IST Establishment

New Zealand Institute of Skills and Technology Establishment Board

Mobilising the New World

Report of the Education Products and Services and Online Arrangements Workstreams

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Executive Summary

Workstream Approach

This is a combined report for the Education Products and Services and Online Arrangements workstreams. The Education Products and Services and Online Arrangements workstreams took an expansive approach to Minister Hipkins' instructions in his 28 August 2019 letter of expectations. We defined products and services to mean those required to enable the full learning journey and to meet learners' diverse needs as envisaged by the NZIST charter. The Online Arrangements workstream broadened its scope to ask what technology-enablement will be required to support the learning journey.

We took a collaborative design approach. As our discussions progressed, six key principles emerged:

- Think big, think transformative
- Start with what is needed to enable the learning journey
- Technology capability requirements flow from business requirements; specific technology system choices come last
- Focus on the strategy and capabilities required, not on end-state organisational structure
- Do not get held up by dependencies and interdependencies
- Leverage what is good with the current system, and add value to learners, employers and staff.

We sought to develop ideas that, taken together, would deliver on these objectives:

- Enable all learners to succeed and thrive, especially Māori, Pasifika, those with disabilities, and those disengaged from training.
- Reach and connect all learners to the right education and training.
- Deliver the right skills and knowledge, the right way, at the right time.
- Be there for employers.
- Create a culture of collaboration and engagement.
- Spend money wisely.

Summary of Recommendations

Notes: * Products: programmes and micro=credentials; ** Learning resources: also known as materials, courseware, products or content. All information, including assessment, to support the learners' success and reinforce the learning. The technology plan would cover learner management systems (LMS), learning content management systems (LCMS) and any other relevant technology systems.

1. 24/7 Learner Support Service

We propose that the NZIST establish a 24/7 support service, for all learners in all learning modes and contexts, whose support advisors have a 360° view of learners, are able to proactively identify possible learner needs, and to reach out to offer concrete support, particularly to priority learners[1].

Proposal

The 24/7 Learner Support Service is the game-changing initiative to improve learner success. It would build on existing support services across the ITP and ITO network to support the whole person and remove obstacles to successful learning. It would offer support from pre-enrolment (e.g. study and career pathway choices; financing study) through the learner's study journey (e.g. academic and personal support) to employment (e.g. job search/career advising), and back into study again as graduates seek to upskill or change careers. It would serve enrolled (and potential) NZIST learners of all types, wherever and however they are learning (distance[2], online, classroom, work-place, and blended modes).

The key to delivering 24/7 personalised and proactive support for learners will be a network-wide technology-enablement strategy including deep learner analytics, and delivered by a dedicated cross-network learning support team.[3]

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[1] We use the term "priority learners" to refer to learners who face higher barriers to successful VET learning or who have been historically underserved by learning support. These learners include Māori, Pasifika, learners with disabilities, gender diverse learners, learners with mental health issues, learners who are 'first in family' to participate in tertiary education, are changing careers or returning to tertiary study for a 'second chance', those from low socio-economic backgrounds, and those with low or no NCEA credits. We are also thinking of work-based learners as these are a new group to be served by the NZIST and are therefore likely to have higher support needs at least initially.

[2] Distance learning may be delivered over the internet or using more traditional correspondence methods.

[3] This team does not necessarily need to be co-located so long as it is linked in to the same technology platform.

To deliver 24/7 support, the NZIST will use technology-enabled services such as phone/chat/text/video support and asynchronous services such as chat bots and email. Aggregating demand across New Zealand will enhance the viability of this service. Face-to-face in-person support service should still be an important element and delivered on regional campuses, in workplaces and potentially other face-to-face nodes, e.g. libraries, where regional campus reach is insufficient to serve communities.

To deliver personalised and pro-active support, the NZIST must invest in developing a data warehouse that aggregates learner data from student management, learner management, CRM and other systems. It must also invest in developing an analytics team capable of analysing that data and providing timely reports on individual learners for advisors and learning facilitators. By using deep learner-analytics based on data from multiple sources, the NZIST can prompt an advisor to contact a learner to check-in and offer support. Advisors could, for instance, reach out if learners had not completed a work-place assessment or have been marked absent in class a significant number of times.

By leveraging technology to maximise learner self-service, and analytics to help identify learners potentially in need of support, the NZIST would enable focused advisor time and outreach to the learners who most need help, at the time they need it. For learners identified as needing the most support, the support service would assign a personal advisor, a best-practice that builds learner engagement and sense of community.[4]

Future Vision

As the Learner Journey's work found, learners often do not know where to reach out for support, are reluctant to do so, or need support outside of business hours. Making it easy for learners to find the help they need, when they need it is essential to learners' success, confidence and engagement in the NZIST community.

Risks

1. Setting learner expectations that cannot be met. Mitigation: Manage learner service and service level expectations, particularly in the early stages. Communicate staged roll-out as systems and personnel are scaled. Involve learners in system design and implementation.
2. Unsustainable costs. Mitigation: focus on priority learners for pro-active provision of support.
3. Inconsistent or low-quality learner support. Mitigation: training, clear roles/responsibilities/service level timeframes/expectations.

Next Steps

In Phase II the NZIST should establish a co-design team, involving learners and potential learners themselves, to take this work forward. This includes identifying and prioritizing the services to be offered and target learners for piloting proactive support. While it will take time and resources to evolve network-wide learner analytics (for pro-active learner support), there is much that can be leveraged to deliver practical help sooner by using existing enabling technologies. For existing learners, creating a live call/chat support service that has the ability to connect them to immediate IT support outside of business hours and refer them, including by making appointments, to the right resources for them, would be a good start. As for new and potential NZIST learners, data collected from the marketing and enrolment pipeline could be integrated to the data warehouse. This data could be analysed to identify priority learners for referral to the learner support service for pro-active outreach and support.[5] Another short-term win will be enabling advisors (and learners) to view programme offerings across the NZIST system so that advisors can offer potential enrollees good advice.

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[4] The Phase II design team will need to scope targeting and costing of personal advisors, including taking into account existing personal advisor services in the ITO network.

[5] This data should be captured in a CRM system.

2. Learner Digital Home

We propose that existing and potential learners have an easy to navigate, single point-of-access that connects them to everything they need to thrive in their current learning, and also to connect them to the right learning for them as their careers progress.

Proposal

The NZIST learner digital home would aggregate services such as: enrolment; my learning (schedule, course content access); my plan (study and career planning); my finances (including Studylink resources); my network (peer-to-peer and community); my support (including the 24/7 support centre); my profile (academic records, cv), and easy to use digital communications tools.

The Learner Digital Home would be used by learners in all contexts: work-based; on-campus; online; and distance learners in New Zealand and overseas.

Future Vision

Making interaction with the NZIST as learner-centric and simple as possible will remove unnecessary hurdles and make it easier for learners to succeed.

Risks

1. Containing scope. Mitigation: focused research to identify features of a digital home most valued by learners.
2. Poor uptake. Mitigation – ensure core services are excellent (enrolment, timetables, results) and promote them strongly at point of enrolment.
3. Timeframe for development/testing/implementation/training. Mitigation: clear project and communication plan(s).

Next Steps

In Phase II, the NZIST should establish a co-design team, involving both learners and potential learners, to take this work forward. A first step towards creating an NZIST Learner Home would be to establish an NZIST home page with information resources and providing access to the first network-wide services, e.g. the 24/7 learner support service, and an NZIST-wide programme pathways tool enabling learners to identify learning options across the network.

3. Employer Digital Support Service

We propose that the NZIST establish a co-design team to develop an easy to access network-wide NZIST digital service that gives employers the right support at the right time.

Proposal

The NZIST has an opportunity to leverage scale economies to build modular online support services applicable across many employer types and industries, and to deliver them via interfaces tailored to specific industry/employer needs. Modular services could include, for example: the ability to view apprentice and trainee progress online; easy ways to upload evidence of learning such as images and videos; the ability to complete and file training agreements electronically, and to use self-service to arrange training where desired. These core services should be delivered in customised ways for different industries and employer types.

Future Vision

Currently, ITOs provide varying types and levels of online support and engagement to employers. Their efforts have been customized to individual ITO business models and limited by a lack of scale economies.

Risks

Investing in things employers don't really want, leading to poor uptake. Mitigation: thorough research in partnership with employers; pilot highest priority service(s) identified by employers.

Next Steps

In Phase II, the NZIST must work closely with employers across industries and across employer types to develop this service. We therefore recommend that, the NZIST establish a co-design team involving employers from across industries and of different kinds to develop this service. It will be important to involve employers who have so far not engaged in training with ITOs or ITPs as a key goal for the NZIST must be to understand and better serve their needs. The co-design team should engage in a deep investigation of employers' needs and then a series of design and prototyping sprints to develop, test and pilot the NZIST service, building on the many examples of existing good practice across ITOs.

4. Network-Wide Applied Research Coordination Service

We propose that the NZIST establish an Applied Research Coordination Service to bring existing network expertise and resources together to focus on real world problems and development needs, both large and small, in a coordinated way.

Proposal

The Applied Research Coordination Service would provide leadership and facilitate coordination across the NZIST network to leverage existing research and specialist expertise and relationships with employers, communities, Iwi groups, facilitators and learners, in ways that differentiate our organization from a university. It would champion applied research from the vocational education sector by promoting the services available throughout the network and promoting the success stories, and also develop best practice systems and processes, e.g. IP management and contracts, and commercialisation.

Future Vision

While current ITPs have applied research capabilities, these are currently under-utilised and lack a coordinating mechanism to identify and match stakeholder needs with the right ITP resources. Moreover, New Zealand businesses, industries, iwi and communities frequently often lack awareness of which applied research capabilities are available and how they might utilise them.

By better coordinating and promoting existing applied research capabilities, the Applied Research Coordination Service would increase the NZIST network's impact on, and engagement with communities, iwi, employers and professions and through them increase NZ productivity. It would also expand staff relationships with employers, professions and communities and expand learner engagement in experiential learning in a wide range of problem-solving contexts.

Risks

1. Lack of employer/community/iwi engagement. Mitigation: prioritise outreach, including communication of prior successes.

2. Lack of engagement across network. Mitigation: governance arrangements must engage and empower existing applied research providers across the network.

Next Steps

In Phase II of the design process, the NZIST should establish a cross-network team to develop the 'Applied Research Coordination Service'. This team should be led by the senior NZIST research leader, and include representatives of research leaders from the NZIST network, including expertise in commercialisation. It should also clarify the relationship to CoVEs.

5. Network-Wide Learning Design and Development Service (LDSS)

We propose that the NZIST establish a network-wide Learning Design & Development Service (LDSS) and charge it with delivering on the NZIST's charter expectations of:

- **Raising learning quality** through best-practice specialised learning design that lifts the quality of learning, teaching, and assessment across the system and meets changing learner needs.
- **Increasing learner mobility** so that learners can continue their chosen learning paths even if they change modes of instruction, e.g. from online to classroom to work-based learning, or the location of their learning, e.g. from one region to another.
- **Delivering programme consistency with regional flexibility** so as to support learner mobility and high-quality learning experiences, while allowing for regional variation where needed to meet specific regional learner and employer needs
- Ensuring that learning is designed and delivered in ways that **maximise accessibility for learners**. NZIST learning should be accessible to all learners, regardless of learners' location, time constraints, preferred delivery modes, and technological constraints. This includes Māori and Pasifika learners, learners with disabilities, and international students.
- **Responding quickly to changes in learner and employer/industry needs**, technological advances, and to changes in best-practice learning design.
- **Reducing the ongoing cost of resource development** by reducing duplication of effort and reusing and repurposing existing educational resources where applicable.

Proposal

The Learning Design and Development Service would have three key elements:

1. **NZIST Network-wide Learning Strategy.** To deliver on the expectations outlined above, the NZIST needs a network-wide learning strategy, supported by a policy framework, that:

- Identifies network-wide graduate attributes or characteristics, and suitable models of learning and assessment to shape the design of NZIST learning experiences
- Defines the NZIST's product market position through engagement with industry, employers, and learners, and expert knowledge of vocational education best practice and work trends
- Is based on a deep understanding of ITOs' and ITPs' current products and services and how they are delivered nationally and regionally
- Includes multi-year product plans that define the NZIST's product offering at foundational, vocational and degree-level and above level, and its priorities for product development and rationalization to remove unnecessary duplication
- Includes multi-year learning resource plans that set the priorities for establishing high-quality network-wide learning resources, including of "master programmes".

2**. A Design and Development Team**. This will be a centrally co-ordinated network-wide service. This service will be responsible for developing products required by the product plans, to agreed learning design principles and quality standards. They will also identify and, where necessary, develop quality-assured learning resources in line with the learning resource plans.

Importantly, the service will seek to quickly raise the quality of learning resources across the NZIST network by identifying and sharing the best existing learning resources available within it, from whole programmes and micro-credentials to courses and assessment modules down to individual media items such as digital simulations. This process will be an important part of this service's work, particularly in the transition phase. Generally, the service will adopt a principle of leveraging high-quality learning resources of all kinds from across the NZIST network before designing or purchasing new ones. Taking this approach

will ensure that the NZIST identifies and leverages existing capabilities from ITPs, ITOs and industry, especially subject matter experts and leading learning designers.

