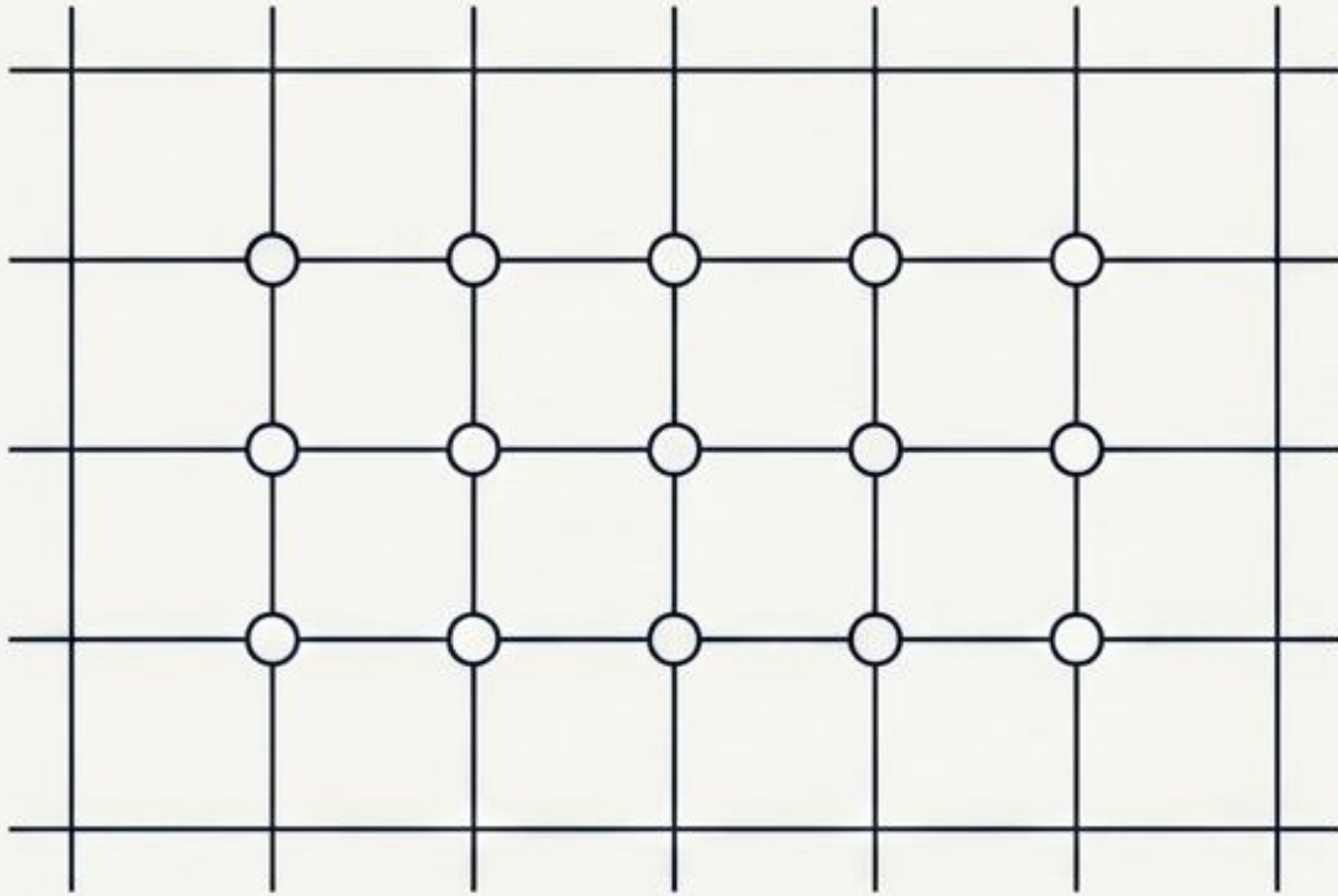


From Static Checklists to Evolving Ecosystems

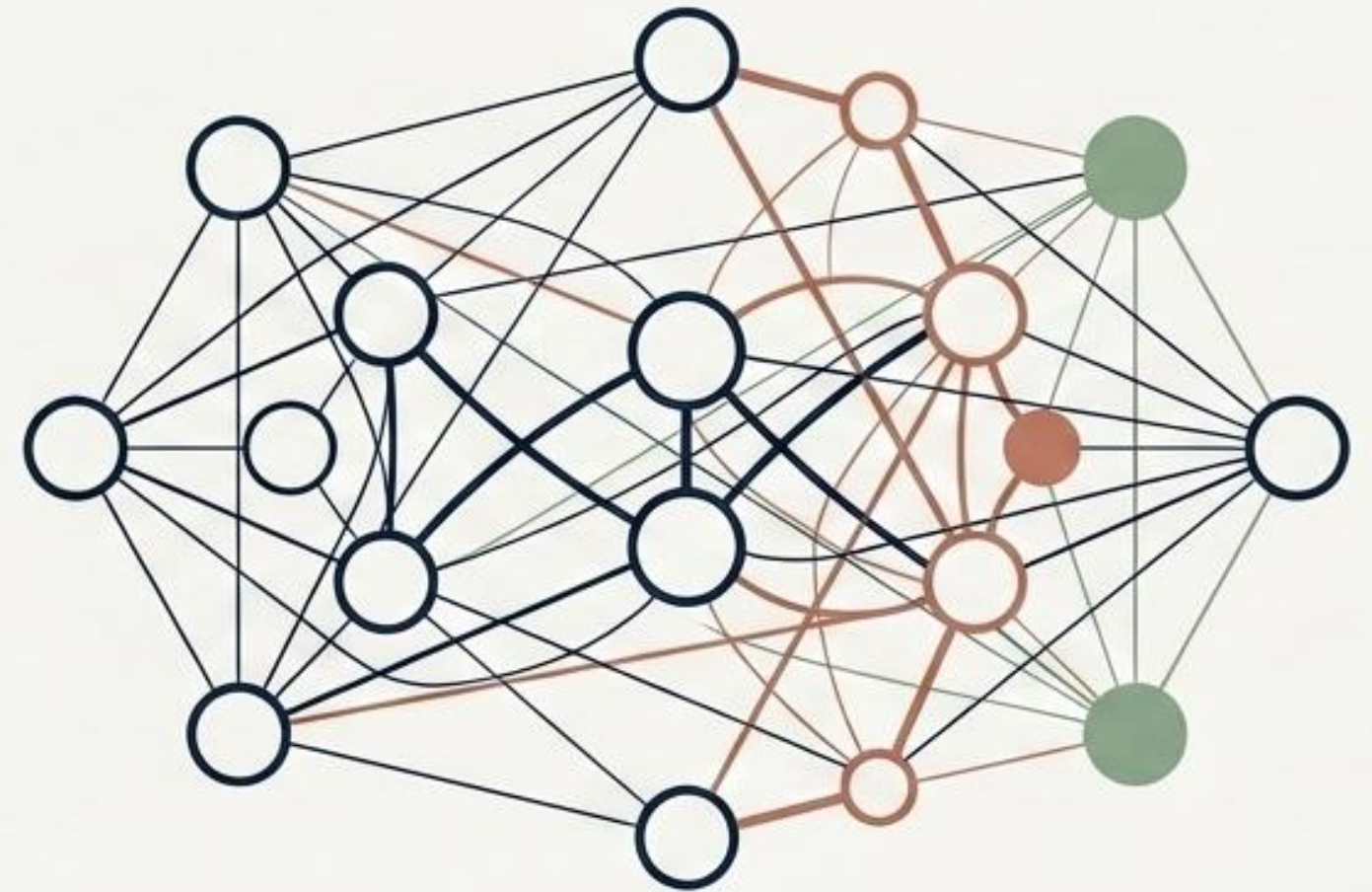
A Longitudinal Systems-Informed
Analysis of Malaysian ESL
Student-Teacher Pedagogies

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Institute of Teacher Education Malaysia
International Languages Campus



The Static Checklist

Traditional approaches view teaching variables as isolated, cross-sectional snapshots prior to classroom immersion based on the Additive, Dynamic, and Usage-based Multilingual Multilingual Approach (ADUMA; Teh, 2023).

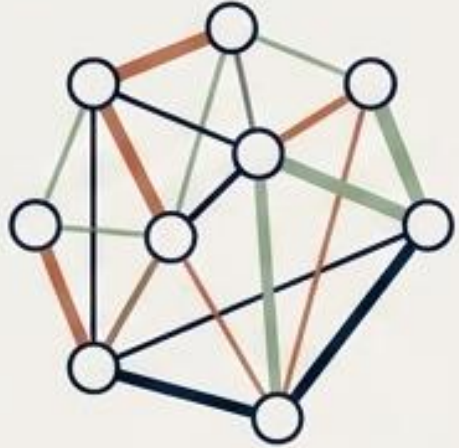
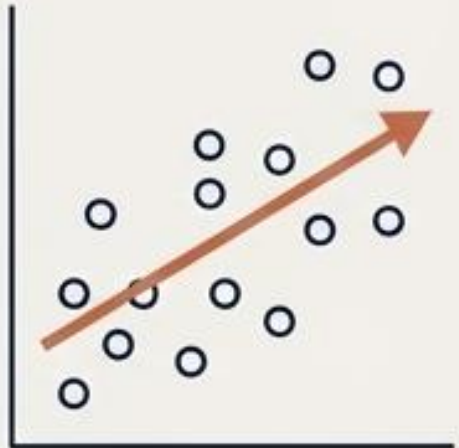


The Dynamic Ecosystem

Dynamic Systems Theory treats the student-teacher practicum as a perturbation event. It shocks a theoretical pedagogical system into a reactive, self-organising classroom reality.

Goal: Uncovering how pedagogical variables reorganise over time.

A Dual-Layer Analytical Architecture

	Track 1: Longitudinal Network Analysis
	Mapping Structural Reconfiguration Utilising regularised partial correlation networks (<i>bootnet</i>).
	Track 2: Longitudinal Regression Modelling
	Identifying Dynamic Drivers Isolating stable versus shifting drivers of translanguaging pedagogy via time-by-predictor interactions.

