PLURALSIGHT

TECHNOLOGY SKILL DEVELOPMENT:

Preparing your teams for digital transformation

An interactive strategy workbook

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Introduction

You've got a technology project that's too important to fail.

You're exploring how to ensure your teams can deliver the goods and if they have the right skills to produce the results you require.

What do your teams need to prep for the vital work ahead? What factors should you consider as you plan your implementation? The pages in this workbook will help answer these questions—and the ones you haven't thought of yet.

Before diving in, let's chat about who will most benefit from this workbook: technology leaders and L&D professionals.

Tech leaders: You're on the hook for digital transformation results. It's in your best interest to actively plan how to get your technical workforce from where it is today to wherever you need it to be to successfully implement your vision.

L&D leaders: Sometimes technology teams throw learning-related requests over the wall in a transactional way—"we need a Terraform class" or "we want our team AWS certified." If your organization's future depends on a successful digital transformation, engage your technology counterparts when strategizing.

In the top organizations, engineering leaders and learning professionals work together to define the technology skill development strategy (TSD).

Let's get started.

TIPS FOR USING THIS RESOURCE

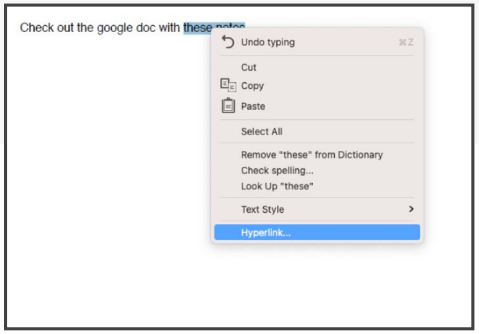
1. Download the PDF and open it with Adobe Acrobat Reader* to edit the text fields. If you open it in a browser, you can read but not write.

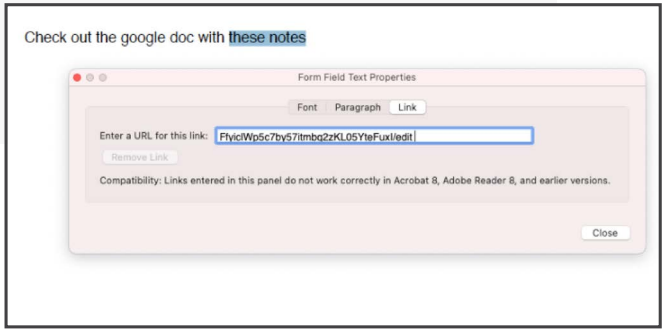
2. You'll find blank spaces for writing throughout this workbook. Click on the empty boxes, type your notes and regularly save the file.

3. You can add hyperlinks to documents, spreadsheets, photos, audio recordings or any other file type. This comes in handy if you run out of writing space in the workbook. Take notes elsewhere, save them to your team's drive and add a link.

4. To make your URLs viewable from the workbook, highlight the URL and right click on it. Select Hyperlink, paste the URL where indicated and save. Voila! You can access your notes in one place.

**No Adobe Acrobat Reader? No problem. Take notes however you prefer. And if you decide to print this workbook, we won't eco-shame you.*





Contents

The big picture

Let's begin with a definition and an illustration.

What is technology skill development (TSD)?

A vital strategy for technology leaders

TSD is a strategy, not a tactic, for building your workforce's technology skills to innovate, disrupt the market and increase your velocity. Though TSD is a relatively new category in the learning domain, you need to excel in it if you want to:

- **Attract and retain** top tech talent
- **Build** your competitive advantage
- **Support** internal talent mobility
- **Succeed** in your mission-critical technology projects

When done well, TSD:

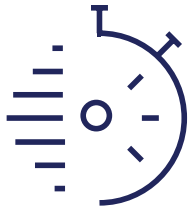
- Fuels continuous growth and intentional upskilling
- Provides personalized, guided, scalable learning experiences
- Produces measurable ROI in a cost-efficient manner
- Aligns tightly with your business goals
- Inspires your teams, boosting employee engagement and retention

TSD is different from simply taking a course. It's possible to whip through video tutorials, read manuals or sit through lectures and not gain enough mastery to translate the learning into day-to-day projects. TSD focuses on **real-life application** and **continuous learning** for the purpose of **achieving measurable organizational goals.**

Your litmus test? Software, IT and data professionals can confidently apply new knowledge to your organization's specific use cases and implement your digital transformation projects successfully.