3. **A Quality-assured Learning Library**. A digital library could house quality-assured learning resources identified, developed or digitised by the Design and Development team, and make them available for use in network-wide learning delivery. This may be particularly valuable in a transition stage as NZIST identifies its future state design process.

Future Vision

Charter expectations as described above are achieved.

Risks

1. Failure to deliver early results to learners and employers/industry. Mitigation: manage scope tightly. Identify and focus initially on priority qualifications where learner success is poor. Identify and develop highest priority new products to meet employer/industry needs.
2. Academic workforce is alienated. Mitigation – spread revision of existing qualifications around the network.
3. Insufficient learning design staff. Mitigation: train additional staff and leverage existing capability in ITPs and ITOs.
4. High cost to curate/develop resources. Mitigation: clear projects of work with scopes/project plan. Follow a standardised approach.

Next Steps

In Phase II, the Learning Design & Development Service (LDSS) should be established as soon as possible under the governance of the senior NZIST academic executive responsible for learning products. It should include the chair of the new Academic Board and also involve senior academic and learning design and delivery experts from across the NZIST network, from all modes of learning, especially from expected high growth modes such work-based, distance and online learning. In designing the LDSS, the NZIST should take into consideration that staff with the essential learning, instructional and assessment design capabilities are distributed widely throughout the NZIST network and develop a structure that effectively utilises these capabilities. The newly formed LDSS should establish a team drawing on network-wide expertise to begin development of the NZIST learning strategy and associated processes.

As there are multiple learning resource design and development models/ frameworks in place across the existing network of capability, a first priority for the LDSS will be to prepare a report that reviews and evaluates alternative models that might be adopted by the NZIST-network, and propose a recommended approach. This report should pay particular attention to learning design and development models for expected high growth modes of delivery, namely work-based learning, distance and online delivery.

We note two other specific issues that will require further research by the LDSS: where “master programmes” would add the most value in the NZ environment; and, the intellectual property rules for NZIST content. The LDSS should also prioritise establishing productive relationships and role clarity with the WDCs and the NZQA.

6. Collaborative, Capable Staff and Leadership

We propose that the NZIST establish a network-wide staff training and development service for learning facilitators, leaders, and management.

Proposal

New Zealand has not required educators at polytechnics to be certified as capable teachers/learning facilitators, although some ITPs do so. We note that TAFE Queensland requires all instructors[6] to complete its certificate in training and assessment (TAE) before commencing teaching. We recommend that the NZIST also make possession of an advanced practice-based teaching qualification mandatory for all NZIST learning facilitators.

We also recommend that the NZIST develop a management and leadership training programme focused on building academic leadership and management talent at all levels, including by building people-to-people links and collaboration across the NZIST network.

Future Vision

As well as having the right professional/trades expertise, NZIST learning facilitators are also trained and skilled educators across modes of delivery. The NZIST develops a group of educational leaders and managers of the future, with strong people-to-people links across the network.

Risks

1. Resistance to upskilling teaching qualifications. Mitigation: phased implementation of mandatory training, support package (e.g. decreased workload), and linkage to career progression and remuneration.
2. Lack of participation in leadership training. Mitigation: link programme to career progression and enable work release.

Next Steps

In Phase II, the NZIST should establish a team to take this work forward, commencing with a stocktake of existing tertiary teaching qualifications and programmes. Early engagement with leaders and managers will be needed to design appropriate leadership development experiences.

7. Technology Transition Plan

We propose that, as a Phase II priority, the NZIST assign a team to design and develop a network-wide technology transition plan to deliver business as usual services to learners, employers, and staff and quickly resolve problems as they arise.

Proposal

Suggested principles for the transition plan are set out in the workstream's full report.

Future Vision

The NZIST maintains learner, employer and staff trust and confidence throughout the transition process.

Risks

Insufficient sustained attention to plan development and implementation. Mitigation: dedicated resources, multi-year planning.

[6] Those staff delivering teaching and learning. Not staff such as training advisors whose role is to arrange learning.

Next Steps

The NZIST technology leader should establish a team to take forward the transition planning, and communicate as soon as possible its commitment, as a first priority, to ensure that learners and employers do not experience disruptions as the NZIST evolves its technology systems.

8. Learner Data Warehouse and Analytics Service

We propose that the NZIST immediately begin design and development of a Learner Data Warehouse and Analytics Service.

Proposal

The plan for this game-changing service that will enable pro-active learner support and targeted improvement of learning design and learning facilitation should encompass a:

1. 360° learner data warehouse. No one system will provide a full picture of a learners' interactions with the NZIST. For example, learner management systems (LMSs) will capture learners' interactions with their courses; student management systems (SMSs) will capture learner demographics and academic records; CRM systems will capture other interactions, e.g. with advisory staff or employers; the NZIST website will capture learner enquiries. A full 360° learner view should include data from external systems, e.g. high school records and records from non-NZIST tertiary institutions. Bringing data from these disparate systems together is the fundamental capability required to deliver pro-active support to learners, more responsive learning design and facilitation and thus to improve learner success.

2. Data collection and management strategy: To bring these information sources together, the NZIST will need a data strategy. It will be important to get this right at the outset so that the NZIST collects, manages, and uses the information it needs, while giving primacy to obtaining and respecting learners' and other users' consent and privacy preferences.

It should include an identity management strategy that enables the NZIST to match learner data entered in different internal and external systems. Without an identity management strategy, we could not know, for example, that learner A who is a carpentry apprentice is also learner B who is doing an on-campus ESOL course and who excelled in math and science at a Māori medium high school but then dropped out of a science programme at Massey University. Current data projects at the TEC, MoE and DIA can mesh with the NZIST's strategy and these conversations should be continued in Phase II of design.

3. Learning analytics and reporting capability: The NZIST will also need to build a team that is capable of analysing this data and producing actionable insights reports for learning advisors, facilitators, learning resource developers, and more, including for learners themselves. We note that several ITPs, ITOs, and their affiliates already have capability in this area as they are leveraging data from their learner management systems. A first step will be to identify these pools of capability.

Future Vision

The NZIST's data-driven, pro-active learner support as envisaged in the learner support service strategic priority succeeds. NZIST learning design, staff training and development, learning facilitators' teaching strategies, and more are informed and improved by the provision of timely actionable insights.

Risks

1. Imposing a solution that does not involve existing sources of expertise and good practice across the network. Mitigation: ensure Phase II team consults widely and communicates decisions clearly justifying the selected solutions and involving the stakeholders in selecting solutions.

2. Under-leveraging learner insights. Mitigation: develop a system-wide insights-to-action plan on enabling better learner outcomes, better learning design, better learning facilitation, and institutional improvement generally.
3. Misalignment TEC/MoE data strategy. Mitigation: include TEC and MoE in the planning process.

Next Steps

The NZIST technology leader should establish a team to take forward this work with input from external resources skilled in best-practice design and implementation of similar systems.

9. Learning Resource Technology Plan

We propose that the NZIST prioritise developing a technology plan to support the design, creation, delivery, and management of the high-quality learning resources, including master programmes, that will be a key NZIST asset. This plan should address all relevant technology systems, including but not limited to learning management systems (LMS) and learning content management systems (LCMS).[7]

Proposal

Rather than make specific recommendations about system design and technology choices, we recommend that the NZIST identify and be cognizant of appropriate international technology standards in developing its learning resource technology plan. We recognise that any design process inevitably involves trade-offs amongst conflicting objectives, but an ideal system design would deliver on all five of the objectives identified below.

1. Accessibility. The NZIST must deliver great education opportunities and outcomes for every learner, including those with vision, hearing or other disabilities such as dsylexia. Learning must be accessible in te reo Māori and other languages. Access for remote New Zealanders and lifelong learners is also critical, for example, offline access capability.

2. Portability. We recommend that the NZIST prioritise portability of all learning resources. Adhering to portability standards ensures that NZIST learning resource assets are easily transferred from one system to another. Learning resource portability supports flexibility in how learning is delivered, and in how the NZIST's systems evolve as educational technology changes.

3. Collaborative Authoring and Teaching Environment. The NZIST should ensure that learning resources content can be easily developed by staff, subject matter experts, learning designers and industry experts; simultaneously and collaboratively. The learning environment should enable a team model for learning facilitators that fosters professional practice communities.

4. Learner Experience Optimisation. The NZIST should ensure that the digital solutions prioritise the learning experience, and are able to adapt and evolve in response to insight on learner needs and changing educational technology best practices.

5. Interoperability. The NZIST should ensure that key systems meet appropriate interoperability standards, as integration with other software is essential to gathering and analysing data about the learners' progress, and enabling processes such as automatically enrolling a learner into a module and securely transferring data about the learner.

[7] Learner management system (LMS): A software application for the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs. Note that some LMSs also have LCMS capabilities. Learning Content Management System (LCMS): The platform for creating, managing and hosting/storing digital learning resources.

Future Vision

The technology plan to support NZIST's learning resources maximises the impact of those assets by ensuring they are accessible, portable, presented in an optimal way for learners, developed collaboratively, and integrate to other NZIST systems.

Risks

Implementation fails due to lack of buy in across network. Mitigation: communicate commitment to leveraging existing network people capabilities regardless of technology choices; have a plan for developing people-to-people links and new system-wide cultural norms.

Next Steps

The Chief Executive should ensure that the technology planning process for the NZIST is informed by the objectives above. In evaluating technology options, the team should report on the extent to which alternative technology design and system choices would support these objectives.

Introduction to the Full Report

The following sections expand upon the strategic priorities and initiatives presented in the executive summary to give additional information that may be useful to the NZIST as it seeks to take the initiatives forward. They also provide some more detailed background on our approach to the brief (Appendix A) and a list of some supplementary resources we collected during our work that are available in a separate Resource Pack (Appendix B).

Focus on Transformative Strategic Priorities

We propose five transformative strategic priorities for the NZIST, and nine key initiatives to deliver on them (see also Figure 1 below).

Learner Support and Engagement: Supporting and engaging all NZIST learners in ways that make it easier for them to succeed must be our first priority. We propose two initiatives that we believe will lead to significant progress on this key goal.

1. A 24/7 Learner Support Service: this service is the game-changing initiative to improve learner success. It would build on existing support services across the ITP and ITO network to support the whole person and remove obstacles to successful learning.
2. A Learner Digital Home: an easy to navigate, single point-of-access that connects them to everything they need to thrive in their current learning, and also to connect to the right learning for them as their careers progress.

Employer Support and Engagement: Employers have a multi-faceted place at the heart of our vocational training system. For instance, they are customers of NZIST vocational training services, educators, mentors and sources of pastoral care for learners, learners themselves, and a source of insight into workforce needs and best-practices. We propose two initiatives to serve them and develop the partnership.

3. An Employer Digital Support Service: an easy to access network-wide NZIST digital service, developed in partnership with employers, that gives employers the right support at the right time.
4. A Network-wide Applied Research Service: to bring existing network expertise and resources together to focus on real world problems and development needs, both large and small, in a coordinated way.

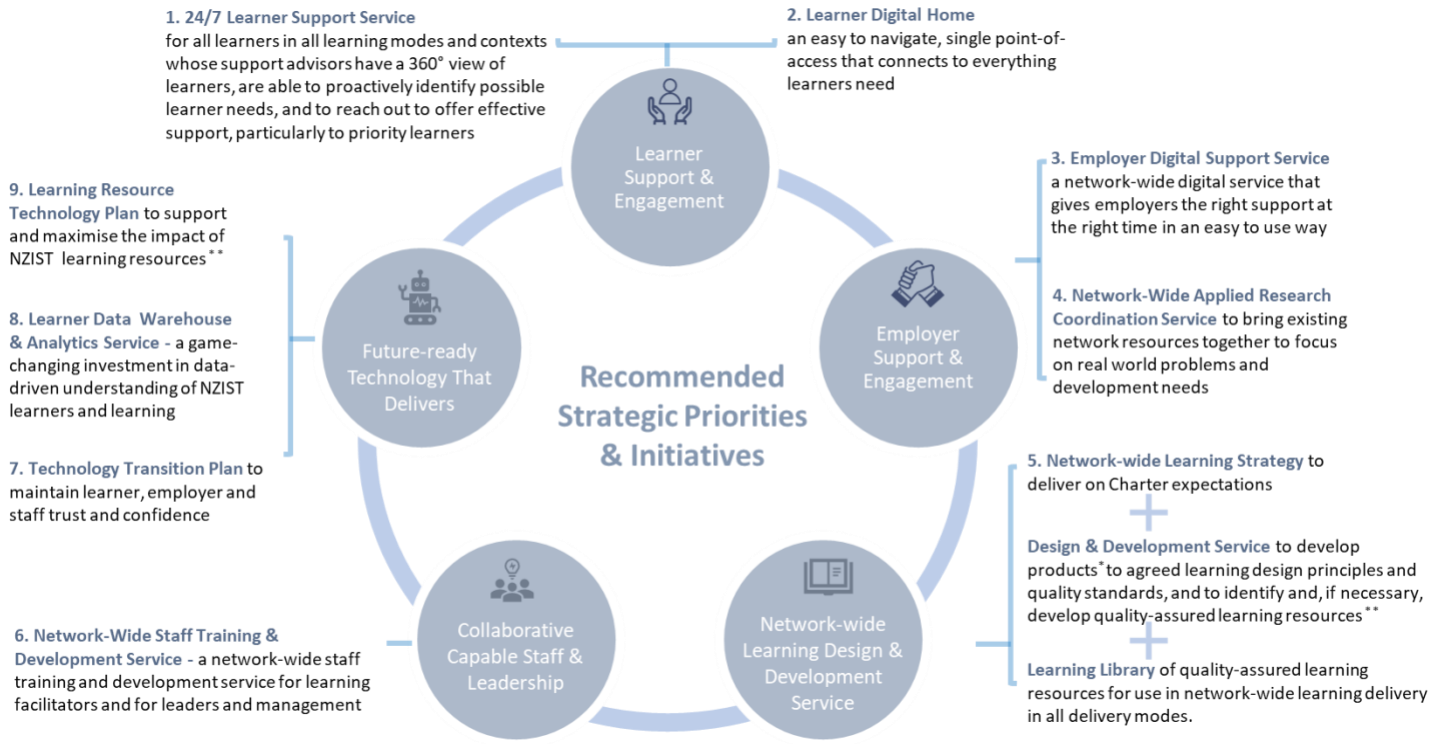
5. A Network-Wide Learning Design and Development Service: charged with delivering on the NZIST's Charter expectations of raising learning quality, increasing learner mobility, delivering programme consistency with regional flexibility, maximising accessibility, responding quickly to changes in learner and employer/industry needs, and reducing the ongoing cost of resource development. The service would comprise three key elements: a network-wide learning strategy; a design and development service; and, a learning library for use across the network.