Time 2 (Post-Practicum) Survey Items

Item 1: Teacher Multilingual Identity (TMI). ***

To what extent do you agree with the statement: "My identity as a teacher is tied to my ability to use multiple languages."?

Note: Mark only one oval.

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Item 2: Teacher Multilingual Practice (TMP). ***

How frequently do you use non-English languages for pedagogical purposes during your English lessons?

Note: Pedagogical purposes refers to using languages to explain concepts, clarify instructions, or build rapport. Mark only one oval.

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

Item 3: Multilingual Resource Integration (MRI). ***

How often do you incorporate multilingual resources (e.g., texts, videos, apps) into your teaching materials?

Note: Multilingual resources refer to materials that are not exclusively in English. Mark only one oval.

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

Item 4: Translingual Curriculum and Pedagogy (TCPP). ***

To what extent do you agree with the statement: "The English curriculum should actively encourage the use of students' home languages."?

Note: Mark only one oval.

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Item 5: Classroom Norms and Culture of Pluralism (CNCOFP). ***

To what extent do you agree with the statement: "In my classroom, it is acceptable for students to use languages other than English."?

Note: Mark only one oval.

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Item 6: Community Monolingualism. ***

How common is English in the community surrounding your practicum school?

Note: 'Meso-landscape' refers to the immediate physical surrounding of the school compound. Mark only one oval.

☐ Completely Absent ☐ Extremely uncommon ☐ Uncommon ☐ Common ☐ Extremely common

Item 7: Pupil-led Action. ***

How frequent did your pupils use non-English languages during your English lessons?

Note: 'Nano-communities' refer to the student-formed small groups in a classroom. Mark only one oval.

☐ Never ☐ Extremely rare ☐ Frequent ☐ Extremely frequent

Item 8: School Organisational Ethos (SOE). ***

To what extent do you agree with the statement: "My school administration actively supports the use of multiple languages in the classroom."?

Note: Mark only one oval.

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Item 9: School Multilingual Landscape (SML). ***

How visible are different languages in the physical environment of your school (e.g., signs, posters, notices)?

Note: Mark only one oval.

☐ Not visible at all ☐ Slightly visible ☐ Moderately visible ☐ Very visible ☐ Extremely visible

Item 10: School Organisational Ethos (SOE). ***

To what extent do you agree with the statement: "The overall school culture encourages a respect for linguistic diversity."?

Note: Mark only one oval.

☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Layer 1 Regression: The Institutional Anchor

39.9%

The longitudinal interaction model explains a robust 39.9% of the variance in Teaching Multilingual Practice (TMP) pedagogies.

The Institutional Anchor

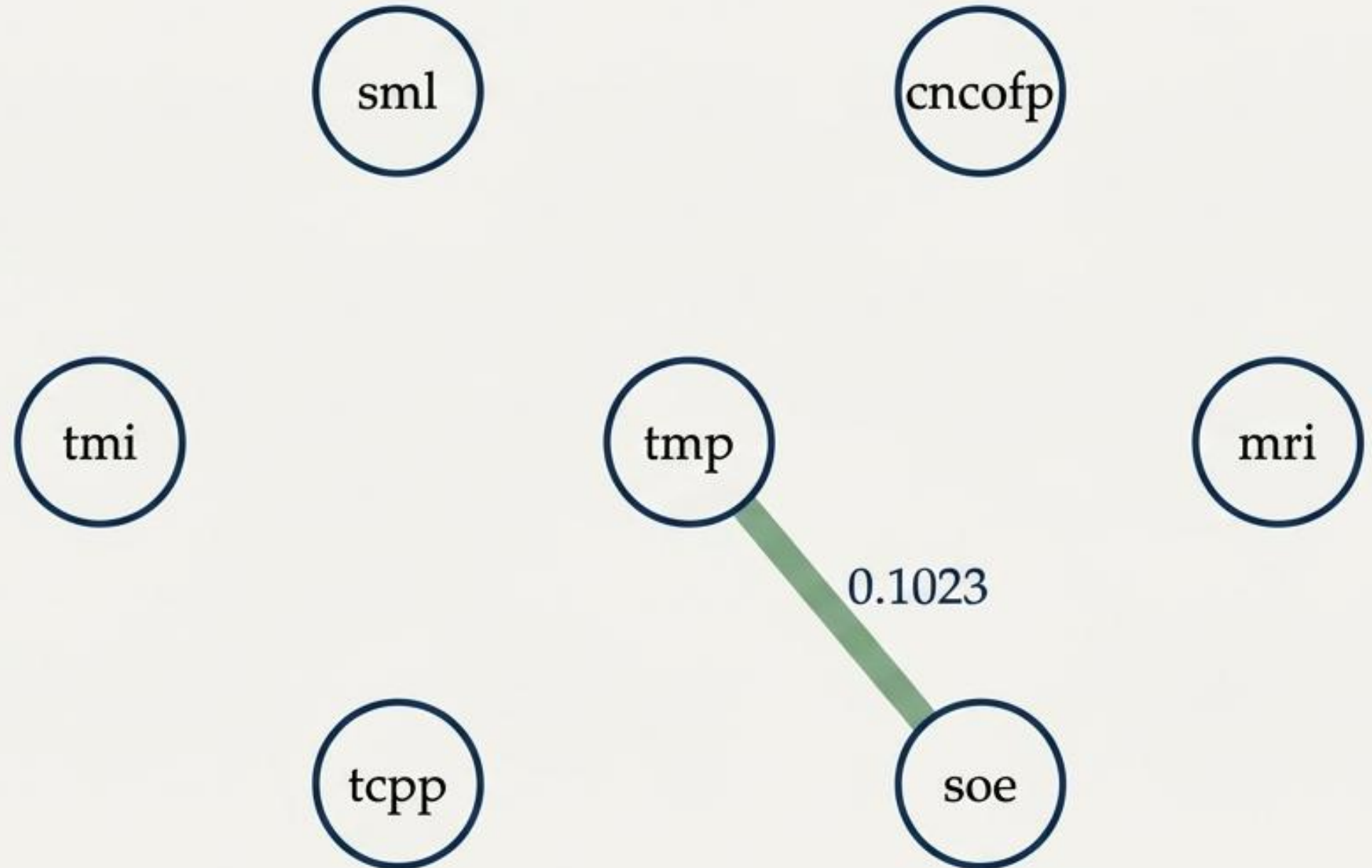
School Organisational Ethos (SOE, Item 10) emerges as the sole, stable institutional predictor across both the pre- and post-practicum phases, aligning with established organisational schema theory (Epitropaki & Martin, 2005).