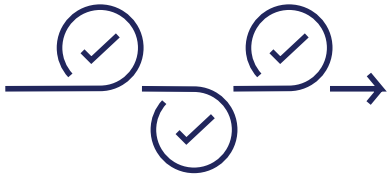
This workbook will walk you through TSD best practices. Compare them with what you're doing today (the work part) and identify opportunities for improvement (the fun part).

Where does TSD fit in digital transformation planning?



The urgency

If you're not a market leader today, or if you're concerned about holding on to your competitive edge, meticulous TSD planning can make the difference between winning at business and falling behind.



TSD is not one and done

Because technology constantly evolves, tech professionals must regularly update skills. With TSD, learning is a way of life and a requirement for long-term business success.

Strategists create the technology roadmap

INFORM THE → TO DRIVE

Mission, vision & organizational goals → Business strategy & technology roadmap → Business outcomes

Implementation planners figure out the travel details

- Technical planning
- Requirements definition
- Architecture
- Compliance
- Controls
- Cost management

+

- Tech skill development planning
- Skills gap analysis
- Strategy to fill gaps
- Learning program design
- Change management support
- Community engagement
- Coaching & mentoring
- Ongoing on-the-job support
- Continuous learning
- Measurement and reporting

two-way dialogue

=

Organizational readiness to implement successfully

Engineers get you to your destination

Does everyone on your team have a driver's license and navigation skills?

Current skill level → Upskill or reskill with hands-on learning experiences → Digital mastery → Individual readiness to deliver project results

How do you decide the most efficient route from the lower left of this illustration (where your learners are today) to the upper right (the key business outcomes your organization needs to achieve)?

Though the illustration above is straightforward, organizations frequently misstep when implementing their technology roadmaps.

6 common trouble spots

Take inventory. Do you see any of these issues in your organization?

1 **Fuzzy business objectives** (at the strategist level)

"Moving to the cloud" needs specifics. Which applications will you move to the cloud? When? Using what technologies? **And for what purpose?** Are there any downsides or risks if the project takes longer than planned? If you could speed up the project, would that create a business advantage? You get the idea.

Does your organization's technology roadmap have crystal-clear success measures? If not, what details are missing?

2 Incomplete technical plan (at the implementation planning level)

Sometimes in the quest for speed, organizations do not spend adequate time identifying non-functional requirements (think cybersecurity). Or they underestimate the amount of time required for certain steps, resulting in an unrealistic project schedule.

How will you determine whether your organization's technical plan is robust enough to achieve your business goals? What expectations do you need to set for your analysts and architects? Do those individuals need upskilling or refreshers on topics such as secure coding? And does the calendar include ample time for required skill development?

3 No official bridge between technical and TSD planning (at the implementation planning level)

The people responsible for the technical aspects of implementation—such as defining the architecture—need formal, frequent two-way dialogue with the TSD strategy team. When communication between these groups is impromptu and infrequent, learning programs often miss the mark.

Who are the subject matter experts to help translate the technical requirements into skill requirements? And what service-level agreements do you need between the SMEs and the TSD strategy team? What activities will each party be responsible for?

4 Lack of change management strategy (at the implementation planning level)

Any time you engage in large-scale change, team members will have a range of opinions. Some will be excited. Others may resist. You'll see a variety of responses between cheerleading and naysaying, but you've made the decision to embark on this digital transformation journey. If you want to achieve your outcomes, you need to get people onboard to drive your project to completion. You don't have time for heel dragging.

Who are the executive sponsors and change management specialists on your team? How are you identifying employee concerns and ways to respond that will build team buy-in for your project? Do you have a plan in place to create psychological safety so people feel comfortable asking questions and sharing candidly?

5 Inadequate leadership support (at the engineer level)

Without effective strategies to support your management chain from top to bottom, transformation work can fall apart. For example, many managers don't know how to support skill development. They're reluctant to create time for learning during the business day because they believe it slows team velocity.

What actions do you need your managers to take to ensure your technology workforce can deliver successfully? And how will you equip and inspire your managers to do their part?

6 **Failure to assess capabilities before and after learning** (at the engineer level)

Last time we checked, a multiple-choice test wasn't enough to get a driver's license. Yet many organizations aren't verifying if learners can apply their new skills in various driving scenarios.

Who handles behind-the-wheel instruction and road tests to make sure each engineer is ready for the tech transformation freeway?