6. Collaborative, Capable Staff and Leadership. Learners' success depends on engaged, capable educators and learning facilitators and collaborative, future-oriented capable leaders and management. We therefore propose a staff training and development initiative for both educators and leaders/managers.

Future-ready Technology That Delivers. Today, technology enablement pervades and is essential to delivering learning experiences that support and empowers the full learning journey for learners and for employers and meets their diverse needs. We propose three key technology-enablement initiatives that we believe will have the largest impact.

7. Technology Transition Plan: a network-wide technology transition plan to deliver business as usual service to learners, employers and staff and quickly resolve problems as they arise.
8. Learner Data Warehouse and Analytics Service: a game-changing service that will enable pro-active learner support and targeted improvement of learning design and learning facilitation.
9. Learning Resource Technology Plan: to support the design, creation, delivery, and management of the high-quality learning resources, including master programmes, that will be a key NZIST asset.

Figure 1: Recommended Strategic Priorities and Initiatives



Notes: * Products: programmes and micro=credentials; ** Learning resources: also known as materials, courseware, products or content. All information, including assessment, to support the learners' success and reinforce the learning. The technology plan would cover learner management systems (LMS), learning content management systems (LCMS) and any other relevant technology systems.

Learner Engagement and Support

1. 24/7 Learner Support Service

Recommendation

We propose that the NZIST establish a 24/7 learner support service for all learners in all learning modes and contexts, whose support advisors have a 360° understanding of the learner, are able to proactively identify possible learner needs, and to reach out to offer concrete support, particularly to priority learners.[8]

Future Vision

As the Learner Journeys workstream has clearly shown, if we are to improve the participation, engagement and success of learners, particularly priority learners, it is essential that we improve our support for and empowerment of learners at all stages of their learning journey. Currently learner support is fragmented across the ITP and ITO network and is of variable quality and scope. Most learners do not have access to support outside business hours.

Often learners are not aware of what support is available to them. In addition, learners may hesitate to reach out to ask for support or may not know which service to contact first. Unfortunately, those most able and willing to reach out for assistance may well be those who need it least. This makes it important to develop the NZIST's ability proactively to identify and reach out to learners who may need and want support.

Taking an NZIST-wide approach would allow us to build on the support already available to learners across the network, including in the work-place. A network-wide approach would also increase the NZIST's ability to develop services that meet the needs of different kinds of learning. It would enable delivery of high quality, easy to access support wherever the learner is in the NZIST network. Learners in different modes and contexts of learning would all have the same easy access to high quality, learner support that works for them.

Offering consistent, easy-to-access support to those learners who contact the service would be a big improvement in itself, but the learner support service will be transformative if its advisors are able to personalize their services to learners based on a 360° knowledge of the learner's background, need, and experiences across the NZIST network and beyond. Even more transformative would be the ability for advisors to use reports triggered by this 360° learner view to proactively reach out to learners who may want and need help[9].

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[8] We use the term "priority learners" to refer to learners who face higher barriers to successful VET learning or who have been historically underserved by learning support. These learners include Māori, Pasifika, learners with disabilities, gender diverse learners, learners with mental health issues, learners who are 'first in family' to participate in tertiary education, are changing careers or returning to tertiary study for a 'second chance', those from low socio-economic backgrounds, and those with low or no NCEA credits. We are also thinking of work-based learners as these are a new group to be served by the NZIST and are therefore likely to have higher support needs at least initially.

[9] For research on the impact of learning analytics on student success see: Arnold, Kimberly & Pistilli, Matthew. (2012). *Course signals at Purdue: Using learning analytics to increase student success.* ACM International Conference Proceeding Series. 10.1145/2330601.2330666; DataUSA (2019). *Southern New Hampshire University*. Retrieved from https://datausa.io/profile/university/southern-new-hampshireuniversity#enrollment; Sclater, N., Peasgood, A., & Mullan, J. (2016). *Learning analytics in higher education: a review of UK and international practice*; Jisc.Retrieved from: https://www.jisc.ac.uk/reports/learning-analytics-in-higher-education; Sclater, N., Mullan, J. (2017). *Learning analytics and student success – assessing the evidence*. Jisc. Retrieved from: http://ji.sc/learninganalytics-and-student-success.

Proposal

The support service would support the whole person to remove obstacles to successful learning. It would offer support from pre-enrolment (e.g. study pathway choices and financing study) through the learner's study journey (e.g. academic and personal support) to employment (e.g. career advising), and back into study again as graduates seek to upskill or change careers. It would serve enrolled (and potential) NZIST learners of all types, wherever and however they are learning (distance, online, classroom, work-place, and blended modes[10]).

We envisage that the support service would offer a full range of support to learners, including: guidance on study pathways; matching to training options; financial (including StudyLink) and personal planning for success; learning support, both in disciplines and in "learning how to learn"; study techniques; academic/essay/report writing; time management; personal effectiveness; coaching/mentoring support, especially for priority learners; counselling and well-being support; IT support; job search and job placement skills; extra-curricular development of skills valued by employers; a recognition of prior learning service.

While all the above services can be offered in at least a basic way, e.g. via referral to existing provider support services, the key to delivering 24/7 personalised and proactive support for all learners will be a network-wide strategy based on deep learner analytics. This will be delivered by a dedicated cross-network learning support team.[11]

To deliver 24/7 support for learners who are often working and unable to access support during business hours, the NZIST will use technology-enabled services such as live phone/chat/text/video support and asynchronous services such as chat bots and email. Aggregating demand across New Zealand will also help make it viable to deliver 24/7 support. Face-to-face in-person support service should still be an important element and delivered on regional campuses, in workplaces and potentially other face-to-face nodes, e.g. libraries, where regional campus reach is insufficient to serve communities.

To deliver personalised and pro-active support, the NZIST must invest in developing a data warehouse that aggregates learner data from learner management, learner management, CRM and other systems, and in developing an analytics team capable of analysing that data and providing timely reports on individual learners for advisors and learning facilitators. By using deep learner-analytics based on data from multiple sources, the NZIST can flag learners who may need support, prompting an advisor to contact the learner to check-in and offer support. Advisors could, for instance, reach out if learners had not completed a work-place assessment or have been marked absent in class for a week.

By leveraging technology to maximise learner self-service, and analytics to help advisors identify learners potentially in need of support, the NZIST would focus advisor time and outreach on the learners who most need help, at the time they need it. For learners identified as needing the most support, the support service would assign a personal advisor, a best-practice that builds learner engagement and sense of community.[12]

Risks

1. Setting learner expectations that cannot be met. Mitigation: Manage learner service and service level expectations, particularly in the early stages. Communicate staged roll-out as systems and personnel are scaled. Involve learners in system design and implementation.

[10] Distance learning may be delivered over the internet or using more traditional correspondence methods.

[11] This team does not necessarily need to be co-located so long as it is linked in to the same technology platform.

[12] The Phase II design team will need to scope targeting and costing of personal advisors, including taking into account existing personal advisor services in the ITO network.

2. Unsustainable costs. Mitigation: focus on priority learners for pro-active provision of support.
3. Inconsistent or low-quality learner support. Mitigation: training, clear roles/responsibilities/service level timeframes/expectations.

Next Steps

In Phase II the NZIST should establish a co-design team, involving learners and potential learners, to take this work forward.

In addition to the learner journeys work, the co-design team's work should be informed by research on best practices at other institutions[13] and a current state audit of NZIST network engagement/recruitment and student support services[14]. It should also be informed by New Zealand and international research on the key drop-out points in the tertiary education pipeline.[15]

In Phase II, the co-design team should also define the principles and goals for the learner support service. As a starting point, we suggest the following

- Focus on removing barriers early (approximately 25% of first year ITP students drop out) and even before learners enrol.
- Prompt response times (with KPIs).
- Advisors empowered to take action, e.g. to give a learner an extension on an assignment and inform the learning facilitator of this.
- Prioritise changing learners' mindset around support – empowerment, normalisation, destigmatize, humanize, peer connection.
- Build capability so learners can address their own problems, including by reaching out to their teachers and employers.
- Be transparent about data, ethics and privacy policies, develop them to meet best practice standards[16], in conjunction with learners, and include learners on annual data and privacy reviews.

While it will take significant time and resources to build network-wide learner analytics that will enable pro-active learner support, there is much that can be done to deliver practical help sooner using existing enabling technologies. For existing learners, creating a 24/7 live call/chat support service with the ability to connect learners to immediate IT support and refer them, including by making appointments, to the right resources for them, would be a good start..For new and potential NZIST learners, data collected through the marketing and enrolment pipeline should be analysed to identify priority learners for referral to the learner support service for pro-active outreach and support.[17] Another short-term win will be enabling advisors (and learner) to view programme offerings across the full NZIST system so that they can offer potential enrollees good advice.

[13] Such as Southern New Hampshire University, see Appendix X for an overview of SNHU's approach

[14] We note that online providers in the NZIST network have already made strides with learner analytics and support and will be important assets to leverage, e.g. Open Polytechnic, TANZ eCampus, LearningWorks, SIT.

[15] For example, Ngāi Tahu's work on Māori journeys through the education system (He Awa Ara Rau, A Journey of Many Paths, 2019) and TEC's learner journeys work.

[16] E.g. GDPR standards. NZ Privacy Commission. Archives NZ. Māori data sovereignty network.

[17] This data should be captured in a CRM system.

2. Learner Digital Home

Recommendation

We propose that learners (and potential learners) have an easy to navigate, single point-of-access that connects them to everything they need to thrive in their current learning, and also to connect to the right learning for them as their careers and lives progress.

Future Vision

Making interaction with the NZIST as learner-centric and simple as possible will remove unnecessary hurdles and make it easier for learners to succeed. Without a unified and consistent view of the NZIST, learners and potential learners' experience of the NZIST will continue to be fragmented. Creating a digital NZIST learner home that the learner can take with them from the first moment they encounter the NZIST will encourage learners to see the NZIST as a partner that helps them succeed and improve KPIS of learner engagement, satisfaction, retention and learning outcomes.

Proposal

As illustrated in Figure 2 below, this NZIST learning home would aggregate services such as: my learning (schedule, course content access); my plan (study and career planning); my finances (including Studylink resources); my network (peer-to-peer and community); my support (including the 24/7 support centre); and my profile (academic records, cv), and easy to use digital communications tools. It would be used by learners in all contexts, work-based, on-campus, online etc – and locations, including overseas.

Figure 2: Learner Digital Home

A good reference point for the learner digital home is the online banking experience we've all come to expect. Although it aggregates multiple services that exist on separate technology platforms – checking and savings, mortgages, bill paying, credit cards and so on – the user experience is seamless and it's easy to access from multiple devices, from phones to laptops and tablets. And, while the services offered constantly evolve and expand, the look and feel of the interface stays stable, providing a sense of continuity and consistency.

Risks

1. Containing scope. Mitigation: focused research to identify features of a digital home most valued by learners.

2. Poor uptake. Mitigation – ensure core services are excellent (enrolment, timetables, results) and promote them strongly at point of enrolment.
3. Timeframe for development/testing/implementation/training Mitigation: clear project and communication plan(s).

Next Steps

The learner home should, like all NZIST learner services, be developed in conjunction with actual learners and potential learners. In Phase II of the NZIST design process, a design group of key stakeholders, including learners and potential learners[18], should be established and a suitable firm engaged to lead a series of design sprints and prototyping. There are many potential models for the Learning Home, but what will be important is to focus it on serving learners' self-identified needs rather than following outside models. That said, examining potential best-practice models, including from within the NZIST network, for the Learning Home should be part of the Phase II work.

