical learning and performance, and this paper uses LCT Semantics to explore a selection of those systems. In music education today, including diverse musical traditions and pedagogies is considered a matter of social justice and a way to decolonise the field. However, there is no consensus on how best to include traditions that vary greatly in the complexity of their knowledge frameworks. A particular challenge is maintaining a balance between musical skill and abstract conceptualisation of music.

Western music education has placed high value on fluency in staff notation and theory of music. This has been critiqued as hegemonic insofar as the abstract conceptual language of music theory is not a prerequisite to learning other musical genres and because its abstract content can alienate some learners. In South Africa, reducing theory of music requirements in both secondary and tertiary courses is seen as a means toward decolonising music curricula.

Music is invisible and fleeting, and although it is learned primarily through aural and kinetic modes, as the complexity increases, so does the need to manage musical materials in an abstract way. Western theory of music fulfils this function for the Western classical music tradition. However, many traditions employ alternate systems that help users conceptualise musical materials beyond empirical musical experience. These systems support the mastery of complexity; they represent musical materials at a distance; they are not music but an alternative conceptualisation.

The systems use different modes. Some use a form of script (e.g., staff notation, jazz lead sheets, tonic solfa, Nashville number system), some diagrammatic representation (e.g., guitar tablatures), some spoken mnemonics (e.g., West African drumming and South Indian konnakol), and some rely on gesture (e.g., Kodaly hand signs). These have developed alongside their related traditions, and in this paper, I argue that the level of complexity of each system is appropriate for its respective musical practice.

I use LCT's Semantics dimension to explore and compare these systems to make this argument. Semantic gravity can describe the level of abstraction of each system and its relative distance from musical experience;

semantic density can unpack the level of complexity in the respective symbols. Together, these can answer questions about each system's potential for increasing users' fluency with musical materials, transferring knowledge, and transcending the immediate context. Further, understanding the semantic differences between diverse musical traditions can help educators make appropriate decisions about curricular design and pedagogy, a crucial part of any decolonising project.

This inquiry has implications beyond music studies as curricula are being challenged internationally to decolonise and strive for social justice. To the extent that learning in any field relies on symbolic systems such as text, numerals, diagrams, and icons, these systems should provide learners with greater fluency in the conceptual language of the field. The examples from musical systems offer a way to think about conceptualisation in education in general, as well as the questions we should be asking of the knowledge frameworks of our respective fields.

SESSION 23 (Plenary): Changing practice with LCT: Preparing teachers for an education system in crisis

Lee Rusznyak, Dale Langsford, Preya Pillay, Sinegugu Madlala & Sikhumbuzo Bulose
University of the Witwatersrand, South Africa

How can students become competent teachers when they come from and return to an education system that is largely in a state of crisis? This is a crucial question facing teacher educators in South Africa and beyond. To ensure that teacher trainees don't replicate prevalent practices by default, they must understand their developing teaching practices in new and revolutionary ways. LCT empowers student teachers to analyse their own practice, which creates the potential to change prevalent ways of working. This, we argue, is crucial if future generations of teachers can transcend compliance with the status quo.

This interactive session demonstrates the practice-based work done at The University of the Witwatersrand to promote social change. We share how Semantics and Specialization are used to shape the gaze of future teachers and empower them to imagine teaching beyond prevalent practices. During the session, several teacher educators and trainees will share extracts from their work to show how their understanding of teaching has changed over time and what this means for them as future teachers in South African classrooms.

We outline the challenges of preparing teachers in South Africa and will demonstrate why LCT provides teacher educators with tools for addressing them. We show how students use LCT to learn how teachers work with knowledge in their lessons. We show how a different set of LCT tools is used with final-year students. Using Specialization, students analyse how they are enacting their practices as teachers. For example, they share an analysis of their reflections written on their teaching. They show how LCT allowed them to see for themselves how they could write them better in preparation for their final school-based practicum. Lastly, the team shows how these insights are crucial for preparing knowledgeable, reasoning, ethical, and responsive practitioners whose practices do more than merely mimic prevalent practice.

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