90%

of organizations will have to delay a product or service release due to a lack of IT skills. This amounts of $775 billion in lost revenue. -IDC

Though some of these trouble spots are outside the charter of the TSD strategy team, it's vital to keep these six topics in mind when designing learning programs. If at any point your TSD strategy isn't delivering the results you want, you can use the Big Picture illustration on page 16 and the questions above as a starting point for troubleshooting.

Next, let's explore the TSD planning process.

8 TSD planning phases

ADDIE model* + the engineering process = modern technology skill development planning

Who needs to be involved in each TSD planning phase?

Consider these stakeholders: Executives. Engineering managers. Technical subject matter experts. Instructional designers. Recruiters. Talent and change management pros. Diversity and inclusion. Individual learners.

Not everyone will need to be involved in every phase. However, you want to be intentional in thinking through who to interview for background information and involve in planning and decisions and who needs communication updates.

*In the 1970s, Florida State University devised the ADDIE model for the military. The acronym refers to five stages of instructional design required to create effective learning programs: analysis, design, development, implementation and evaluation. (Source: https://psu.pb.unizin.org/idhandbook/chapter/addie/)

PHASE 1

Identify business outcomes

What business goals do you need to achieve?

If you want your organization's learning programs to help you reach strategic organizational objectives, you have to start the planning process with a thorough understanding of the business goals. These goals must be specific and measurable—either you achieved them or you didn't. Here are a few examples:

50%
Reduce new hire attrition by 50 percent

25
Create a reliable pipeline of 25 new Java developers every six months

30%
Reduce code churn on a project by 30 percent

20%
Reduce cloud spend by 20 percent

3
Move our three biggest applications to the cloud by December 31, 2023

ISO
Meet ISO Standard 30414 to win new customers who require that certification

40%
Shave costs from cybersecurity breaches by 40 percent

What specific outcomes are you pursuing? Which stakeholders need to be involved in answering this question?

PHASE 2

Determine skill requirements

What skills do your teams need to deliver on these goals?

Answering this question will require some digging. You'll need to interview technical leaders about programming languages, tools and business processes—and how those will change during the digital transformation. Will your teams jump at the chance to learn these new skills, or do you anticipate some resistance?

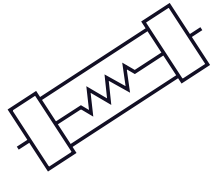
Important tip

Dig deep to learn what concerns employees may have about the upcoming project. If engineers will need to close large skills gaps, some may experience anxiety.

Interview technical leaders

Seek SME input on technology specifics

Define, in detail, the present state of employees' skills and the desired state



Identify potential areas of resistance

What barriers do you run into when attempting to identify your team and organizational skills gaps?

Pinpoint current state

How will you measure your teams' current skills?

To identify gaps, TSD planners need to have conversations with engineering managers and individual contributors. Ask questions, collect feedback and synthesize the information into overall findings.

Because interviews are time-intensive, most employers use a multifaceted approach to skills gap analysis. They pair conversations with a formal automated process using a technical learning survey, individual skill assessments or both.

Organizations face six challenges when they launch a skills gap analysis:

1. A gap analysis needs to be proactive, not reactive. You don't want to wait until a manager notices a performance problem or an employee feels unprepared for a project and self-reports the concern.

2. By the time a thorough gap analysis is complete, there's a risk that it's already obsolete. Teams frequently change directions, and tech is evolving so rapidly, it can be hard to stay in front of the shifts. Employers need to select an approach that uses fresh information for decision making.

3. Interviews are a popular method for collecting information on skills gaps. For interviews to be effective, organizations need to use a standardized template for recording the information to promote consistency and enable meaningful analysis.

4. Some employees are reluctant to participate in individual skill assessments because they're concerned about adverse consequences if they don't make the grade.

5. Some managers assume experienced hires have the skills or can quickly get up to speed on their own.

6. Forecasting the need for future capabilities and planning the pipeline for filling those needs can be tricky.

Additionally, if you use skill assessments, are you certain they are measuring what you need? For example, are they looking at knowledge retention or true skill proficiency? Are they identifying specific gaps and how to fill them? And are they static or dynamic? With a static assessment, learners get the same questions during retakes, so you don't know if you're seeing memorization or mastery.

Design learning journeys

How will you get the skills from the present state to the desired state?