A first step towards creating an NZIST Learner Home would be to establish an NZIST home page with information resources and providing access to the first network-wide services, e.g. the 24/7 learner support service and an NZIST-wide programme pathways tool enabling learners to identify learning options across the network.[19]

Employer Engagement and Support

3. Employer Digital Support Service

Recommendation

We propose that the NZIST establish a co-design team to develop a network-wide NZIST digital service that gives employers the right support at the right time in an easily accessible place.

Future Vision

The NZIST has an opportunity to leverage scale economies to build modular online support services applicable across many employer types and industries, and to deliver them via interfaces tailored to specific industry/employer needs. Currently, ITOs provide varying types and levels of online support and engagement to employers. Their efforts have been customized to individual ITO business models and limited by a lack of scale economies.

By creating a digital support service, the NZIST can make it easier and less time-consuming to arrange and manage work-based training, freeing up employers, learners and training advisors to focus on higher value discussions. Important but low-value activities such finding a training progress update, the date for their next learning assessment visit, filling out and submitting paper-based training agreements, and finding ways to provide evidence of learning could be completed online. Another benefit is that in the process of the developing the service, the NZIST will develop stronger engagement with and understanding of employers' needs.

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[18] This group should be diverse and cover all priority learners identified by the Learner Journey's workstream. It should also be careful to cover not just currently enrolled learners but also those interested or potentially interested in the NZIST. It would make sense to involve the NZIST marketing team, the 24/7 support team.

[19] We note that this NZIST-wide programme pathways tool will also be important for potential NZIST students and for admissions advisors' seeking to help them identify the right programme for them.

Proposal

While ITOs have told us that there is a need for this service, we have had very little engagement with employers and therefore hesitate to define how the service would work exactly. In general though, we believe that the NZIST has an opportunity to build a suite of core online employer support services applicable across employers,

- Including resources, information, tools and guidance for seeking the right training at the right time, managing and supporting employees in training; supporting employers as trainers and assessors, and to help employers evaluate the ROI on training.
- Providing a platform for employers and NZIST employer account management to work together as well as self-service employer tools and resources.

Some of the specific requests that ITOs report employers as having are: the ability to view apprentice and trainee progress online; easy ways to collect and upload evidence of learning such as images and videos; the ability to complete and file training agreements electronically; to peruse NZIST training offerings and use self-service to arrange training where desired or to find provider-based training where they need it; to find support resources and free training for employers who need support with issues such as cultural competency or managing mental health issues in the work place. The digital support service could also link employers to the right contacts at the NZIST and to a peer-to-peer employer network.

Although we believe that there would be a suite of core services applicable across many industries and employer types, we know that different industries and types of employers have different needs. The digital support service would therefore need to be customizable depending on their needs.

Risks

Investing in things employers don't really want, leading to poor uptake. Mitigation: thorough research in partnership with employers; pilot highest priority service(s) identified by employers.

Next Steps

The NZIST must take the time to work closely with employers across industries and across employer types to develop this service. We recommend that in Phase II of the design process, the NZIST establish a co-design team involving employers from across industries and of different kinds to develop this service.

Before doing anything else, the co-design team should engage in a deep investigation of employers' needs and then a series of design and prototyping sprints to develop, test and pilot the NZIST service. It will be important to involve employers who have so far not engaged in training with ITOs or ITPs. It is essential to understand the needs of the roughly 80% of employers who do not engage in ITO or ITP based training.

The co-design team should also engage in a discovery process of current ITO online services and seek to build on the many examples of existing good practice. It should also ask ITOs to mine their customer data in order to identify the top problems generating employer help requests. We note also that there may be an early opportunity to gather all existing ITO online services under an NZIST brand look and feel.

4. Applied Research Coordination Service

Recommendation

We propose that the NZIST establish an Applied Research Coordination Service to bring existing network resources together to focus on real world problems and development needs, both large and small, in a coordinated way.

Future Vision

While current ITPs have applied research capabilities, these are currently under-utilised and lack a coordinating mechanism to identify and match stakeholder needs with the right ITP resources. Moreover, New Zealand businesses, industries, iwi and communities frequently often lack awareness of what applied research capabilities are available and how they might use them. Research performance is also highly variable, reflecting wide differences across the NZIST network in both research capability and capacity.

By better coordinating and promoting existing applied research capabilities, the Applied Research Coordination Service would increase the NZIST network's impact on, and engagement with communities, iwi, employers and professions and through them increase NZ productivity. It would also expand staff relationships with employers, professions and communities and expand learner engagement in experiential learning and problem-solving in a wide-range of contexts.

As the largest tertiary institution in the country, employing a large and varied range of staff able to engage in applied research, the NZIST network will be uniquely well-positioned to serve and collaborate with stakeholders to solve real-world problems using applied research. There are many research questions and issues needing to be resolved through applied research in New Zealand, many of which reside with small businesses and entities that cannot realistically meet nor afford to address their own research needs. There are also many research issues currently not addressed concerning the effectiveness of the vocational education system itself, including the effectiveness of learning, teaching and assessment strategies for particular learner groups and in different delivery contexts.

Proposal

The Applied Research Coordination Service would provide leadership and facilitate coordination across the NZIST network to leverage existing research expertise and relationships with employers, communities, Iwi groups, facilitators and learners. This would allow NZIST to differentiate from a university. It would champion applied research from the vocational education sector by promoting the services available throughout the network and promoting the success stories, and also develop best practice systems and processes, e.g. IP management and contracts, for use throughout the network.

The Applied Research Coordinating Service would provide system wide coordination and leadership which leverages the expertise of the staff and learners of the NZIST network to improve industry and organisational performance by solving problems, developing new products (prototyping) and improving processes and systems.

The service would coordinate with NZIST network regions to leverage their research expertise and relationships with employers, communities, Iwi groups, facilitators and learners. It would be a mechanism to ensure that:

- Industry knows the capability of the NZIST network.
- There is visibility to where specific capabilities lie across the network.
- Capability is developed and grown. The coordinating service identifies needs for new capability and gaps in current capability and supports capability growth by identifying and disseminating best practices.
- Best practice systems and processes (which it would develop, e.g. for IP management and contracts, commercialisation) are used throughout the network.

The central coordinating service would champion applied research from the vocational education sector by promoting the services available throughout the network and publicising the success stories. It would undertake specific marketing of system capabilities:

- Drive/broker collaborative partnerships between NZIST subsidiaries and industry, employers, iwi and communities and other research institutions.
- Provide a data base of research capabilities throughout the NZIST network.
- Coordinate extensive and/or multi-party projects with a national or international reach.
- Coordinate research projects of interest to mana whenua (iwi and hapū).
- Promulgate best practice in applied research through publications and conferences/symposia.
- Build research capability through training and development.
- Ensure common research software management solutions.
- Provide contestable funding to complement PBRF funding.
- Provide support for innovation in New Zealand by: establishing an innovation hub for RD and educational innovation; providing contestable funding pool for innovation; disseminating successful innovations from within the system.

Risks

1. Lack of employer/community/iwi engagement. Mitigation: prioritise outreach, including communication of prior successes.

2. Lack of engagement across network. Mitigation: governance arrangements must engage and empower existing applied research providers across the network.

Next Steps

In Phase II of the design process, the NZIST should establish a cross-network team to develop the Applied Research Coordination Service. This team should be led by the senior NZIST research leader, and include representatives of research leaders from the NZIST network, including expertise in commercialisation. Amongst the team's first priorities should be:

- Establishing how the NZIST can effectively engage with industry, employers, iwi and communities to identify their applied research needs.
- Differentiating NZIST applied research services from any similar services or work undertaken in CoVES, RSLGs and WDCs. It should also seek to identify possible areas of collaboration.
- Investigate best practice applied research models, including that of Canada's polytechnics, which has been highly successful.[20]
- Developing the financial model and funding requirements for the service. We do not expect that applied research will be a significant source of revenue. The NZIST should, however, consider following Canada's model where applied research is supplied free to industry where the return to

[20] For more information, including on performance outcomes, *Applied Research 101, Polytechnics Canada,* https://www.polytechnicscanada.ca/wp-content/uploads/2019/03/Applied-Research-101-pdf.pdf. For information on other models, see: de Beor, H. F. (2016). The Netherlands, strengthening research in Universities of Applied Sciences: One of twelve case studies produced as part of the project on structural reform in higher education. Publications Office of the European Union. doi:10.2766/038545. Victorian TAFE Association. (2018). Applied Research and Innovation in VET. Retrieved from https://www.vta.vic.edu.au/doctest/governance/resource-materials/876-wfcp-ar-ag-discussion-paper-applied-research-and-innovation. Eaton, J., & Gower, L. (2015). Fostering an institutional scholarly culture: a case study from Newcastle College. First Research and Scholarship in College Higher Education Conference (pp. 56-61). Association of Colleges. Retrieved from https://www.aoc.co.uk/sites/default/files/Research%20%26%20Scholaship%20in%20College%20HE%20%28LowRes3%29.pdf

learners is high; co-funded with industry where benefits are shared; and funded entirely by industry where the research is clearly linked to a business revenue model.

- Establishing a Research Ethics Committee with oversight of research involving human subjects
- Undertaking a stocktake of capabilities and research focus areas by subsidiary.
- Develop an applied research service presence on the NZIST website as key communication tool
- Developing best practice guidelines covering applied research operations, e.g. IP management and contracting, and for engagement with industry / community / professions.
- Develop a searchable repository for document sharing between ITP staff. This will include policies, research outputs, sample contracts and checklists, sample confidentiality agreements.

5. Network-Wide Learning Design & Development Service

Recommendation

We propose that the NZIST establish a network-wide Learning Design & Development Service that will:

1. Lead and contribute to the development of the NZIST's Network-wide Learning Strategy
2. Provide a Learning Product Design and Development Service
3. Develop and maintain a Quality-assured Learning Library.

Future Vision

- **Raising learning quality** through best-practice specialised learning design that lifts the quality of learning, teaching, and assessment across the system and meets changing learner needs.
- **Increasing learner mobility** so that learners can continue their chosen learning paths even if they change modes of instruction, e.g. from online to classroom to work-based learning, or the location of their learning, e.g. from one region to another.
- **Delivering programme consistency with regional flexibility** so as to support learner mobility and high-quality learning experiences, while allowing for regional variation where needed to meet specific regional learner and employer needs
- Ensuring that learning is designed and delivered in ways that **maximise accessibility for learners.** NZIST learning should be accessible to all learners, regardless of learners' location, time constraints, preferred delivery modes, and technological constraints. This includes Māori and Pasifika learners, learners with disabilities, and international students.
- **Responding quickly to changes in learner and employer/industry needs,** technological advances, and to changes in best-practice learning design.
- **Reducing the ongoing cost of resource development** by reducing duplication of effort and reusing and repurposing existing educational resources where applicable.

Proposal

The three key elements of the Learning Design and Development Service are:

- **A Network-wide Learning Strategy:** An NZ-wide learning strategy supported by a policy framework, that sets the NZIST's graduate attributes or characteristics, models of learning and assessment and, its product portfolio.

- **A Design and Development Service:** A network-wide service that uses best-practice learning design to develop and evaluate NZIST-network learning resources for all modes of delivery (work-based, distance, online, classroom, blended).
- **A Quality-assured Learning Library:** A digital library of quality-assured learning resources for use in network-wide learning delivery.

Each of these elements is described further below, using the definitions in Figure 3.

Figure 3: Definition of Key Learning Design Terms

NZIST product offering	The programmes and micro-credentials offered by the NZIST at foundational, vocational and degree-level and above level.
Programme of Study	A coherent arrangement of learning or training that is based on clear and consistent aims, content, outcomes and assessment practices, which leads to a qualification listed on the NZQF[21]
Learning Resources	Also known as materials, courseware, products or content. All information, including assessment, to support the learners' success and reinforce the learning. Learning resources may include written material, images, video, simulations, capstone assessments, demonstrations of competency and more.
Master Programme	Quality-assured learning resource packages to support multi-modal delivery of entire programmes of study.
Quality-assured Learning Resources	Learning resources that have been evaluated by the Learning Product Design and Development Service as meeting NZIST learning design standards.
Components	Parts of a programme (or training scheme), which together make up a coherent arrangement of learning or training. Components may include projects, papers, courses, modules, practicum and skill and assessment standards.[2]
Micro-credentials	*Also known as badges, nano-credentials and nano-degrees.* Stand-alone education products intended to enable learners to access specific knowledge and skills in a cost-effective and time-efficient way. They are small-scale qualifications, with a tight focus on developing skills to meet the immediate needs of industry, employers, iwi and/or community.[22]
Model of learning	A conceptual framework that describes a systematic procedure in organizing learning experiences to achieve specific learning objectives. For example, Project-Based Learning (PBL) and Outcome-based Education (OBE)
Graduate attributes	Also known as graduate characteristics. The qualities, skills and understandings learners should develop during their time at the NZIST. These attributes include but go beyond disciplinary expertise or technical knowledge to wider attributes that contribute to learners' future success.
Models of assessment	The methods or tools that educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students. For example, competency-based and merit-based assessment.

