Nurturing Your Knowledge Engine

A Talent Development White Paper

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What and Who?

This paper relates to talent development for scientists and engineers. It is designed for learning and development (L&D) and HR professionals who support technical groups and individuals within scientific, engineering or manufacturing organisations. It presents practical tips, tools and insights which aim to...

- Improve understanding of technical talent
- Assist creation of value-adding L&D
- Bring fresh perspective on learning & value
- Support and help Learning Champions

Content Snapshot

It focuses on the key assets and challenges which play a part in the lives of scientists, engineers and technical teams. It presents tips, tools and insights designed to help L&D and HR professionals in their mission to nurture and invest in their technical talent. The white paper includes:

- Technical talent: assets & challenges
- Understanding performance & value
- Team dynamics and culture conflict
- Creating value and building resilience

Our Frame Of Reference

Realising the Value of Learning and Development

In a dynamic changing environment peoples’ desire to grow and adapt is an asset to any organisation as long as it is supported and nurtured. Especially true for scientists and engineers.

As depicted in Figure 1 below, value for all is created when:

- Learning and development (L&D) and business objectives are aligned
- L&D professionals take a holistic approach and help translate business and individual needs into authentic learning
- Organisations recognise people as lifelong learners whose continuous development results in far-reaching advantages: human and commercial

Learning and development can achieve this ‘value’ mix by...

- Being supportive
- Being strategic
- Encouraging excellence
Hurray For Our Technical Talent

Thanks to our scientists, engineers and technologists inventing, researching, designing, developing, manufacturing, supporting, consulting, educating we have a

**KNOWLEDGE ENGINE** that brings us

- 3D printed artificial limbs improving accessibility
- Seed technology addressing global agricultural challenges
- Mobile phones connecting disparate global communities
- Internet of Things enabling independence in old age

Recognising this contribution and value to the economy and society; nurturing individuals and supporting teams is not some ‘touchy feely’ initiative to tick a few boxes. It is an imperative; one to be championed by boards, line management and L&D professionals alike.

What is Special about Scientists, Engineers and Technical Teams?

Many writers refer to the nature of our current business and technology environment as **VUCA** (Volatile-Uncertain-Complex-Ambiguous). For organisations change and complexity are the new norm. Really? On reflection the answer is ‘yes’ and ‘no’ depending on your point of view.

From a business perspective, repeatability, predictability and basing the future decisions solely on past results don’t work today. Constant adaptation, evolution and innovation at all levels are a fact of life. And for certain disciplines this can be challenging and uncomfortable. From the perspective of scientists and engineers, the response to this dynamic environment is... welcome to our world!

Scientists and engineers, individually or as team members, are often expected to be chameleon-like; solving problems one minute, being part of a cross-organisational project the next. Working to their ‘home’ team rules in the morning, satisfying what matters to a client in the afternoon. Being expected to act as an expert and problem-solver; mentoring those just starting out; reporting at board-level on projects and progress. This variety in working scenarios, relationships and expectations brings with it many assets... and challenges too.

The four key ones are as follows:

<table>
<thead>
<tr>
<th>High-skills individuals</th>
<th>Intra &amp; inter organisational</th>
<th>Multifunctional groups</th>
<th>Reach beyond technical</th>
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<tr>
<td><strong>Asset:</strong> Productivity</td>
<td><strong>Asset:</strong> Opportunity scope</td>
<td><strong>Asset:</strong> Innovation</td>
<td><strong>Asset:</strong> Transferrable skills</td>
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<tr>
<td><strong>Challenge:</strong> Boredom</td>
<td><strong>Challenge:</strong> Culture clash</td>
<td><strong>Challenge:</strong> Low respect</td>
<td><strong>Challenge:</strong> Priority conflict</td>
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Why do special characteristics which are major organisational assets also act as challenges to achieving high performance? What can we do to support our technical talent and build high performing teams?
Nurturing your knowledge engine

Assets and Challenges. So What?!

**High-skills individuals:** The UKCES report, *Growth Through People*, reiterates the importance of high-skills people to productivity and the UK economy. Do high-skill technical professionals equal high productivity? Not if skills are underutilised. Boredom and feeling undervalued influence behaviour affecting self-esteem and relationships.

L&D ensures high-skills developed and utilised; increasing productivity, quality and engagement.

**Intra & inter organisation:** Picture an organisation as an ecosystem with its own culture and systems. People influence and are influenced by this environment. What happens when individuals from different teams or different organisations work together? Culture clash can bring misunderstanding and disrupt team dynamics.

