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Rethinking Vocational and Academic Pathways in Senior Secondary Education

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Abstract

This paper presents the preliminary phase of a structured literature review, establishing conceptual, historical, and policy foundations for an analysis of how senior secondary curricula can disrupt entrenched hierarchies, positioning vocational and academic learning as mutually reinforcing rather than oppositional.

Particular attention is given to the Aotearoa New Zealand context, where recent reforms highlight tensions between policy intent, system design, and educational outcomes. Drawing on national and international literature, the paper examines how curriculum design, assessment structures, and pathway architectures shape perceptions of knowledge, credibility, and progression. It introduces a set of preliminary codes to guide the full review: status and hierarchy; pathway permeability; curriculum and assessment architecture; and equity.

The review identifies a range of strategies employed internationally, including rebranding initiatives, hybrid school-work learning models, and multiple entry routes to higher education, with mixed evidence of effectiveness.

The findings suggest design principles and structural conditions associated with more equitable access and credible progression. As a preliminary paper, these insights will inform and shape the subsequent structured literature review and contribute to ongoing discussions about how senior secondary pathways in Aotearoa might be redesigned to support diverse learner trajectories without reinforcing existing hierarchies.

Key Words: Vocational Education, Curriculum Hierarchy, Senior Secondary Pathways

1 INTRODUCTION

This paper examines how senior secondary education systems have attempted to reconcile longstanding divisions between academic and vocational pathways. While these pathways are often presented as complementary, they remain hierarchically organised, shaping learners' future opportunities. The paper serves as a first phase in a structured literature review, establishing the conceptual, historical, and policy context necessary to examine how curriculum design, assessment structures, and pathway architectures contribute to hierarchies or attempt to disrupt them. Particular attention is given to the Aotearoa New Zealand context, where recent reforms have sought to reconfigure vocational education while raising new questions about knowledge, equity, and system design.

2 DEFINITIONS

The field of vocational and academic education is complex. Clarity of terminology is essential, as key concepts are often used inconsistently across policy and research. Some believe high school/secondary education should prepare learners for the workforce, whilst others believe it should develop well-rounded citizens, and others perceive it as a time to prepare for university study (Parada et al., 2024; Young, 2008).

Across many systems, there exists a hierarchy of knowledge, sustained through senior secondary school curriculum, assessment, and institutional rules. Many refer to the trajectory into university study as an 'academic pathway', typically associated with theoretical disciplinary knowledge (Ferm, 2021). Vocational pathways are associated with programmes oriented toward specific occupations or industries, often combining practical skill development with applied knowledge, assisting students to transition from school to a career (Curtis, 2008). Academic pathways are frequently framed as the 'default' route to status, mobility, and future opportunity, while vocational pathways are framed as second-choice options associated with lower prestige, lower expectations, and narrower futures (Niemi & Rosvall, 2013).

The concept of parity of esteem refers to efforts to position vocational and academic pathways as equally valuable. However, as this paper will argue, such parity is often more aspirational than realised, with structural features of education systems continuing to reproduce hierarchies between forms of knowledge.

3 CONTEXT

Aotearoa New Zealand is currently engaged in an ongoing review and reform of its education and training system, including the redesign of senior secondary pathways, with attention to the coherence, credibility, and status of secondary–tertiary transitions.

In Aotearoa, the distinction between academic and vocational pathways has been shaped by history and tradition. Technical and trade-oriented education has long been positioned alongside, but separate from, academically-oriented schooling, with different institutions, qualifications, and

progression routes reinforcing this divide (Abbott, 2000). These foundations originated in the late nineteenth century, when class-based differentiation positioned secondary schooling as preparation for university, while technical and manual education was oriented toward trades and industry. Mid-twentieth-century reforms sought to democratise access through a universal and comprehensive secondary system; however, differentiation persisted, particularly through streaming.

Reforms in the 1980s and 1990s, followed by the introduction of the National Certificate of Educational Achievement in the early 2000s, aimed to provide greater flexibility, recognising both academic and vocational learning, and enabling more diverse recognition of learning. In practice, qualifications associated with academic subjects have continued to carry higher status, with examination results remaining a dominant signal of success and privileging academic pathways.

Policy initiatives (e.g., Trades Academies, Youth Guarantee, Vocational Pathways, and the NCEA Review) have aimed to strengthen alignment between schooling and vocational education, with limited impact on underlying hierarchies. Recent policy discourse frames this as a misalignment between schooling and industry, advocating clearer vocational pathways and stronger transitions into work-based learning (Chand et al., 2024; Johnston, 2025). While these approaches may improve participation, they tend to frame the problem as one of alignment and efficiency, rather than addressing deeper questions of knowledge, status, and purpose. These, together with other recent policy changes, have raised questions about how the rate of change is not sufficiently supported by policy evaluation.