Network-wide Learning Strategy

The Learning Design & Development Service would be responsible for leading and contributing to the development of the NZIST's Network-wide Learning Strategy. To deliver on the NZIST Charter expectations outlined above, the NZIST needs a network-wide learning strategy, supported by a policy framework, that:

- Identifies network-wide graduate attributes or characteristics, and suitable models of learning[23] and assessment to shape the design of NZIST learning experiences
- Defines the NZIST's product market position through engagement with industry, employers and learners, and expert knowledge of vocational education best practice and work trends

[21] From NZQA glossary https://www.nzqa.govt.nz/providers-partners/approval-accreditation-and-registration/programme-approval-and-provider-accreditation/progs-lvl7-diplomas/glossary/

[22] From TEC https://www.tec.govt.nz/news-and-consultations/archived-news/releasing-the-potential-of-micro-credentials/

[23] As defined in definitions table.

- Is based on a deep understanding of ITOs' and ITPs' current products and services and how they are delivered nationally and regionally
- Includes multi-year product plans that define the NZIST's product offering at foundational, vocational and degree-level and above level, and its priorities for product development and rationalization to remove unnecessary duplication.
- Include multi-year learning resource[24] plans that set the priorities for establishing quality-assured network-wide learning resources, including of "master programmes". [25]

NZIST Product Plans: should define NZIST's product market position and offering, i.e. the programmes and micro-credentials offered by the NZIST at foundational, vocational and degree-level and above level.[26] They should sharpen the NZIST's industry, employer and learner focus, build NZIST's capability and outcomes focus, and innovate NZIST products and services.

They should cover product lifecycle activities, from bringing on to retiring learning products, consolidating products, determining multi-modal delivery options, reducing duplication, improving portability and, ensuring consistency. This includes determining what modes of delivery will be adopted for specific products and what products, should be offered by a one/two/a few providers where student numbers nation-wide are relatively low. The LDSS should also establish a process to implement product plans, including for implementing rationalization of the current portfolio of programmes of study to remove unnecessary duplication.

NZIST Learning Resource Plans: Learning Resource Plans will set the priorities for establishing quality-assured network-wide learning resources. Quality-assured learning could be for entire programmes of study ("master programmes"), but also for courses and other programme components, or for micro-credentials and their component parts, or even particularly high-value learning objects such as simulations or videos[27].

With respect to "master programmes", we have investigated TAFE's master products strategy and recommend that the LDSS explore where adopting this approach would add the most value in the NZ context. Adopting standard national learning resources such as master programmes will reduce duplication of effort across the NZIST network, and also provide learners with quality, consistent, accessible and portable learning. We note that the master products concept is likely to need modification for the NZ context as TAFEs do not deliver either work-based learning or degree-level qualifications. The NZIST should also seek an update on TAFE's current work to evolve its master products system. For these reasons, we recommend that the LDSS prioritise a deeper investigation of how and where master programmes should be adopted in New Zealand.

Process design: In designing processes to deliver the network-wide learning strategy, including multi-year product and learning resource plans and a process to rationalize the current portfolio of programmes of study to remove unnecessary duplication, the LDSS should include a robust industry engagement process involving peak bodies and employers, as appropriate. It should also identify the right points of engagement with WDCs. We think the TAFE Queensland model of aligning product governance with industry skills governance organisations (WDCs in New Zealand); creating industry panels to give quarterly input to product portfolio management; and distributing responsibility for product governance across the regional network is worth exploring further.

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[24] As per the definitions table, learning resources are also known as materials, courseware, products or content. They include all information, including assessment, to support the learners' success and reinforce learning. Learning resources may include written material, images, video, simulations, capstone assessments, demonstrations of competency and more.

[25] Similar to TAFE Queensland and NSW's master products.

[26] Aligning to NZQA TROQ (targeted review of qualifications) process.

[27] For instance, digital 3D simulations that are expensive to produce.

Quality Assurance: As part of its role in developing the NZIST learning strategy, the Learning Design and Development Service would take also leading validation, audit and quality assurance activities to support maintenance of high-quality product and measuring ROI based on learner and employer needs.

Intellectual Property: The NZIST learning strategy should also develop an intellectual property policy for NZIST learning resources. As a first step, the Learning Development and Design Service should adopt a policy that all NZIST learning resources will be shared freely within the NZIST network. It should also develop a policy on external licensing of NZIST content. We note that New Zealand is a signatory to the UNESCO Recommendation on Open Education Resources[28] which encourages signatories to create and share open education resources. At the same time, it is important to give consideration to the appropriate treatment of content that is culturally significant to New Zealand, particularly to Māori and Pacific cultures, and to ensure the NZIST complies with IP licenses for any external resources it incorporates in its learning resources. The NZIST will need to work through these issues in developing its IP policies and processes.

Design and Development Service

51. The Design and Development Service would be responsible for setting a common learning resource design framework for the NZIST network. Currently, there are multiple learning resource design models and frameworks in place across the existing network of capability. A common framework will ensure alignment with quality assurance, support systems, development efficiency and budgeting, development contracting, planning and training. Development processes might also follow a common, agile framework that can be centrally supported.

Importantly, the service will seek to quickly raise the quality of learning resources across the NZIST network by identifying and sharing the best existing learning resources available within it, from whole programmes and micro-credentials to courses and assessment modules down to individual media items such as digital simulations. This process will be an important part of this service's work, particularly in the transition phase. Generally, the service will adopt a principle of leveraging high-quality learning resources of all kinds from across the NZIST network before designing or purchasing new ones. Taking this approach will ensure that the NZIST identifies and leverages existing capabilities from ITPs, ITOs and industry, especially subject matter experts and leading learning designers.

The Design and Development Service would also be responsible for:

- Where necessary, designing and developing, to agreed design principles and standards, the products required by the LDSS product plans.
- Developing learning resources to embed transferable skills and Māori knowledge and perspectives, the latter with local iwi and/or hapū.
- Designing learning resources for seamless integration of learning in the workplace with class-room based or online learning.
- Providing a rapid response service to address new, emerging or immediate training needs
- Working with NZQA to ensure quality standards are met.
- A monitoring role which oversee matters such as assessment, moderation and annual programme review processes. This also includes coordinating monitoring visits for degree and post graduate programmes across the country, and working with NZQA and/or WSBs for the consistency reviews for sub-degree programmes.

Quality-Assurance Process for Master Programmes and Other Learning Resources: We believe that a large number of excellent learning resources have already been developed by members of the NZIST network. The Design and Development Service should establish a process to gather these resources,

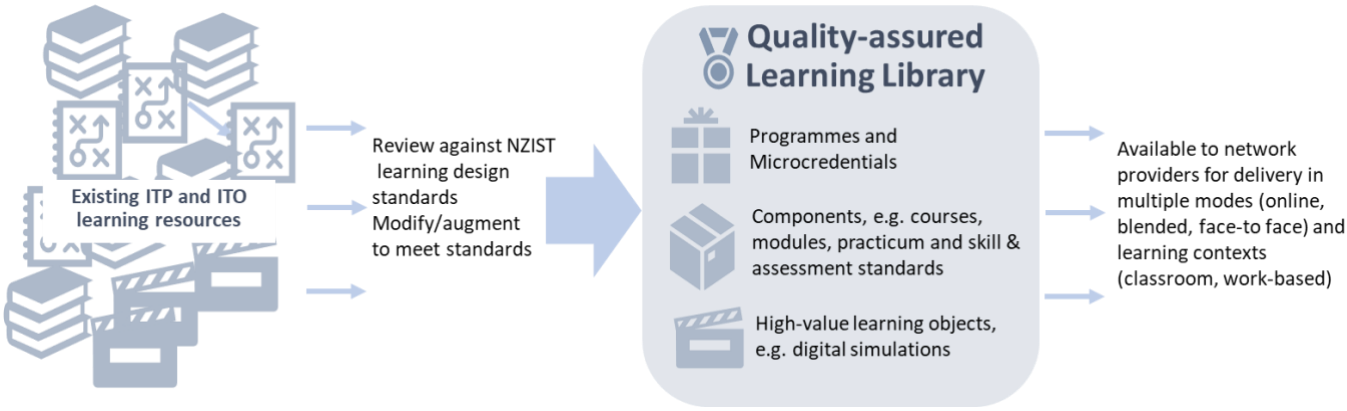
[28] https://en.unesco.org/news/unesco-recommendation-open-educational-resources-oer

validate their quality, certify them either as master programmes or as quality-assured learning resources and make them readily available to NZIST network providers. As noted above, this process will be critical to rapidly improving the quality of learning resources across the network, and ensuring that best practice learning resources are shared and built upon.

We envisage a process, outlined in Figure 4 below, in which ITPs (and ITOs in due course) submit learning resources to the 'Design and Development Service'. The Design and Development service would systematically analyse submitted learning resources, assessing them against best practice learning design standards. Resources will be evaluated based on; whether they are in alignment with the NZIST's learning and assessment models, graduate characteristics, and learning design standards. The 'Design and Development Service' would also evaluate the learning contexts and modes for which the content is suited.

If submitted learning resources are of suitable quality, or can be modified or augmented by the 'Design and Development Service' to meet those standards, they would be made available via the Quality Assured Learning Library (discussed below) and thus available for use across the NZIST network. If new learning resources need to be designed and developed for a new programme of study, the 'Design and Development Service' will work with Subject Matter Experts across the network to create these resources for the appropriate delivery modes.

Figure 4: Quality Assurance Process for Existing NZIST Learning Resources



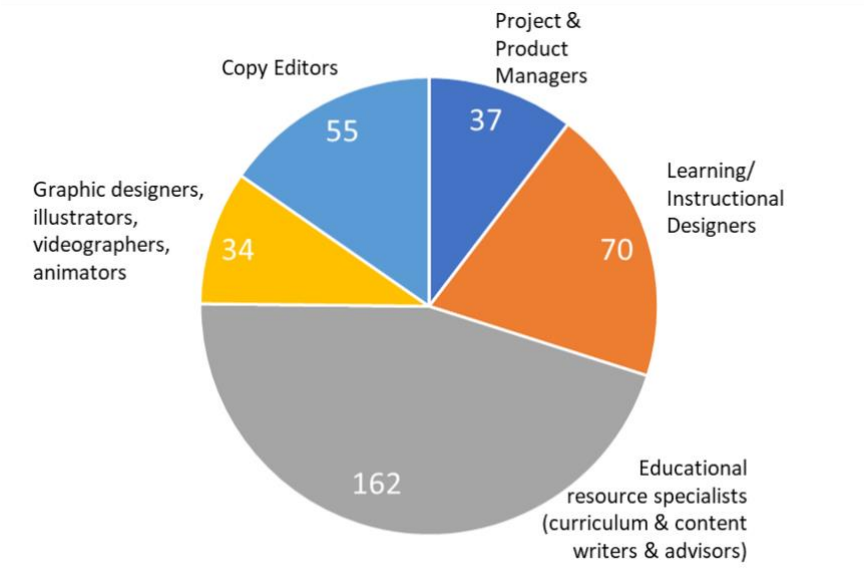
Learning Design Staff Roles and Capabilities: The Design and Development Service would be staffed by specialists in learning, instructional and assessment design who:

- Use best-practice learning design to develop and evaluate NZIST-network learning resources for all modes of delivery (work-based, online, classroom, blended).
- Write programmes inclusive of learning outcomes and assessment guidelines, and who develop specialist learning resources.
- Ensure that documentation meets educational quality requirements and who work alongside NZQA.
- Work with subject matter experts drawn from the provider network and also with industry.[29]
- Work alongside a market development team and the WDCs to ensure industry, community and learner needs are met and that programmes are fit for future needs.
- Work with iwi and hapū, as appropriate, to ensure that mātauranga ā-iwi/ā-hapū and Māori perspectives are embedded into all programmes of study.

[29] The Professional Learning Communities structure employed by TAFE is a possible model.

In designing the service, the NZIST should leverage the wide range of existing learning design capabilities in the NZIST network. We were unable to fully document these in Phase I of the design process, but were able to capture the online/blended learning design people capabilities at Open Polytechnic, TANZ e-campus, LearningWorks, SIT, Otago Polytechnic, Wintec and Weltec/Whitireia. While the data below is incomplete and should be refined and expanded to ITOs as well, it gives an indication of the people capabilities available in the NZIST for the Learning Product Design and Development Service[30]. Given that needed capabilities are distributed widely within the NZIST network, the Design and Development Service would best be structured as a distributed unit.

Figure 5: Partial Summary of NZIST Online Learning Design People Capabilities (Permanent FTEs & Contractors)
(Open Polytechnic, TANZ e-campus, LearningWorks, SIT, Otago Polytechnic, Wintec and Weltec/Whitireia)



Quality Assured Learning Library

59. A digital library could house quality-assured learning resources identified, developed or digitised by the Design and Development team and make them available for use in network-wide learning delivery. This may be particularly valuable in a transition stage as NZIST identifies its future state design process. All NZIST network learning facilitators and designers would have access to the library. The LDSS will need to establish under what conditions others, including individual learners, should be given access.