State 1: The Sparse Pre-Practicum Network

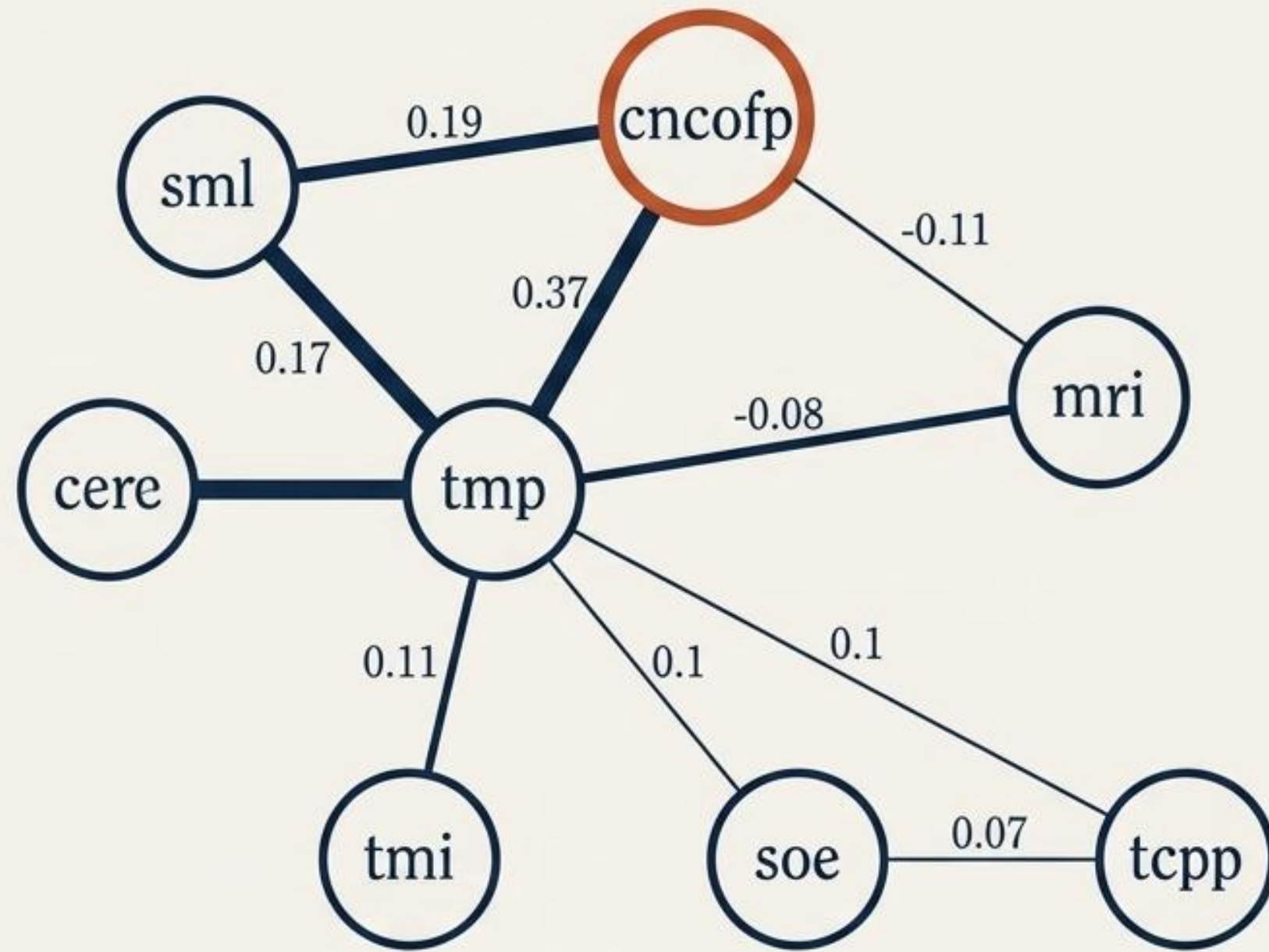
Before entering the physical classroom, the student-teacher's pedagogical network is profoundly sparse.