These developments highlight a persistent systemic challenge: the academic–vocational divide is embedded in institutional structures, cultural expectations, and competing purposes of education. As such, achieving parity of esteem is better understood as a complex or 'wicked' problem (Head, 2022), shaped by contested values, interdependencies, and no straightforward solution. For technology educators, this is not abstract. Technology learning sits at the boundary between conceptual knowledge and applied practice, and between schooling and the world of work, making it particularly sensitive to how knowledge is defined, valued, and credentialled within curriculum and assessment systems.

This paper synthesises international research relevant to reimagining senior secondary curricula and pathway structures so that vocational and academic learning are positioned as mutually reinforcing rather than oppositional.

4 CONCEPTUAL FRAMING

Three concepts are used throughout this paper to interpret the literature: parity of esteem (Cort, 2025), permeability (Schmees et al., 2025), and wicked/complex problem framing (Head, 2022).

4.1 Parity of esteem

Parity of esteem holds that vocational learning should be valued as highly as academic learning. In the analysed literature, parity is closely tied to credibility signals such as progression rights (who can enter higher education), the perceived quality of programmes, and the conceptual status of knowledge taught in different tracks. The disjuncture between parity rhetoric and learner experience has been the basis for international reviews (Polesel, 2010; Tarabini & Jacovkis, 2022; Wahlberg & Gleeson, 2003).

4.2 Permeability

Permeability refers to how easily learners can move between pathways and progress into higher learning or work without being trapped by earlier choices. The literature treats permeability as both a structural feature (rules, entry requirements, bridging routes) and a lived experience (do students feel options are real?). Publications include: examples of multiple entry routes and outcomes (Biemans et al., 2020; Schmees et al., 2025), institutional constraints and early differentiation shaping aspirations long before formal pathway choices are made (Dörffer & Tieben, 2025), and systems that offer 'routes' on paper but still reproduce sorting and unequal outcomes in practice (Dörffer & Tieben, 2025; Doroftei & da Silva, 2024; Tarabini & Jacovkis, 2022).

4.3 Wicked vs complex problems

A recurring warning in the literature is that making vocational pathways 'attractive' and 'equal' often presents a wicked, or at least complex, problem rather than a technical problem with a stable solution. A Danish case explicitly frames parity as a wicked problem, noting that policymakers draw on familiar reform strategies but find them insufficient to shift participation and status (Cort, 2025). This framing matters for technology educators because it discourages simplistic fixes (for example, rebranding alone) and instead points to multi-layered change across curriculum design, assessment, institutional rules, and public narratives.

5 METHOD

This paper addresses the following research question:

> How do senior secondary curriculum designs integrate vocational and academic pathways in order to achieve parity?

This paper presents an initial phase of a structured literature review, focusing on the development of an analytical framework and emphasising the identification of patterns, tensions, and conceptual categories to inform subsequent analysis.

Searches were conducted across ERIC, Scopus/Web of Science, Google Scholar and ProQuest Education using terms related to curriculum integration/reform, academic–vocational divides, parity of esteem, pathways, and senior secondary contexts.

Initial searches that included New Zealand terms produced very limited (sometimes zero) returns in peer-reviewed literature, leading to a principled widening of search parameters to include international studies while retaining relevance to senior secondary curriculum and pathways, particularly Technology education.

5.1 Inclusion and screening

Peer-reviewed journals, theses, policy reports, and curriculum analyses published between 2006 and 2026, written in English, with full text available, were included. Studies were screened by title and abstract and then assessed for eligibility. For each included study, data collection captured: the aim/purpose, theoretical framing (where provided), methodology, key findings, and any implications for Aotearoa New Zealand.

5.2 Coding

A set of codes was developed both deductively and inductively to guide the analysis of the full set of literature. A subset of studies addressing senior secondary or upper-secondary pathway structures, perceptions of VET, academic–vocational divides, school–work integration designs, and transition to higher education was used to test the codes and identify the initial themes reported here. The codes provided an analytical lens for identifying recurring patterns, tensions, and design features across systems, forming the basis for the subsequent full synthesis.

5.3 Trustworthiness

The initial phase of this study, as reported here, aimed to enhance the trustworthiness of the analysis and subsequent presentation of findings. The development of codes was a collaborative process in which the authors discussed their reading and suggested codes. Intercoder reliability was assessed by comparing the coding of specified articles across the authors. The themes emerging from the analysis were also discussed and jointly agreed on.