Risks

1. Failure to deliver early results to learners and employers/industry. Mitigation: manage scope tightly. Identify and focus initially on priority qualifications where learner success is poor. Identify and develop highest priority new products to meet employer/industry needs.
2. Academic workforce is alienated. Mitigation – spread revision of existing qualifications around the network.
3. Insufficient learning design staff. Mitigation: train additional staff and leverage existing capability in ITPs and ITOs.

[30] Further information on people capabilities with regard to online learning design and provision are available in the separate resource pack (see the "Supplemental Resources" appendix).

4. High cost to curate/develop resources.
Mitigation: clear projects of work with scopes/project plan. Follow a standardised approach.

Next Steps

In Phase II, the Learning Design & Development Service (LDSS) should be established as soon as possible under the governance of the senior NZIST academic executive responsible for learning products. It should include the chair of the new Academic Board and also involve senior academic and learning design and delivery experts from across the NZIST network, from all modes of learning, especially from expected high growth modes such work-based, distance and online learning. In designing the LDSS, the NZIST should take into consideration that staff with the essential learning, instructional and assessment design capabilities are distributed widely throughout the NZIST network and develop a structure that effectively utilises these capabilities. The newly formed LDSS should establish a team drawing on network-wide expertise to begin development of the NZIST learning strategy and associated processes.

As there are multiple learning resource design and development models/ frameworks in place across the existing network of capability, a first priority for the LDSS will be to prepare a report that reviews and evaluates alternative models that might be adopted by the NZIST-network, and propose a recommended approach. This report should pay particular attention to learning design and development models for expected high growth modes of delivery, namely work-based learning, distance and online delivery.

We note two other specific issues that will require further research by the LDSS: where "master programmes" would add the most value in the NZ environment[31] and the intellectual property rules for NZIST content.[32] The LDSS should also prioritise establishing productive relationships and role clarity with the WDCs and the NZQA.

6. Collaborative, Capable Staff and Leadership

Recommendation

We propose that the NZIST establish a network-wide staff training and development service for learning facilitators and for leaders and management.

Future Vision

The NZIST must ensure that learning facilitators are also trained and skilled educators across modes of delivery. Currently vocational education in ITPs is staffed by people who typically are hired for their professional/trades expertise. They may or may not then be trained for their specific roles with learners. The 'teacher /tutor/trainer' training that occurs is highly variable both as to scope and level. In terms of leadership and management training and development this is again left entirely to individual provider entities with mixed scope and quality. The ITP sector is characterized by a shortage of strong educational leaders. Staff training and development also presents an opportunity to build people-to-people links across the NZIST network, contributing to the development of the collaborative culture desired for the new institute.

[31] We note that TAFEs do not deliver either work-based learning or degree-level qualifications and that TAFE is currently evolving its master products strategy.

[32] We note that here are specific issues with regard to intellectual property that will require further investigation, including protection of intellectual property and opportunities to support New Zealand's commitment to the UNESCO resolution on Open Education Resources.

Proposal

Training of learning facilitators

For learning facilitators, the mandatory training and development emphasis would be on preparing educators of the future, ensuring that those who facilitate learning have the requisite knowledge and skills to support the most effective learning and the best possible learner experience.[33] The NZIST must ensure that, as well as having the right professional/trades expertise, learning facilitators are also trained and skilled educators. Training should also be constructed with the goal of developing relationships amongst learning facilitators across the NZIST network so as to build a cross-network collaborative culture.

While it has a good range of suitable training products, New Zealand has not required educators at polytechnics to be certified as capable instructors. We note that TAFE Queensland requires all instructors to complete its certificate in training and assessment (TAE), and recommend the NZIST also make possession of an advanced teaching qualification mandatory for all NZIST learning facilitators.[34][35]

In their role as learning facilitators/trainers and, in some cases, assessors or validators of learning, employers would also have access to non-mandatory support and training. Employer-specific training would need to be developed separately.

Leadership and Management Training

The NZIST must also invest in developing the educational leaders and managers of the future. It should develop a management and leadership training programme focused on building leadership and management talent at all levels, including by building people-to-people links and collaboration across the NZIST network.

66. The training and development service would also develop staff for management and leadership roles throughout the NZIST network, both general leadership and management and, more specifically, educational leadership and management. Criteria for identifying potential staff for leadership and management training need to be defined.

67. The training and development emphasis will be on preparing fit for future leadership and management at all levels, including by building people-to-people links and collaboration across the NZIST network

68. Staff providing this training would be drawn from around New Zealand, both within and external to vocational education, and from international networks, to facilitate training and development in specific areas of leadership.

Collaborative Culture

69. Apart from the specific competencies developed in staff training, training would be designed with the specific objective of building people-to-people links and collaboration across the NZIST network.

Risks

1. Resistance to upskilling teaching qualifications. Mitigation: phased implementation of mandatory training, support package (e.g. decreased workload), and linkage to career progression and remuneration.

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[33] Training would go beyond "teaching and assessment" to encompass learning facilitators' important role in learner pastoral care, ensuring that learning facilitators are confident in this role and knowledgeable about NZIST learner support services and can help learners find the right support for them, e.g. through the 24/7 learner support service.

[34] We suggest a Level 7 qualification be required.

[35] Mandatory educator training would not apply to roles, such as ITO training advisors, which do not involve delivery of teaching or training.

2. Lack of participation in leadership training. Mitigation: link programme to career progression and enable work release.

Next Steps

In Phase II, the NZIST should establish a team to take this work forward, including considering the potential for an early pilot of staff training, perhaps via contracting out to a suitable provider. We note that Ako Aotearoa currently has a brief for the promotion and facilitation of improved teaching across the tertiary sector which includes all types of tertiary institutions.

Future-Ready Technology That Delivers

71. Given the early stage of development of the NZIST, we did not endeavour to develop a full technology architecture and plan for an uncertain end-state structure and operating model.[36] We believe that the NZIST should take a considered approach to developing its technology strategy and not rush to make system choices. At a high level, the approach should be to:

- Clearly understand the learner journey through the system from initial enquiry all the way through enrolment, learning, learning and pastoral support, assessment, and record keeping. This will include classroom, workplace and online learners, and the needs of high priority learners such as Māori and Pasifika, learners with disabilities, those who are first in their family to attend tertiary education, international students.
- Clearly understand what staff and employers will need to be able to support the learner journey, and all the systems and processes that support this.
- Establish a baseline of key requirements to deliver technology-enabled systems to support the staff, learners and employers.
- Review international work in the educational systems arena.
- Pay attention to international standards for inter-operability and assess where this will be important to support evolution of the NZIST system in line with changing best-practice in educational technology.
- Collaboratively compare available solutions against the requirements we know about and innovative features we have not thought of yet. It might be that the systems that are selected happen to be systems that are already in use. However current systems should not drive a robust evaluation and selection processes.
- Establish governance of legacy systems and data migration.

We do think it is important to identify the key technology capabilities that will be required to support the NZIST's strategy, and to put some stakes in the ground around what we think will be the most consequential decisions. As discussed earlier, the "technology" workstream of Online Arrangements collaborated closely with the Education Products and Services workstream to jointly develop the initiatives outlined in previous sections. The technologists amongst us listened and asked questions to enable identification of the key enabling technology priorities for the NZIST. We were listening for the areas that were most important to realising the strategies and paying close attention where technology solutions were likely to be uncertain, non-standard or likely to evolve rapidly as educational technology continues to change.

[36] We do, however, provide an overview of current technologies in the ITP and ITO network in a separate resource pack provided to the incoming Council and Chief Executive. See Appendix "Supplemental Resources".

75. Our conclusion was that the most important assets the NZIST will have are:

- **The trust and confidence of its learners, employers and staff.** We put this first because careful transition planning will be needed to maintain and build trust and confidence as the NZIST makes technology decisions that affect learner, employer and staff experiences.
- **Knowledge and actionable insight into our learners** – who they are, their skills and competencies, how they are engaging with the NZIST, their learning and broader support needs
- **High-quality learning experiences that can be delivered flexibly across multiple delivery modes** as these evolve over time.

76. Decisions in these areas are therefore critical to the NZIST's ability to deliver on its strategy and meets its objectives, and we focus our comments accordingly.[37] Whilst developing its long-term technology strategy, we recommend that the NZIST focus on three key priorities:

- A **Technology Transition plan** that maintains the trust and confidence of learners, employers and staff.
- A **Learner Data Warehouse and Analytics Plan** to develop the deep learner insight capabilities need to deliver the data-driven, pro-active learner support envisaged in the 24/7 learner support service strategic priority
- A **Learning Resource Technology Plan** to support the development and storage of the high-quality learning resources that will be a key asset for the NZIST.

Before describing these priorities in detail, we put forward some definitions of terms used.

Figure 6: Definitions of Selected Education and General Technology Terms

Term	Meaning
SMS (Student Management System)	Software that supports the management of student (learner) data. Capabilities may include attendance, personal information, learning and assessment records and financial data.
LCMS (Learning Content Management System)	The platform for creating, managing and hosting/storing digital learning resources.
LMS (Learning Management System)	A software application for the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs. Note that some LMSs also have LCMS capabilities.
Learner Intelligence (LI)	A set of processes, architectures and technologies that convert raw data into meaningful information about learners. A more specific application of the general term "business intelligence".
Learner-centric CRM (Customer Relationship Management System)	A comprehensive and consistent information model that supports a 360° view of the learner[38]

[37] This is not to say that other elements of the strategy will not require technology enablement, but, in the case of applied research and staff training and development, we think the technologies are less critical and likely to be more standard. In the case of employer support, we are conscious that the initiative needs to be co-designed with employers before business requirements are clear. The provision of national online learning material will complement learning that students do on the job. More input is required from the ITOs on what we need to deliver to best support their learners. We need to work collaboratively with ITO representatives who can articulate what their systems and requirements are so that we can accommodate their needs and support work-based learning.

38 PWC definition from March 2019 RoVE Target Architecture and Capability Sprint and June 2019 Transition Roadmap

7. Technology Transition Plan

Recommendation

We recommend that, as a Phase II priority, the NZIST assign a team to design and develop a network-wide technology transition plan.

Future Vision

As noted above, the trust and confidence of learners, employers and staff are a key NZIST asset. The NZIST should communicate as soon as possible its commitment, as a first priority, to ensure that learners and employers do not experience disruptions as the NZIST evolves its technology systems. Follow-through on delivering business-as-usual service levels, enabling users of all types to quickly and easily raise problems, and issue resolution will be important for maintaining trust. Similarly, it will be important for learners, employers and staff to be involved in the creation of the longer-term transition plan as NZIST technology evolves.

Proposal

We recommend that the transition plan prioritise the following:

- Establishing and communicating a commitment to ensuring that learners in all modes can continue their current studies uninterrupted while the NZIST migrates to a new target architecture.
- Establishing and communicating a commitment to maintaining consistency and stability in user-facing interfaces whilst back-end technology systems evolve.
- Establishing and communicating a single point of contact for IT problem resolution across the NZIST network and a commitment to rapid response and resolution.
- Developing a brand migration strategy for NZIST learner, employer and staff digital interfaces. This should take a multi-year approach that recognizes that functionality will evolve over time. Developing an “NZIST look and feel” for learner interfaces across provides in the NZIST network could be a first stage implementation of the “learner digital home” strategic initiative discussed previously.
- Establishing and communicating a policy to existing technology vendors that provides them clarity that current contracts will be honoured.
- Regularly collecting, evaluating and responding to feedback from across the NZIST network from learners, employers and staff.

Risks

Insufficient sustained attention to plan development and implementation. Mitigation: dedicated resources, multi-year planning.

Next Steps

The NZIST technology leader should establish a team to take forward the transition planning. The team should involve the ITP technology leadership network, and also the nascent ITO technology leadership network. However, it must also include learners, employers and NZIST staff, and other network resources who are likely to be able to rapidly identify emerging problems.

8. Learner Data Warehouse and Analytics Service

Recommendation

We recommend that the NZIST immediately begin design and development of a Learner Data Warehouse and Analytics Plan.

Future Vision

To deliver data-driven, pro-active learner support (as envisaged in the 24/7 learner support service strategic priority), the NZIST will need to develop strong data-driven learner insight capabilities. The advisors in the dedicated 24/7 support centre will need access to relevant and timely information about how learners are engaging with NZIST delivered learning across all models of delivery. If a learner is engaged in work-based learning but also engaged in a separate online course, support centre advisors need to have a total picture. For instance, they should know if the learner has logged a concern about the level of support they are getting in their learning environment, and if they have failed to submit an assignment.

In addition to enabling pro-active learner support, timely, data-driven learner insight will help the NZIST to improve the design of its programmes and learning resources. It will also direct staff training to areas that most improve learner success, enable learning facilitators to get rapid feedback on the effectiveness of their delivery of learning, and enable the NZIST to understand its learner body at an aggregate level. And of course, it will enable timely feedback and insight for learners themselves.

Proposal

The plan for this game-changing investment should encompass these key elements:

- A 360° learner data warehouse to consolidate data on learners from multiple NZIST and external systems.
- A data collection and management strategy with clear principles that support data consent, privacy and sovereignty,[39] align with key standards[40] and include an identity management strategy.
- Learning analytics and reporting capability - a team that is capable of analysing this data and producing actionable insights reports for all stakeholders.