L&D supports cross-group interactions; creating opportunities along supply and value chains.

**Multifunctional groups:** Different approaches and knowledge matter to different disciplines and functions. What happens if there is no mutual respect or appreciation of the experience of others? Not seeing beyond a personal bubble and appreciating the perspectives and ideas of others stifles creativity and collaboration.

L&D embraces varying experience, knowledge and world views; promoting respect and innovation.

**Reach beyond technical:** The skills of scientists and engineers are often misunderstood; by themselves and others. Their diversity of experience is a source of advantage. What happens if we waste these talents? Doing the same old thing brings the same old results. Moving beyond ‘comfort zones’ needs support; it can affect confidence and bring conflict.

L&D listens to, understands and supports the special challenges that face scientists and engineers.

Before truly creating value, it is important to consider what it means.

**Performance in Perspective**

Please take a moment to think about the following three questions...

- How valuable is our technical talent?
- Does the organisation value technical talent?
- Do our technical team members value themselves and each other?

Why questions about value? It is fair to say that, in organisational and team settings, value and performance are linked. There may not always be an explicit connection but at individual, team and organisation levels it is happening every day.

- We value our fellow team members based on how well they perform
- Teams’ results collected together show how the organisation has performed
- Organisational results indicate performance and influence market and shareholder value alike

Therefore, understanding, creating and sustaining value in team, organisational and individual contexts are pivotal in the learning and development mix.

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By appreciating links between value and performance we are able to understand and cohesively measure what matters and is meaningful from commercial, human and learning perspectives. Instead of measuring what is misaligned and misinformed and fuelling the fires of mistrust.

Members of cross-organisational and cross-functional teams have different organisational contexts and interpretations of value. People who feel undervalued or do not see their value will not truly come together to form any kind of team. Teams that are undervalued or misunderstood can try as hard as they like but the view of their results will always be tainted. Perception is a powerful thing.

How do we achieve commonality of value and nurture our technical talent?

**Nurturing High Performing Talent and Teams**

Creating commonality of value is a particular challenge for scientists and engineers due to the variety of team scenarios and dynamics they encounter. ‘Home’ teams versus short-term troubleshooting teams versus cross-organisational collaborations versus project teams; the list goes on. There are, however, several common elements found in high performing teams which in combination address the ‘value’ challenge.

- **Leadership**: not based on labels or status
- **Skills**: fully utilised and developed
- **Purpose**: understood and shared
- **Roles**: identified and evolving
- **Trust**: valued and nurtured

Successfully building high performing technical talent and teams addresses these areas; they are interlinked and powerfully influence each other so are best considered together and not in isolation. That does not mean changing everything at once; it requires a holistic, integrated thinking approach.

**Technical team development**

Where to start can often be the most perplexing. The value-based team development model shown in Figure 2 is designed to help with thought processes, allow several interconnected elements to be put in perspective and to get the ball rolling with our talent development mission.

**The Model Elements**

**Why? Purpose**

Shared objectives don’t appear by magic. Crafting common purpose for teams and individuals is essential to achieving high performance. Lack of purpose encourages complacency; lets egos get in the way. Purpose is where to start.

**Who? Roles**

Knowing why you are part of a team and how you contribute to its success is a powerful thing. Being seen as a whole person whose skills add value encourages the ‘extra mile’ organisations desire.
How? Practices

Many teams and organisations work and behave in ways that conflict with what they are trying to achieve. This situation is frustrating for those trying to innovate and make things happen, reduces productivity and discourages creativity. Relevant and meaningful team practices encourage respect and support high performance.

L&D which helps scientists and engineers work successfully in diverse scenarios and groups will...

- Increases opportunities and reduces culture clash
- Utilise and develop high-skills individuals increasing productivity and learning
- Encourage mutual respect and enable innovation
- Strengthen existing relationship
- Improve communication and build trust

Real life dictates that it is not possible to consider technical talent and teams in isolation from their organisational settings. Culture and systems impact on performance, learning and development.

Organisations: Friend or foe?

Obviously, organisations only exist thanks to people. Like any community they form a unique ecosystem which must evolve and change to stay relevant and dynamic. The pace at which this takes place, if it happens at all, may not reflect the needs of or insights from the technical teams working with or within them. This is especially true when considering the technology-on-steroids era we are living in. Consequently, and by the nature of their work, scientists and engineers are constantly required to push forward, re-evaluate and adapt, often in spite of their organisation.