6 INITIAL FINDINGS

6.1 Theme 1: The hierarchy is reproduced through discourse, credibility signals, and curriculum design

Across the analysed subset, the academic–vocational hierarchy appears to be reproduced through the way systems structure and signal what counts as legitimate knowledge, not only through public perception. A recurring pattern is the disjuncture between policy rhetoric and lived experience. A UK case study, for example, highlights a gap between the promise of high-status vocational pathways and the realities reported by students and tutors, including constrained progression and lower expectations (Wahlberg & Gleeson, 2003). Similarly, Australian research identifies ongoing contestation around the quality and purpose of vocational provision in schools, with concerns about outcomes and participation reinforcing its lower status (Polesel, 2010).

Curriculum design and structural relationships play a key role. While integration of vocational learning into senior secondary systems can expand options and reshape practice (Polesel, 2010), such changes do not necessarily disrupt hierarchy unless accompanied by shifts in credibility signals, including assessment status and access to further education. Several systems attempt to address status through rebranding and promotion. Examples from Hong Kong and Bulgaria show that positioning, language, and perceived quality can influence student perceptions and participation (Lee et al., 2018; Teofana et al., 2025). However, these strategies appear insufficient where underlying structures remain unchanged (Cort, 2025; Tarabini & Jacovkis, 2022).

A consistent underpinning of this hierarchy is epistemic. Academic pathways are typically associated with abstract, theoretical knowledge, while vocational pathways are framed as context-specific or applied (Tarabini & Jacovkis, 2022). This distinction has direct implications for Technology in New Zealand: when applied learning is positioned as 'skills' rather than knowledge-rich practice, these areas risk lower status within curriculum and assessment systems.

Achieving parity requires more than expanding vocational options or improving an image. It depends on how systems define, structure, and credential knowledge, and on whether applied learning is recognised as conceptually rigorous and capable of supporting credible progression (Cort, 2025; Polesel, 2010; Tarabini & Jacovkis, 2022).

6.2 Theme 2: Permeability is promised, but pathway structures often reproduce inequity and sorting

Systems frequently present multiple pathways and transitions as evidence of flexibility and choice. However, these arrangements often appear to reproduce, rather than disrupt, existing inequalities. A key issue is the role of early differentiation and institutional context in shaping learner trajectories. Evidence from Germany suggests that aspirations are strongly influenced by school type and socio-economic composition, with institutional constraints shaping options well before formal pathway decisions are made (Dörffer & Tieben, 2025). Similarly, analyses from Spain position the academic–vocational divide as a central mechanism in the reproduction of social inequality, as different groups are channelled into pathways with unequal access to high-status knowledge and credentials (Tarabini & Jacovkis, 2022).

While some systems have introduced multiple entry routes to support permeability, their effects are uneven. Norway, for example, provides vocational pathways into higher education (Schmees et al., 2025), and Dutch evidence suggests that alternative routes can support positive learner experiences (Biemans et al., 2020). However, the presence of pathways does not guarantee equitable access or outcomes; routes vary in accessibility, navigability, and legitimacy, and may be more readily utilised by learners with greater resources or institutional support.

Structural and logistical features of programmes can further shape participation. Studies of vocationalised curricula in England highlight the demands of portfolio-based assessment and workplace engagement, which may require access to time, transport, and networks beyond the school (Bell & Donnelly, 2009). These conditions can introduce additional barriers, particularly for learners with fewer resources.

6.3 Theme 3: Reform strategies exist, but parity behaves like a complex or wicked problem

A third recurring pattern is that reforms aimed at strengthening vocational pathways and achieving parity tend to be partial, contested, and limited in their impact. This supports the view that parity is less a technical problem with a clear solution and more a complex or 'wicked' problem. Comparative analyses identify recurring reform strategies, including enhancing vocational provision, creating linkages between pathways, and developing hybrid models of school–work learning. However, evidence suggests that no single approach has been consistently successful in shifting participation or status (Cort, 2025).

A critical issue is how the problem itself is framed. Policy analyses indicate that problem definitions, whether framed as issues of participation, relevance, or system alignment, shape the range of solutions considered (Luimes, 2023). The current draft New Zealand curriculum positions knowledge and practice side-by-side on equal footing across all eight learning areas. Where vocational pathways are positioned as alternatives for those not succeeding academically, reforms tend to reinforce separation. Where they are framed as knowledge-rich and future-oriented, there is greater potential for integration and credibility.

Hybrid and boundary-crossing models offer one avenue for reform, particularly through integrative learning environments that connect school and work (Bouw et al., 2021). However, their effectiveness depends on design choices, including how learning is structured, assessed, and supported. Without careful alignment, such models may increase complexity or logistical burden without improving status or outcomes.