Not everyone masters skills in the same way. You want to present information in a variety of modalities to ensure all learners find a way to connect with the material. Top organizations build interactive blended learning programs that emphasize hands-on application.

The faster someone starts practicing what they're learning, the better the long-term impact and ROI. Getting engineers' fingers on the keyboard as quickly as possible speeds the learning process, improves knowledge retention and prepares team members for applying new skills on the job. Labs and sandboxes allow safe practice where failure doesn't affect a live project.

Employers today aim for around 70% fingers-on-the-keyboard activities in their learning programs to create muscle memory and skill retention. The remaining 30% can involve lecture, videos, reading, collaboration and peer-based discussions.

If employees are learning advanced technologies and skillsets, they already have the muscle memory. Running scenarios, collaborations, brainstorming meetings and whiteboarding sessions can help create the expert-level skills they need to think differently and more analytically to solve complex problems.

When projects are time-sensitive and teams need to use their new skills by a specific date, offer support in the form of an instructor or subject matter expert who can answer questions and spot where learners may struggle with a concept.

Some organizations also incorporate rewards, recognition and community-building opportunities into their learning programs to boost motivation to cross the digital transformation finish line.

When you launch a new learning program, how confident are you that it will get your engineers from the present state to the desired state? If you're not feeling confident, what are your concerns?

Technology skill development experiences

- Self-paced online learning
- In-person training
- Virtual instructor-led training
- Code-along
- Mentoring
- Virtual mentoring
- Pair programming
- Office hours
- Labs
- Sandboxes
- Exercises
- Hackathons
- Simulations
- Projects
- Blended learning solutions with several modalities

PHASE 5

Build in ample practice

How will you ensure learners can apply their new skills on the job?

Organizations talk about wanting "sticky" learning programs, but what does that really mean? Stickiness involves two dimensions: knowledge retention and the ability to apply the knowledge effectively. In the past, it was common for learners to attend courses and walk away with a slide deck and notes, return to their desks and immediately forget some of what they learned.

Some employers test for retention using assessments, but not all assessments are created equal. Some measure rote memorization. Other assessments include coding problems or other ways to test how well the learner can apply their knowledge. Today, the gold standard involves a mix of activities—typically one or more assessments plus a hands-on activity (such as a capstone project) that mirrors the type of work the employee will do post-training.

In a capstone, participants work as a team to achieve a specific end goal within a defined timeframe. When run properly, a capstone project feels like a mini sprint in the Agile world. Students solve a problem and/or build working functionality doing the types of activities they would do on the job. They talk about user stories, backlogs, tickets and velocity and use tools such as Jira and Confluence so it feels real.

Programs can also include hackathons, code reviews, architectural reviews and other real-life activities that reinforce participants' learning. Managers can observe these hands-on projects or simulations and see firsthand how well their teams are performing.

Labs

Sandboxes

Capstone projects

Other?

What methods have you used to ensure learners are able to apply their new skills on the job? Who is involved in this verification?