Only a single non-zero edge exists in the ecosystem: SOE–TMP (edge weight = 0.1023).



At Time 1, student-teachers rely purely on abstract institutional ethos. The system lacks the complexity of live classroom interaction.

State 2: The Dense Post-Practicum Ecosystem



The practicum acts as a perturbation event. The system awakens, generating 8 new non-zero edges.

The Hub: Classroom Nano-Communities of Practice (CNCOFP) becomes the dominant attractor state in the network.

Significant interaction effect for CNCOFP: $\beta = 0.53$, $p < .001$. It is now the primary engine of multilingual practice.

Network Invariance Testing: The Statistical Proof

Network Invariance

A significant structural shift is confirmed across time.

$M = 0.3727, p = .024$ ✓

Global Strength Invariance

Overall network density remained statistically constant, meaning the system reorganised rather than simply expanded.

$S = 1.1009, p = .354$

Significant Edge Alterations

sml-cncofp ($p = .001$)

cncofp-tmp ($p = .016$)

cncofp-mri ($p = .018$)

Deep Dive 1: The TMP Reconceptualisation

The significant strengthening of the cncofp–tmp connection ($p = .016$) represents a fundamental ontological shift in the data.

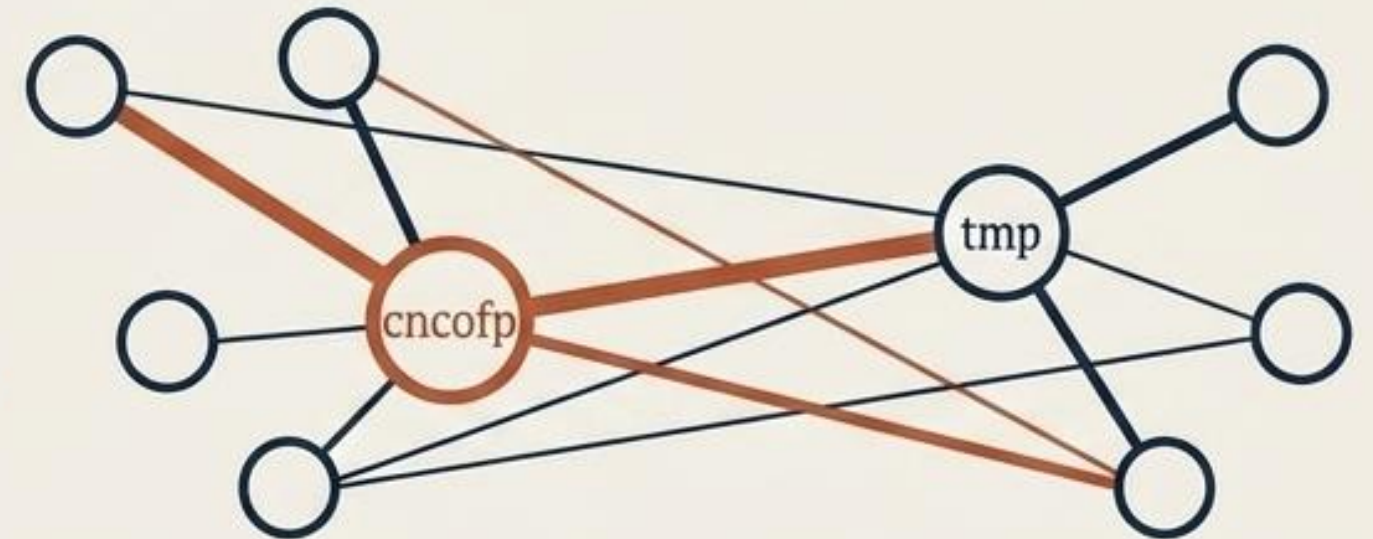
Time 1: Identity



We are no longer measuring a pre-practicum learner preference based on internal identity.