360° Learner Data Warehouse

The NZIST needs deep insight into what is working for learners as they engage with the NZIST, possibly across multiple learning modes and learning contexts (distance, online, classroom, work-based), and possibly in more than one learning mode and context at the same time. No one system will provide a full picture of a learners' interactions with the NZIST. Information will need to be gathered electronically across multiple systems: learner management systems (LMSs) will capture learners' interactions with their courses; student management systems (SMSs) will capture learner demographics and academic records; CRM systems will capture other interactions, e.g. with advisory staff or employers; the NZIST website will capture learner enquiries. A full 360° learner view should include data from external systems, e.g. high school records and records from non-NZIST tertiary institutions. Bringing data from these disparate systems together is the fundamental capability required to deliver pro-active support to learners.

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[39] http://www.legislation.govt.nz/act/public/1993/0028/latest/DLM296639.html

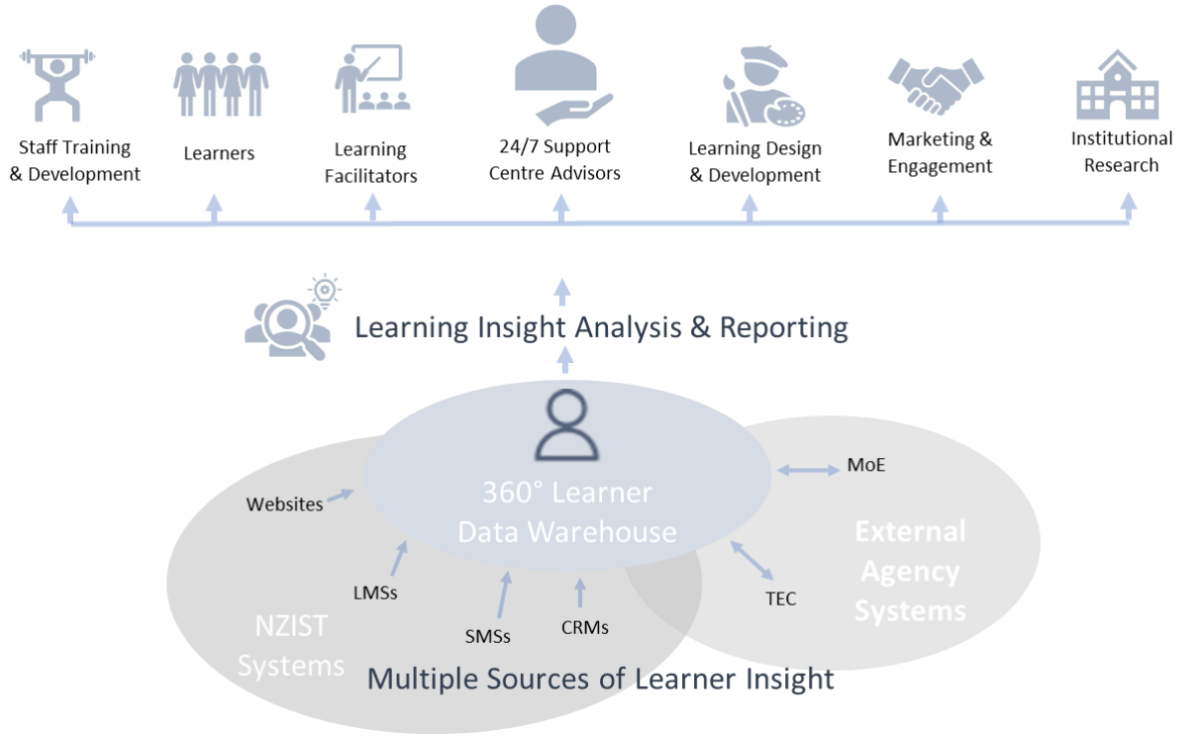
[40] Including the NZ Government Chief Data Steward's data strategy and roadmap, Māori data sovereignty principles, and regulations such as GDPR.

Figure 7 below provides a high-level schematic of the 360 ° data warehouse to support learner intelligence (BI) reporting. While conceptually simple, given the many LMS, SMS and other systems in place in current ITPs and ITOs[41], the 360° data warehouse will be complex to realise and require well-thought out multi-year planning and a considerable investment. It will be important to align the strategy for developing the data warehouse strategy to the long-term technology architecture migration plan for the NZIST (as that is developed), and to select and prioritise systems for integration to the warehouse based on the value-added to learner insight.

As a first phase, we suggest that the NZIST populate the data warehouse with:

- A consolidated view of all NZIST network provider single data return (SDR) reports[42]
- Data collected at the NZIST-wide level during the marketing and recruitment process.

Figure 7: Schematic of Learning Data Information and Analytics



Data Collection and Management Strategy

To bring these information sources together, the NZIST will need a data strategy. It will be important to get this right at the outset so that the NZIST collects, manages and uses the information it needs, while giving primacy to obtaining and respecting learners' and other users' consent and privacy preferences.[43]

[41] Even where the same product is used it is likely to be implemented in different ways.

[42] The TEC's Information Directorate is willing to consolidate submitted data at their end and provide it back to the NZIST in a suitable form. This could be done starting as early as April 2020. After the TEC's Data 2020 project is rolled out, data could be updated as frequently as daily.

[43] The data strategy must have clear principles supporting data sovereignty and privacy, and aligning with the NZ Government Chief Data Steward's data strategy and roadmap, Māori data sovereignty principles, regulations such as GDPR, and the NZ Privacy Act.

The data strategy should include an identity management strategy that enables it to match learner data entered in different internal and external systems. Without an identity management strategy, we could not know that learner A who is a carpentry apprentice is also learner B who is doing an on-campus ESOL course, who excelled in math and science at a Māori medium high school and dropped out of a science programme at Massey University. The TEC, MoE and DIA are working on data projects that can mesh with the NZIST's strategy and these conversations should be continued in Phase II of design. One goal of these discussions should be to support a persistent learner identity that enables a full picture of learners from their first engagement with learning in New Zealand through all subsequent learning experiences, including work-based learning.

With respect to what information it collects, the NZIST should consider capturing a wider range of information to give a more complete picture of the learner and enable the creation of a comprehensive learner record. A comprehensive learner record would go beyond a simple learning record or academic transcript by including records of competency-based education, micro-credentials, badges, employability skills and soft skills. It could also contain a learners' individual learning plan and track their progress against the learning plan towards their goal. A comprehensive learner record would be especially well-suited to work-based learners, as well as to any learner who is pursuing a personalised learning track.[44]

We note that MoE has been engaging with similar issues and coordinating with their approach will be important, especially as NZIST student records should automatically include prior New Zealand learning, e.g. from primary and high schools.[45]

Learning Analytics and Reporting Capability

We note that several NZIST network members already have teams focused on analysing and providing learner insights gleaned from interactions with learner management systems.[46] The NZIST should identify this existing capability and seek to leverage it in designing a network-wide capability.

It will be important for the NZIST to develop a structured model of how it plans to leverage learner insight data, that clearly sets priorities and business rules. In designing this model, the NZIST should draw on best-practice external models.

The design process should also encompass the various dashboards and other interfaces that will be necessary for end users to make the best use of learner analytics and reporting. For instance, support centre advisors will need a single interface to a learner profile that identifies the learner as they move throughout the NZIST network, possibly moving from region to region and across different modes of study. This interface should provide comprehensive learner and potential learner information (e.g. prior study records) .

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[44] The NZIST should give consideration to IMS global learning consortium's comprehensive learner record https://www.imsglobal.org/activity/comprehensive-learner-record.

[45] MoE is creating a new national repository of learner data called "Te Rito" and is using a standard called SIF (Schools Interoperability Framework/Systems Interoperability Framework). Both SIF and the Comprehensive Learner Record cited above are standards for storing data in a structured format, they are not software products. While these two standards are a starting point for considering what standard NZIST will adopt for storing learning records there may be others worth considering. Some points to consider are as follows: Can NZIST use Te Rito and SIF (NZ) to store tertiary records giving continuity from secondary school without creating its' own separate system? Does SIF (NZ) offer the flexibility to do everything that will be required for tertiary students? How important is it to allow electronic matching of job seekers and employers based on a learner record? Is international portability important? How strongly is the Comprehensive Learner Record supported internationally? How can NZIST access NCEA result information electronically without doing manual administrative checks?What role does the separate NZQA record keeping system play, what system do they use, and will they continue to use it?

[46] For instance, Open Polytechnic, TANZ ecampus, SIT, Otago, Learning Works, Wintec and Weltec/Whitireia. These are only examples and more capability undoubtedly exists within the network and should be identified.

Risks

1. Imposing a solution that does not involve existing sources of expertise and good practice across the network. Mitigation: ensure Phase II team consults widely and communicates decisions clearly justifying the selected solutions as well as involving the stakeholders in selecting solutions.
2. Under-leveraging learner insights. Mitigation: develop a system-wide insights-to-action plan on enabling better learner outcomes, better learning design, better learning facilitation, and institutional improvement generally.
3. Misalignment with TEC/MoE data strategy. Mitigation: include TEC and MoE in the planning process.

Next Steps

The NZIST technology leader should establish a team to take forward this work with input from eternal resources skilled in best-practice design and implementation of similar systems.

9. Learning Resource Technology Plan

Recommendation

We propose that the NZIST prioritise developing a technology plan to support the design, creation, delivery, and management of the high-quality learning resources, including master programmes, that will be a key NZIST asset. This plan should address all relevant technology systems, including but not limited to learning management systems (LMS) and learning content management systems (LCMS).[47]

Future Vision

The technology plan to support NZIST's learning resources maximises the impact of those assets by ensuring they are accessible, portable, presented in an optimal way for learners, developed collaboratively, and integrate to other NZIST systems.

Proposal

Rather than make specific recommendations about system design and technology choices, we recommend that the NZIST identify and be cognizant of appropriate international technology standards in developing its learning resource technology plan. We recognise that any design process inevitably involves trade-offs amongst conflicting objectives, but an ideal system design would deliver on all five of the objectives identified below.

1. Accessibility. The NZIST must deliver great education opportunities and outcomes for every learner, including those with vision, hearing or other disabilities such as dsylexia.[48] Learning must be accessible in te reo Māori and other languages. Access for remote New Zealanders and lifelong learners is also critical, for example, offline access capability.[49] The NZIST should also promote accessibility by ensuring that all learning resources is accessible via the learners' technology of choice including: common operating systems such as Windows, macOS, Android, iOS and Linux; devices such as laptops, tablets, Chromebooks and smart phones; a range of web browsers and device specific Apps.

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[47] Learner management system (LMS): A software application for the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs. Note that some LMSs also have LCMS capabilities. Learning Content Management System (LCMS): The platform for creating, managing and hosting/storing digital learning resources.

[48] The NZIST should adopt relevant international and NZ standards. For instance, an international standard for accessibility is "W3C WCAG 2.0" (Web Content Accessibility Guidelines). Adherence to this standard ensures that people who are blind or deaf or otherwise physically disabled will be able to use the product using their adaptive technology solutions.

[49] NZIST learning resources should be available or exportable to formats that can be accessed by learners without reliable internet access, e.g. enabling download via an app or mailing learning resources on a CD/USB device for upload to a computer.

2. Portability. We recommend that the NZIST prioritise portability of all learning resources. Adhering to portability standards ensures that NZIST learning resource assets are easily transferred from one system to another.[50] Learning resource portability supports flexibility in how learning is delivered, and in how the NZIST's systems evolve as educational technology changes.

3. Collaborative Authoring and Teaching Environment. The NZIST should ensure that learning resources content can be easily developed by staff, subject matter experts, learning designers and industry experts; simultaneously and collaboratively. The learning environment should enable a team model for learning facilitators that fosters professional practice communities.

4. Learner Experience Optimisation. The NZIST should ensure that the digital solutions prioritise the learning experience, and are able to adapt and evolve in response to insight on learner needs and changing educational technology best practices.

5. Interoperability. The NZIST should ensure that key systems meet appropriate interoperability standards, as integration with other software is essential to gathering and analysing data about the learners' progress.[51] It is also important that processes such as automatically enrolling a learner into a module are possible and that data about the learner can be transferred securely.

Risks

Implementation fails due to lack of buy in across network. Mitigation: communicate commitment to leveraging existing network people capabilities regardless of technology choices; have a plan for developing people-to-people links, and new system-wide cultural norms.

Next Steps

The Chief Executive should ensure that the technology planning process for the NZIST is fully informed by the objectives outlined above. In evaluating technology options for the NZIST, the relevant team should report on the extent to which alternative technology design and system choices would support these objectives.

[50] For instance, portability standards ensure that your mobile phone contacts transfer to other devices, including other brands of mobile phone, computers, watches or a communication device that has not been thought of yet. Just as lack of content portability might make you hesitate to swap mobile phone brands, not being able to port key learning resource assets to a new system would constrain the NZIST's ability to migrate to new learning delivery systems.

[51] For instance, LTI 1.3 (Learning Tools Interoperability) and LTI Advantage are open source independent industry standards that ensure a learning management system (LMS) can securely integrate with other tools and platforms. LTI Advantage is a package of three services (Deep Linking, Name and Role Provisioning Service and Assignment and Grade Services).