PHASE 6

Run a pilot

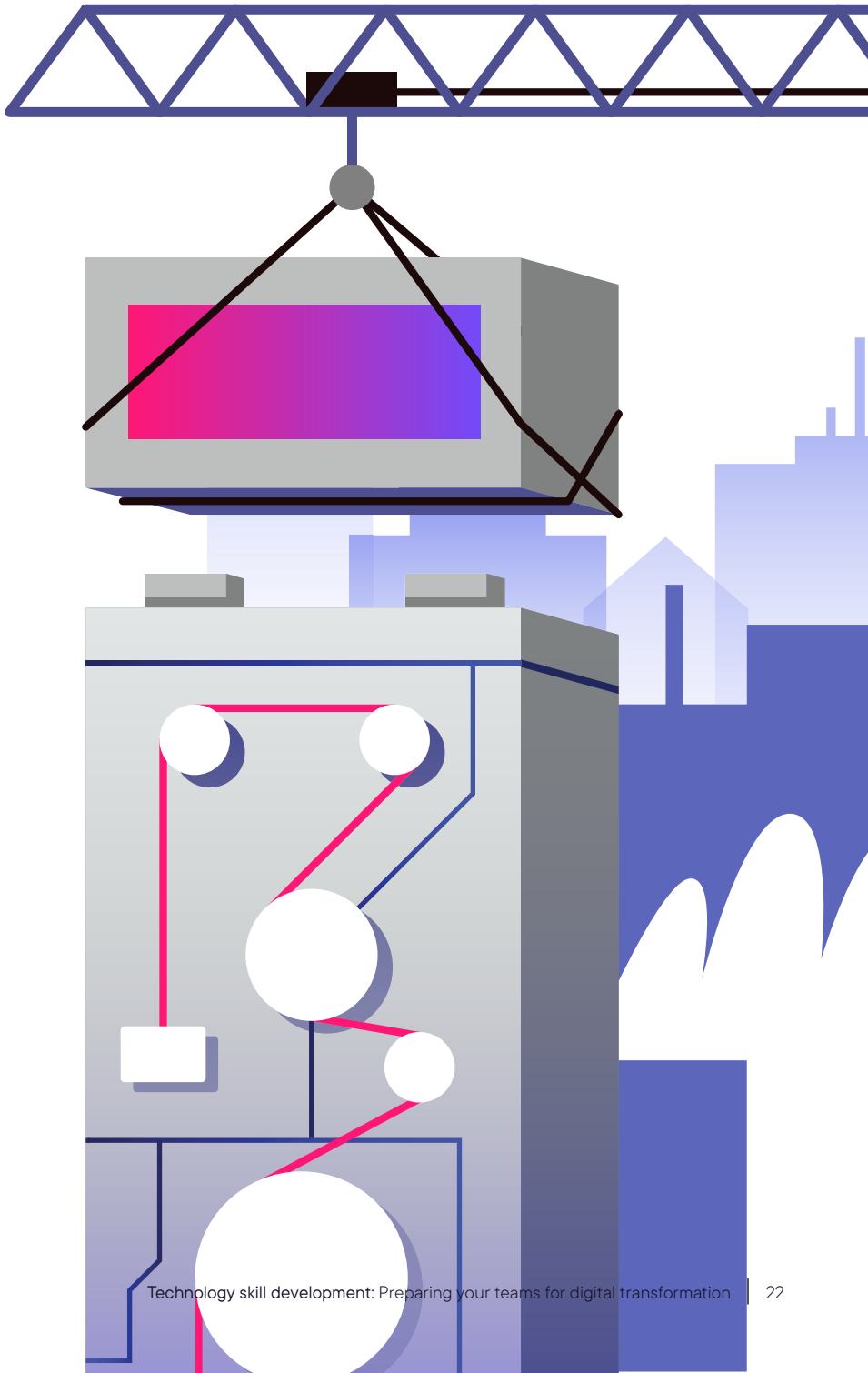
What's the best way to test and refine the TSD strategy before a broad rollout?

Most large organizations formally test new learning programs with one or more pilot groups to gauge effectiveness. These pilots allow you to collect technical feedback on the approach plus input on what worked well and what needs adjustment.

You can also use this opportunity to do some initial measurement. Evaluate your measurement method and determine if you're getting the information you want or if you need to collect something additional or different.

After the pilot(s), some organizations do a staggered or incremental rollout to get additional data to refine both the learning journey and the measurement process even further.

Select a pilot team who will give you candid, detailed feedback so you can enhance your programs and make them as valuable as possible to end users.



Evaluate & measure

Once learning is complete, where are you against your overall goals? What do you need to modify?

Suppose your strategy is to send all new hires through a comprehensive technology skill development program to bring them up to speed on your specific tech stack, tools and processes. Six months after the program, you want to know where you stand. Did new-hire attrition decrease by 50%?

If not, what needs adjustment going forward? Decide up front what you're going to measure—and how—so you're prepared..

Goal	Strategy	Six months later
Reduce new hire attrition by 50%	Send new hires through TSD program to learn tech stack, tools and processes	What is the new hire attrition now? Where can we improve?

Important tip

Even if you have specific, measurable organizational goals, your technology skill development activities are only one component of the strategy to achieve them. If you're not hitting a goal, you'll need to review every tactic your organization used in pursuit of the goal so you can answer the question, "Are we missing the mark due to inadequate skill development or some other reason?"

Share results and prepare for the next cycle

What information do you communicate about tech skill development progress? How and to whom?

Finally, you need a communication plan with your tech skill development strategy. The people who are funding TSD in your organization want to know what you've achieved and where you want to improve. **Executives** will ask how you've moved the dial on key business metrics. **Employees** are interested in what their peers are doing. **External partners** want to know how they've made a difference and what they can do better next time. How will you ensure all **stakeholders** receive the information they need for decision making and continuous improvement?