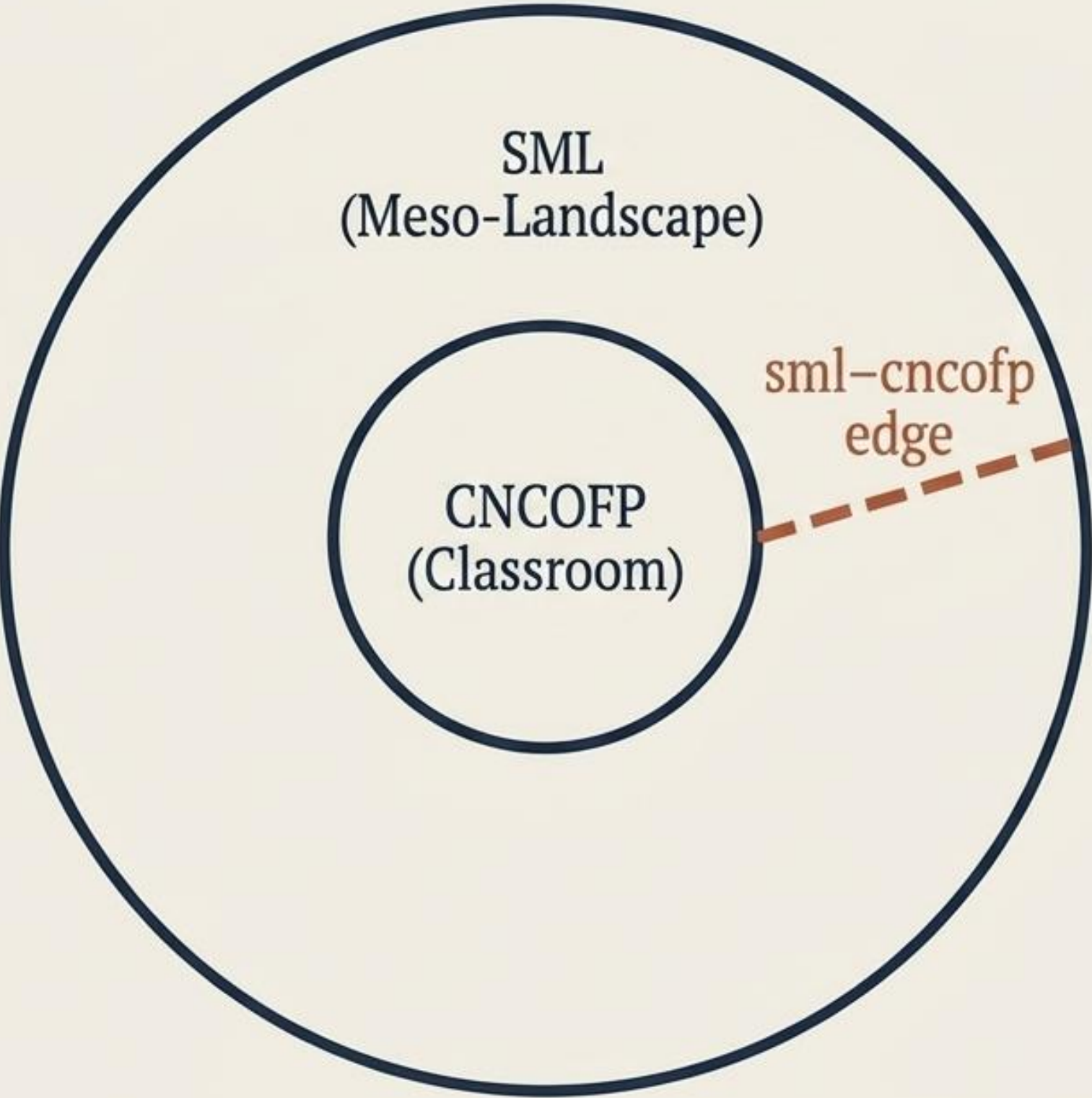


Time 2: Action



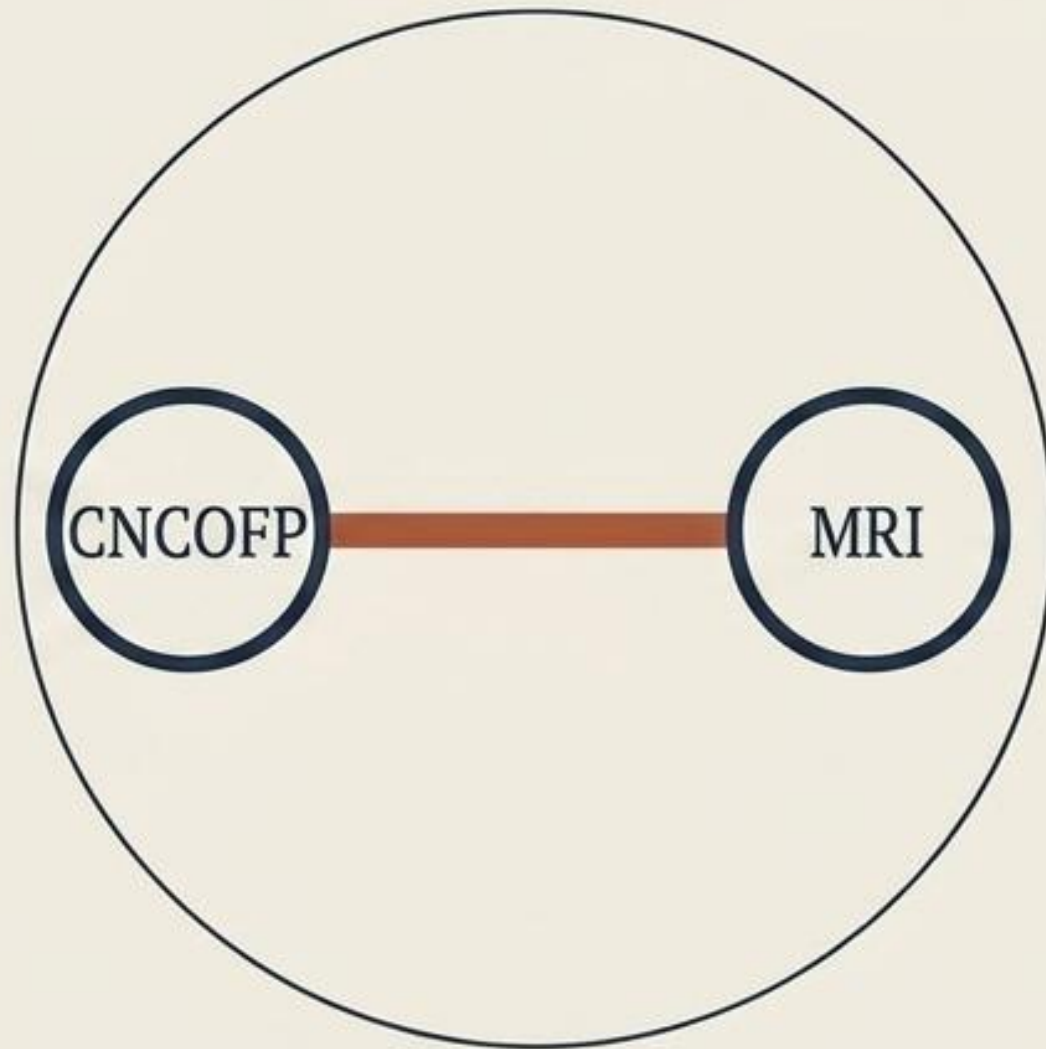
We are capturing a **reactive**, post-practicum classroom action driven directly by the real-time demands of student nano-communities (Galante, 2020).