APPENDICES

A. Approach to the Brief
B. Supplemental Resources List

A. Approach to the Brief

Direction from the Minister and the Establishment Board

In his Letter of Expectations, the Minister requested that the Establishment Board initiate work to "develop a high level strategy to support new products and services to support learner and employer needs" and to "complete a review of current online capabilities; initiate the compilation of business requirements to support online delivery for the Institute; and, agree a strategy for determining future capability, e.g. leverage existing vs running a procurement process". The Minister's target completion date for the education product and services strategy is June 2020, and the work on online capability is to be "well-underway" by April 2020" (Table 2.2 and 2.5, Minister's Letter of Expectations).

In asking our two workstreams to commence this work, the Establishment Board provided some additional guidance, identifying the need to "develop a strategy of how education products and services can give effect to the expectations in legislation and the NZIST charter, and build NZIST credibility; use learner journey maps to inform the strategy; develop a set of priorities for new education products and services that will be useful to NZIST as it starts to form its own brand; include the impact of work-based learning transfer into education P&S, with input from ITOs; and start the analysis of needs and priorities via regional and student group lenses, taking a strategic approach to starting development, identifying any immediate needs and any quick wins".

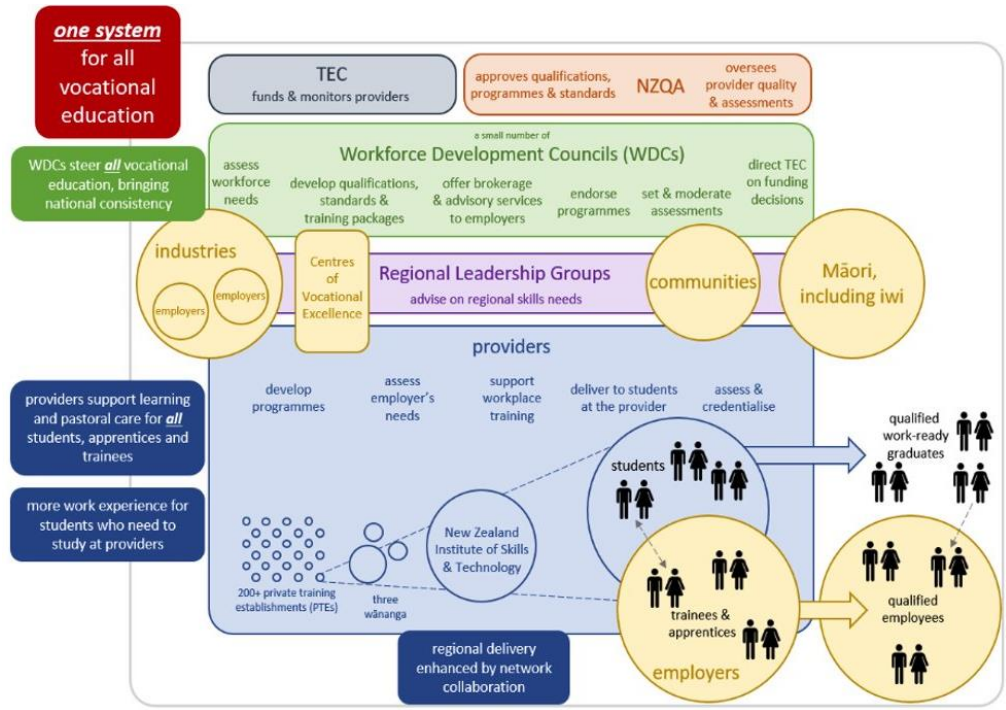
With respect to the brief for online arrangements, the Board asked that we "consider what online delivery needs to do as part of NZIST delivery model to give effect to the NZIST charter, support learner journeys and learning outcomes, and employer and community needs; provide initial thinking of how online arrangements can support work-based learning and on what the online network needs to address to succeed in extending NZIST reach nationally and supporting/supplementing physical sites, and also address the support needed by students, employers and whānau, including addressing barriers/resistance to online."

Workstream Scope Delineation

We defined products and services to all provider functions identified in cabinet's description of unified vocational education system (Figure A below). That is, the products and services the NZIST must deliver to enable the full learning journey for learners and employers and meet their diverse needs as envisaged by the NZIST charter, including foundational, vocational and degree-level and above provision.

We were also guided by the belief that technology is and will be pervasive in any best-practice 21st century learning ecosystem. This led us to broaden the scope of the Online Arrangements workstream to the question of what technology-enablement will be required to support and empower learners' and employers' learning journey.

Figure A: A Unified Vocational Education System



Source: RoVE Key Decisions Cabinet Paper, 29 July 2019, p. 7

Objectives, Principles and Assumptions

Our work was informed by the overall objectives of the Government's Education Work Programme:

1. Learners at the centre – learners (with whānau) at the centre of education.
2. Barrier-free access – great education opportunities and outcomes for every learner..
3. Quality teaching and leadership – quality teaching and leadership make the difference for learners and their whānau.
4. Future learning and work – learning that is relevant to New Zealanders today and throughout their lives.
5. World-class inclusive public education – New Zealand education is trusted and sustainable.

We also distilled six objectives from the detailed NZIST Charter as yardsticks against which to measure our thinking. We recognised that not every good idea would deliver on each objective but sought to ensure that, taken together, they would.

Figure B: NZIST Products and Services and Technology-enablement Strategy Success Requirements

To be successful, the NZIST's products and services and associated technology-enablement strategy must:	
 **Enable all learners to succeed and thrive**	• Enable more people, particularly Māori, Pasifika, the disabled and those disengaged from training, to succeed in their learning and thrive in their learning environment
 **Reach and connect all learners to the right training**	• Connect more people, especially Māori, Pasifika, the disabled and those disengaged from training to the right training for them
 **Deliver the right skills, the right way, at the right time**	• Deliver high-quality, consistent and portable national programmes that flex to meet regional and employer/industry needs • Deliver programmes that give learners and employers not only the skills they need now but also those they will need as the future of work changes • Allow seamless learner transitions between delivery sites and educational modes
 **Be there for employers**	• Support training delivery in the workplace • Help employers identify the right training to build their workforce • Deploy NZIST resources to enhance industry productivity • Help solve employer and industry problems
 **Create a culture of collaboration and engagement**	• Build a culture of outstanding teaching and learning based on qualified learning facilitators who engage deeply with learners, regions, employers and industry
 **Spend money wisely**	• Deliver greater efficiency in programme design, development and delivery • Reduce duplication of functions within the NZIST network • Invest in services and systems that are fit for future needs and have a high ROI

Our work was informed by the Board's principles for collaborative design, and as our discussions progressed, several principles and assumptions emerged as being particularly important for our work.

1. Think big, think transformative.
2. Start with what is needed to enable the full learning journey for learners and employers.
3. Technology capability requirements flow from business requirements. Specific technology system and vendor choices come last.
4. Focus on the strategy and capabilities required, not on end-state organisational structure. Form follows function.
5. Identify, but do not get held up by dependencies and interdependencies with other NZIST Establishment, RoVE or other external agency workstreams.
6. Seek to leverage what is good with the current system and do no harm to the NZIST network learners, employers and staff.

1. Think big, think transformative

11. We were guided by the belief that if the NZIST is to achieve its transformational objectives, we must be willing to go beyond simply aggregating what individual ITPs and ITOs do today. We sought to identify the few big ideas that would significantly move the needle rather than endeavour to address every issue. Bearing in mind that this is only Phase 1 of a longer period of design work, we thought it important to paint a big picture for the incoming NZIST Council.

2. Start with the products and services required to enable the full learning journey for learners and employers

We grounded our discussions in what would best serve learners along their learning journey, starting from initial engagement all the way through enrolment, learning, assessment, and record keeping, and alumni engagement. The Learner Journeys workstream's work took place in parallel to our own, and we wish to thank them for providing their insights as they emerged along the way. Their insights into challenges and barriers faced by different learners and their learner persona development helped our work.

3. Technology capability requirements flow from business requirements. Specific technology system and vendor choices come last.

From the beginning, the Online Arrangements workstream took the view that the NZIST should take a considered, business-requirements driven approach to developing its technology strategy. The "technology" workstream of Online Arrangements collaborated closely with the Education Products and Services workstream, listening and asking questions to enable identification of the key enabling technology capabilities for the NZIST, particularly those that would be most important to realising the NZIST business strategies. We sought to define required capabilities and key principles that should inform the NZIST's capability development planning.

4. Focus on the strategy and capabilities required, not end-state-organisational structure

We agreed that our role is to identify what network-wide strategies the NZIST should adopt in order to achieve its objectives, and what capabilities it will need to deliver on them. The end-state organisational structure, including the role of the head-office and the structure of non-head-office operations will be a decision of the NZIST Council. We assume that form will follow function and our job is to set out what those functions should be.

5. Identify, but do not get held up by dependencies and interdependencies with other NZIST Establishment, RoVE or other external agency workstreams.

Our work complements that of many other Mobilising the New World workstreams. As the section below on our collaborate work process discusses, we tried to identify dependences and engage with other workstreams where they were significant, but we prioritised coming up with big ideas over resolving

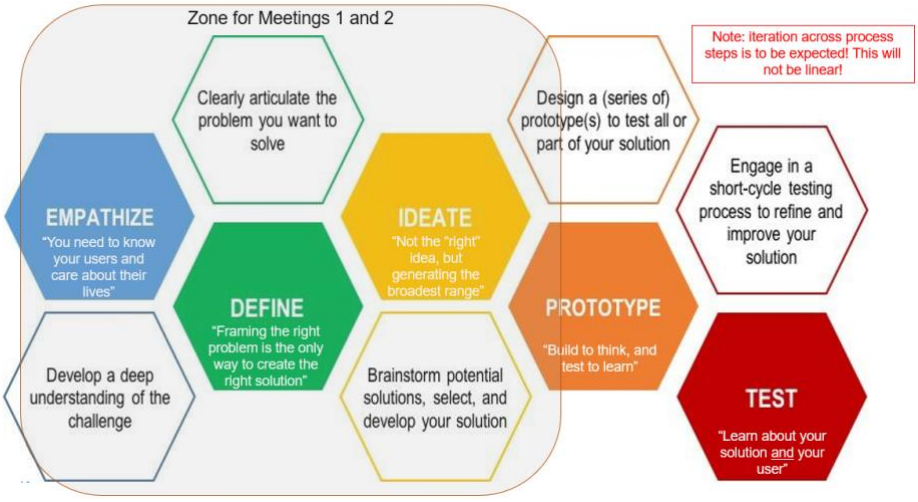
dependencies and interdependencies. We took a similar approach to our engagement, also outlined below, with Ministry of Education, TEC, NZQA and Education NZ stakeholders.

6. Seek to leverage what is good and do no harm to NZIST network learners, employers and staff.
Transformation doesn't necessarily mean starting from scratch. We believe there is much that is good in the existing NZIST network and sought to identify and build on it where possible. We were also conscious, particularly when thinking about implementation, of the need to ensure that learners in particular, but also employers and NZIST staff, experience as much stability and consistency in NZIST service as is possible.

Workstreams' Collaborative Work Process

With these objectives and principles in mind, we followed a collaborative, co-design inspired approach to our work, seeking to leverage the experience in the room to rapidly generate a wide range of ideas and then to "prototype" their key elements in writing, test them with our stakeholder networks, and against the NZIST objectives, and then refine and improve them. We continually asked ourselves, "will this idea lead to transformative results to deliver the NZIST's objectives"?[52]

Figure C: Workstream Process



At our first and second hui, both workstreams stayed in the "empathize, define, ideate" zone, discussing scope, ambitions for the NZIST, the desired future state, and generating big ideas. The facilitator and principal advisor were immediately struck by the similarity in the ideas of the two workstreams, and, while preserving independent ideation, shared them across workstreams at the appropriate time. Between meetings, workstream members sought feedback from their network, which was shared, discussed and used to further refine and prioritise the workstreams' ideas. By the end of hui 2, this process of ideation, cross-workstream pollination and external stakeholder feedback had led us to identify the big ideas that became the five strategic priorities and associated initiatives that are presented in this report.

Having identified our key big ideas, in hui 3 both workstreams worked in small groups using co-design methods to "prototype" each idea in writing. Between huis 3 and 4, workstream members socialised the resulting prototypes with their networks using a "I like, I wish, I wonder" feedback structure to elicit feedback. (See Stakeholder Feedback and Expert Input section below and also Appendix X).

At hui 4, workstream members synthesized the gathered stakeholder feedback, identifying key themes. Workstream members also identified areas for review and further development in each prototype. Online

[52] Recognising that few ideas will deliver transformational results against all objectives at once.

Arrangements workstream members also agreed on a process for documenting existing ITP and ITO online capabilities as requested by the Minister.

At hui 5, we focused on ensuring that the workstreams were fully aligned on the content of the strategic priorities and initiatives presented in this report.

B. Supplemental Resources

The following resources may be useful to the NZIST as it continues the design process and have been provided to the incoming Council and Chief Executive in a separate resource pack.

1. Overview of current technologies in the ITP and ITO network.
2. Overview of people capabilities with regard to online learning design and provision.