TSD planning worksheet

The following template can help as you think through the eight phases:

Planning question	Who needs to be involved?	What stands in the way of completing this?	What step will you take next?	By when?
What business goals do you need to achieve?				
What skills do your teams need to deliver on these goals?				
How will you measure your teams' current skills?				
How will you get the skills from the present state to the desired state? What strategy will you use for technology skill development?				
How will you ensure that learners can apply their new skills on the job? What metrics will you monitor?				
What's the best way to test and refine the TSD strategy before a broad rollout?				
Once the learning is complete, where are you against your overall goals? What do you need to modify?				
What information do you communicate about tech skill development progress; how and to whom?				

1 Who drives technology education in your workplace?

Organizations use a variety of approaches to technical learning. Some rely on employees to decide the skill development they want to pursue. Other organizations have very structured, strategic approaches where training is mandatory and designed to achieve specific organizational goals—and there are many variations in between.

- ☐ Individuals are responsible for their own learning (it's voluntary, unstructured and self-directed)
- ☐ Technical managers ask L&D for help to arrange technical training
- ☐ Technical managers ask SMEs in their group to design/deliver technical training
- ☐ L&D proactively meets with technical teams to assess their skill development needs then designs learning programs to equip teams with those skills
- ☐ The CTO or CIO articulates business objectives and asks for L&D's help to prepare teams to deliver on those objectives
- ☐ Other (please describe): _____

Which option above best reflects what's happening in your organization today?

2 How would you describe the current state of your organization's tech learning programs?

A. Non-existent (nothing formal; employees can ask a manager for permission to attend a conference or course, but it's up to the manager to decide)

B. Decentralized and ad hoc (teams decide what they need and get it; it tends to be reactive/occasional with no centralized visibility into the amount spent or results)

C. Partly centralized (there's an L&D budget and annual planning process, but some engineering teams still manage their own learning programs; centralized visibility is spotty)

D. Centralized (TSD planning for the full organization takes place centrally in collaboration with engineering leaders but measurement is limited; TSD leaders may not be able to draw a direct connection between learning programs and business outcomes)

E. Best practice (learning programs tie directly to business outcomes; robust ROI measurement is in place)

F. Other? _____

Which letter did you select and why? Do you believe your organization's current approach to technical learning is effective? Why or why not?

3 What do you measure today?

Select all that apply:

- ☐ Course completion
- ☐ Course usage/view time
- ☐ Employee satisfaction with the course
- ☐ Skill proficiency
- ☐ Skill and role proficiency
- ☐ Nothing
- ☐ Other (please describe): _____

If you measure skill and role proficiency, how do you currently do that?

If you could wave a magic wand and measure something related to tech skill development that you're unable to assess today, what would it be and why? What prevents you from measuring this today?

4 Could you benefit from a tech learning council?

Some organizations establish a tech learning council to guide the planning, design, pilot and implementation for technical learning programs.

The most effective tech learning councils have representation from the business, tech learning team and engineering team. This "steering committee" identifies current and future talent needs, develops overall talent strategies and periodically reviews how well the talent strategies work for the business.

If the people responsible for designing a tech learning journey don't have a technical background, the council provides a natural avenue for partnering with subject matter experts to scope and define the technical requirements for the learning programs. The council also reviews non-technical skills gaps that tech employees may have—soft skills such as communication, teamwork, negotiation and conflict resolution.

The tech learning council gets quarterly (or more regular) input from business leaders to guide TSD planning and continuous improvement. Instead of a "set it and forget it" approach, the goal is to create a culture committed to continuous learning and skill development.

Conclusion

TSD—and doing it well—requires advanced planning, multiple stakeholders and adequate resources. But it's a high-ROI endeavor that mitigates digital transformation risk.

Your tech employees want to be on a winning team who delivers continuous innovation and a positive user experience. TSD makes this possible by providing growth opportunities and internal career mobility that keeps them engaged and more likely to stay.

When your teams have the right skills, you boost your odds of a successful digital transformation that drives a better bottom line.

Ready to take the next step?

Need a sounding board for your TSD ideas? Or help with an aspect of your strategy?

Connect with a Pluralsight representative today.

Appendix: Important topics to ponder

Do you need to reframe your training objectives?

We tend to look at the business objective for training from a very granular skill development perspective.