Deep Dive 2: The SML Operational Shift



The Finding
The emergence of the sml–cncofp connection (p = .001).
The Context
Our operational instrument strictly shifted from measuring school plurilingualism at Time 1 to community English monolingualism at Time 2 (Campbell-Larsen, 2021).
The Insight
Classroom nano-communities do not exist in a vacuum. Student-led translanguaging (CNCOFP) actively adapts in direct response to the linguistic realities of the surrounding neighbourhood (SML).

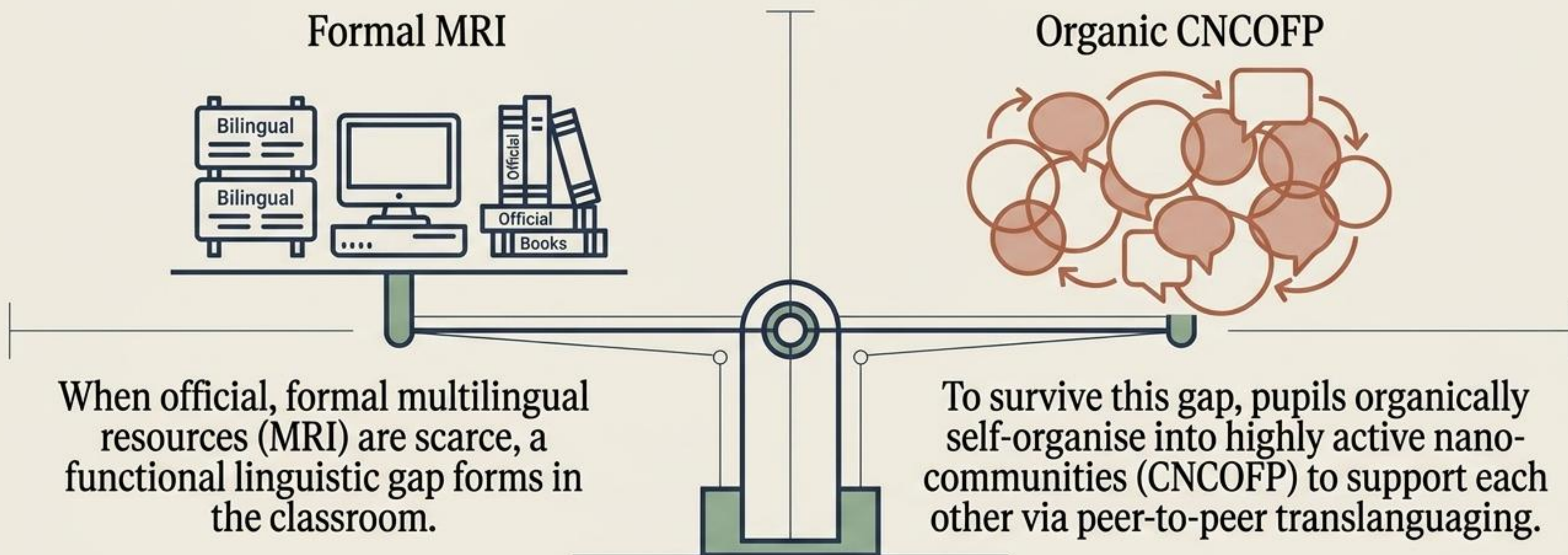
Deep Dive 3: The Resource Paradox



The network reveals the emergence of a statistically significant negative connection: `cncofp-mri` (edge weight = -0.1065 , $p = .018$).