As part of most work ecosystems everyone has an organisational, team and personal dimension. Having them in sync is more conducive to high performance. Not factoring in the organisational dimension means efforts to invest in talent development and create value-adding L&D may be wasted or have a negative impact.

Imagine a joint venture between an entrepreneurial start-up, a commodity manufacturing multinational with a lean philosophy and a bureaucratic public sector partner. Each wants to work together but each brings their personal and organisational set of baggage.

Picture a contract laboratory where individuals are measured by fees earned; driving internal competition not necessarily collaboration. Picture them working with a not-for-profit charity to deliver an educational contract. Conflicting individual and team objectives are inevitable.

What sort of teams would these make?
What would they value?
How would they perform?

To understand this further and help apply it to often complex real situations let us look at the 4-quadrant model described by Frederic Laloux in *Reinventing Organisations* and reproduced in Figure 2.

![Figure 2](Reproduced from Frederic Laloux’s Reinventing Organisations)
Consider again the scenarios above; cultures plus systems contributing to various individual beliefs; beliefs that influence a variety of behaviours and vice versa. A complex mix which can impact on talent development and performance in many ways; positive and negative.

Supporting and investing in the skills necessary to productively and effectively manage these situations is an important aspect of a value-adding L&D mix. Imagine for example when the following cultures come together:

entrepreneurial versus bureaucratic
personal risk versus job security
team versus organisation
private versus public
profit versus cause

What factors may be influencing your technical talent and teams today?

To add value at commercial and human levels it is important learning and development initiatives...

- recognise the influence and impact organisations have on our teams and talent
- translate output of team purpose, roles and practices into relevant language for those involved
- measure what matters; defining value in meaningful terms and demonstrating impact

Value and Resilience

Exposure to a variety of working scenarios, relationships and expectations combined with the high-skills profile of technical talent is a recipe for value creation.

Balancing varying technical priorities with increasing commercial and people-related demands can lead to conflicted priorities and perspectives; even crises of confidence.

The complexity and challenge scientists and engineers thrive on can often lead to increased pressure and be a source of stress; as depicted by Yerkes-Dodson Curve in Figure 3.

Important L&D elements which help maintain a healthy balance between performance and pressure include:

- a supportive environment
- various routes for team members to develop
- listening and understanding

Learning and development adds value and helps build resilience by recognising:

- Management of multiple relationships requires strong communication and people skills
- Embracing complexity and change requires investment in personal and team creativity
- Scientists and engineers always want to learn and evolve
Different Tomorrow?

Scientists and engineers recognise that developing their technical knowledge and expertise takes time and effort. It does not miraculously happen overnight. Creating value-adding L&D programmes and learning cultures is no different.

Day-to-day challenges, balancing resources, business complexity and organisational pressures are facts of life. Do we use them as excuses not to change or see them as opportunities to create value?

Technical talent is an asset and a source of competitive advantage. Supporting technical excellence; creating opportunities or extending the reach of transferrable skills, value-adding L&D plays a key role.

Are you supporting and nurturing your knowledge engine?

Five Top Tips

★ Adopt a broader-ranging, open, creative approach to investing in science and engineering talent.
★ Consider individual, team and organisational perspectives holistically. All are connected and impact on each other.
★ Listen to and learn from technical talent. Their skills transfer beyond the shop-floor or lab.
★ Support and recognise the special challenges that can face scientists and engineers.
★ Learning and applying knowledge are important to scientists and engineers. Create a culture that supports it both on the job and with appropriate professional support.

Bibliography

☆ F Laloux; Reinventing Organisations
☆ R Martin; The Opposable Mind
☆ C R Sunstein & R Hastie; Wiser
☆ UKCES; Growth Through People Report

About Dr Elaine Hickmott

Dr Elaine Hickmott is founder of EH Enterprises, a learning and development consultancy specialising in working with scientists and engineers.

Her mission is to support STEM talent around the world; enabling them to appreciate and develop their broad-ranging skills and expertise.

Elaine’s inspiration is rooted in the knowledge that scientists and engineers who develop holistically and beyond technical boundaries bring global prosperity and social change.

Stepping back in time, her adventure began with a PhD in chemistry followed by experience as an industrial chemist and working in commercial and business leadership roles. Elaine says, “a PhD in chemistry launched me. Manufacturing and business inspired me. Curiosity and pro-activity did the rest”. She describes her career as going from boilersuit to boardroom and beyond.

If you have any questions or insights to share; talent development challenges to discuss please contact Elaine via elaine@eh-enterprises.com

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