Rebranding and promotional strategies are commonly employed (Lee et al., 2018; Teofana et al., 2025). While these can influence perceptions, evidence suggests they are insufficient in isolation. Without corresponding changes to progression pathways, knowledge structures, and assessment systems, efforts to improve attractiveness may remain superficial (Cort, 2025; Tarabini & Jacovkis, 2022).

Technology educators often face pressure to provide 'practical options' while also ensuring academic credibility. Theme 3 suggests that enduring change requires systems thinking: aligning curriculum intent, assessment and credential rules, transitions, industry relationships, and public narratives. It also implies that Technology education can provide knowledge-rich applied learning, or can be absorbed into the hierarchy if treated as low-status electives. Overall, this theme reinforces the importance of treating parity as a systemic challenge requiring coordinated change across curriculum, assessment, institutional structures, and public narratives. Isolated or single-layer reforms are unlikely to disrupt entrenched hierarchies.

7 DISCUSSION: WHAT THIS MEANS FOR TECHNOLOGY EDUCATORS AND FOR AOTEAROA PATHWAY DESIGN

7.1 Parity is epistemic and structural, not just reputational

The literature repeatedly shows that the hierarchy is sustained through what the system signals about knowledge. If academic learning is coded as abstract and vocational learning as specific and contextual (e.g., Tarabini & Jacovkis, 2022), then parity requires intentional effort to convey the conceptual depth of applied learning. This provides a strategic opportunity for Technology to explicitly foreground conceptual knowledge-building through design, systems thinking, modelling, and critique. However, credibility is also structural: if assessment and credentialing arrangements limit progression, parity cannot be achieved by pedagogy alone.

7.2 Permeability must be real for learners, not just present in policy

Multiple routes into higher education (e.g., Biemans et al., 2020; Schmees et al., 2025) demonstrate that permeability can be designed, but equity depends on accessibility, navigability, and legitimacy. For technology educators, this means pathway guidance and curriculum design should assume diverse futures and deliberately avoid 'dead-end' framing. If applied pathways require extensive portfolio management or workplace access (e.g., Bell & Donnelly, 2009), schools must also design supports to prevent inequitable participation (e.g., time, transport, supervision, networks).

7.3 Treat the problem as complex/wicked: design for iterative improvement, not one-off reform

The wicked problem framing (e.g., Cort, 2025) suggests that reforms will tend to under-deliver if systems treat parity as a technical policy adjustment. Instead, systems may need iterative, multi-level approaches that include curriculum coherence, hybrid learning designs (e.g., Bouw et al., 2021), assessment and transition rules, and public narratives (e.g., Lee et al., 2018; Teofana et al., 2025). For Aotearoa, the apparent scarcity of New Zealand peer-reviewed studies directly aligned with this framing (as observed in the search process) can be framed as a research and practice gap. This can be framed as a call for field-building: documenting innovations, evaluating integrative models, and analysing how Technology can work as credible, future-facing pathways without reproducing hierarchy.

8 LIMITATIONS

This paper presents an initial phase of a structured literature review and is, therefore, intentionally partial. The analysed subset represents approximately one-third of the intended corpus, and coding categories are still being refined through iterative analysis.

Rather than aiming for exhaustive coverage, this phase prioritises developing an analytical framework to guide subsequent synthesis. The findings should therefore be interpreted as indicative of emerging patterns and tensions, rather than definitive conclusions.

9 CONCLUSION

This preliminary analysis suggests that the persistence of the academic–vocational hierarchy in senior secondary education is embedded in how systems define, structure, and credential knowledge, and in how progression opportunities are organised and signalled. Across the analysed subset, efforts to address this divide (through expanded pathways, hybrid models, and rebranding strategies) appear to have limited impact where underlying epistemic and structural conditions remain unchanged. This reinforces the framing of parity of esteem as a complex or wicked problem that requires coordinated change across curriculum, assessment, institutional arrangements, and public narratives.

The primary contribution of this paper is the development of an initial analytical framework, centred on status and hierarchy, permeability, curriculum and assessment architecture, and equity, to guide a more systematic examination of these issues.

For Aotearoa New Zealand, the findings highlight a policy challenge and a research opportunity. While reforms continue to focus on alignment and participation, the deeper question of how knowledge is valued within the system remains unresolved. At the same time, the limited presence of New Zealand-focused research within this framing suggests a need for further empirical and conceptual work.

The next phase of the review will extend the dataset and refine the analytical framework, with the aim of producing a more comprehensive account of how senior secondary pathways can be designed to support diverse learner trajectories without reproducing hierarchy.

10 DISCLOSURE STATEMENT

Generative artificial intelligence (GenAI) tools were used as a 'critical friend' to help enhance clarity, structure and argumentation. The writing of the article was a human-led collaborative process. All substantive ideas, theoretical perspectives, analyses, and interpretations are the authors' own.

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