Why does high pupil non-English frequency in lessons (Item 7) correlate negatively with highly supportive school multilingual infrastructure (Item 9)?

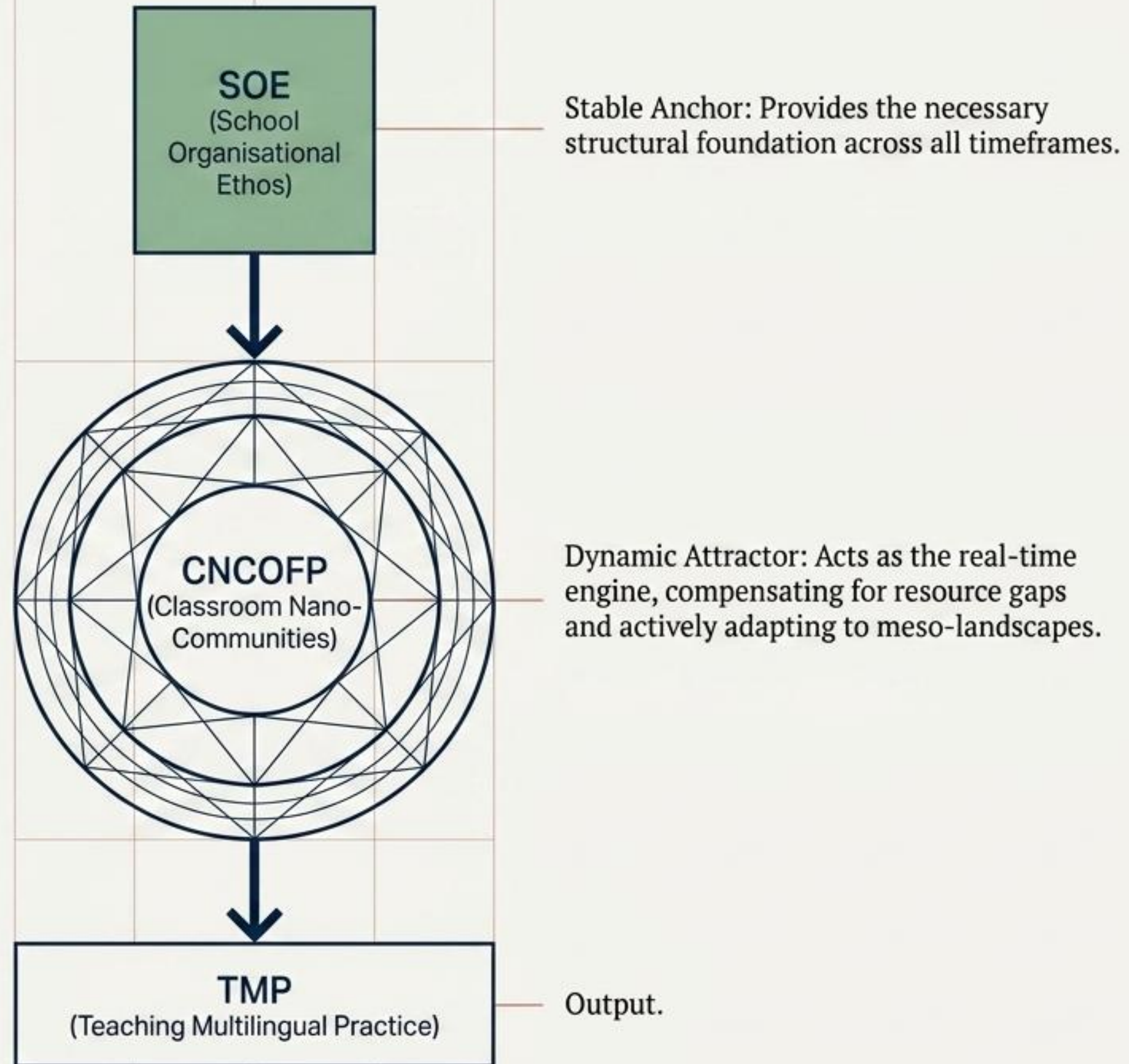
Resolving the Paradox: Compensatory Peer-Support



As official institutional resources decrease, organic peer-support must increase to compensate.

Synthesising the Evolving Ecosystem

The ADUMA framework is not a static checklist; it is an adaptive, compensatory mechanism.



Implications for Teacher Training



Beyond Resource Provisioning

Do not rely solely on supplying multilingual materials. Recognise that a lack of physical resources (MRI) will trigger powerful compensatory peer-support dynamics.



Cultivating Nano-Communities

Train student-teachers to actively map, manage, and harness peer-to-peer translanguageing (CNCOFP), rather than just focusing on their own teacher-led instruction.



Embracing Perturbation

Design practicums that explicitly recognise the shock of transition, building bridges between abstract institutional ethos (SOE) and chaotic classroom social dynamics.

From check-boxes to ecosystems.