"I've got a team of Java developers and I need to make them Python developers."

"I've got a team of junior Python developers and I'm trying to create advanced Python developers."

Organizations benefit from taking a step back from this micro skill development focus and looking at macro business objectives.

How can we use technology skill development to make a measurable difference in key business outcomes? Maybe we want to decrease attrition, increase employee engagement, reduce expensive product downtime or get to market faster. By first identifying the macro business objectives, we can identify the financial importance to the business. For example, if getting to market a month sooner will add $1 million to our annual revenue, what are we willing to invest in TSD to make that $1 million a reality?

Understanding the big-picture financial goal does two things:

1. It's easier to make the business case for a training investment when you can demonstrate how the investment is necessary for moving the needle on an important business metric.

2. It gives you something to measure against. Did your learning program make a difference in that metric?

Are you investing in a culture of learning or productivity?

Organizations invest in technology skill development for a variety of reasons that fall under two categories:

1. **Culture of learning.** Learning programs achieve goals such as attracting new talent (learning as an employee benefit and/or differentiator), retaining and engaging employees and encouraging career growth and innovation.

2. **Culture of productivity.** Learning prepares engineers to make their best technical contribution: create higher-quality products more quickly and efficiently. Upskilling and reskilling enable the technical organization to build products that win in the marketplace.

Some organizations invest in both categories. The key is to make conscious choices about how you are allocating your training dollars. Ask yourself, "How are we going to leverage the dollars we get in the most effective way? What activities will produce the best return?" The answers depend on your goals.

Without answers, organizations tend to treat learning funds as a big bucket of money—and then it's a race to grab the funds. If you don't have a general framework to work within, you could starve some areas of the business and overfeed others, creating unhealthy organizational tension.

Does your learning model support your business objectives?

Organizations typically use one of three models to deliver technical education: decentralized, centralized or hybrid.

Centralized

A tech L&D team handles needs assessment, learning strategy, vendor selection and procurement for the full technical organization. This team is aligned with the CTO or CIO (or sometimes HR) and designs learning programs tightly tied to strategic business priorities. A potential downside? Learners may not have autonomy to choose their career development journey.

Decentralized

Engineering managers, teams or individual employees decide the training goals and how to achieve them. This approach is infinitely flexible but also tends to be just-in-time or reactive. Learners engage with content when they need to solve a problem or fill a skills gap. They may also explore topics to satisfy personal curiosity and interests.

Hybrid

The most common model blends the best aspects of centralized and decentralized approaches. A centralized technology team functions as a shared services organization to support various line leaders. Individuals have significant autonomy in selecting the type and amount of learning they want to engage in.

How you are structured—how you manage and execute your learning strategies—will affect your ability to determine ROI and the business impact of your learning programs. A centralized model makes it easier to tie learning programs to specific business goals.

If you're in a reactive, decentralized, running-with-your-hair-on-fire mode, it will be difficult to measure the impact of your learning initiatives. You may be able to measure a few things, such as employee satisfaction, but it will be hard for you to tell upper management that your strategy saved the company over a million dollars. Also, when employees decide which courses to take, it can be tricky to track if the learning is relevant to the current job or something they're doing for fun.

Do you hire or build the talent you need?

Sometimes a CTO or other senior engineering leader will say they "hire people with the right skills" or "hire people with the best background" as an excuse to avoid deploying formal learning programs.

In reality, technology is shifting so rapidly that even engineers with strong credentials will need regular upskilling to stay current. And because every organization builds software and uses technologies and tools in a unique way, even the most experienced engineers can benefit from training on the nuances of your tech stack, tools and processes.

Also, tech unemployment is very low right now. It may be nearly impossible to find talent via outside hiring. You may need to reskill current employees or candidates from adjacent fields to staff your projects.

Are you promoting personal, team and organizational mobility?

When designing a learning strategy, are you preparing employees for excellence in their current role only? What about team and organizational mobility? Is it important to equip them to move easily among teams as projects end and new ones start?

Do you focus on tactical skills gaps, broad skills gaps or both?

Technical managers and L&D tend to focus on micro skills gaps. Try taking a step back and identifying broader gaps first. For example, have you defined all the roles needed to achieve your strategic business objectives or do you need new roles? Do you have the correct job families or do you need different ones?

Once you've figured out all that, what are the gaps—both technical and soft skills—within each of those roles?

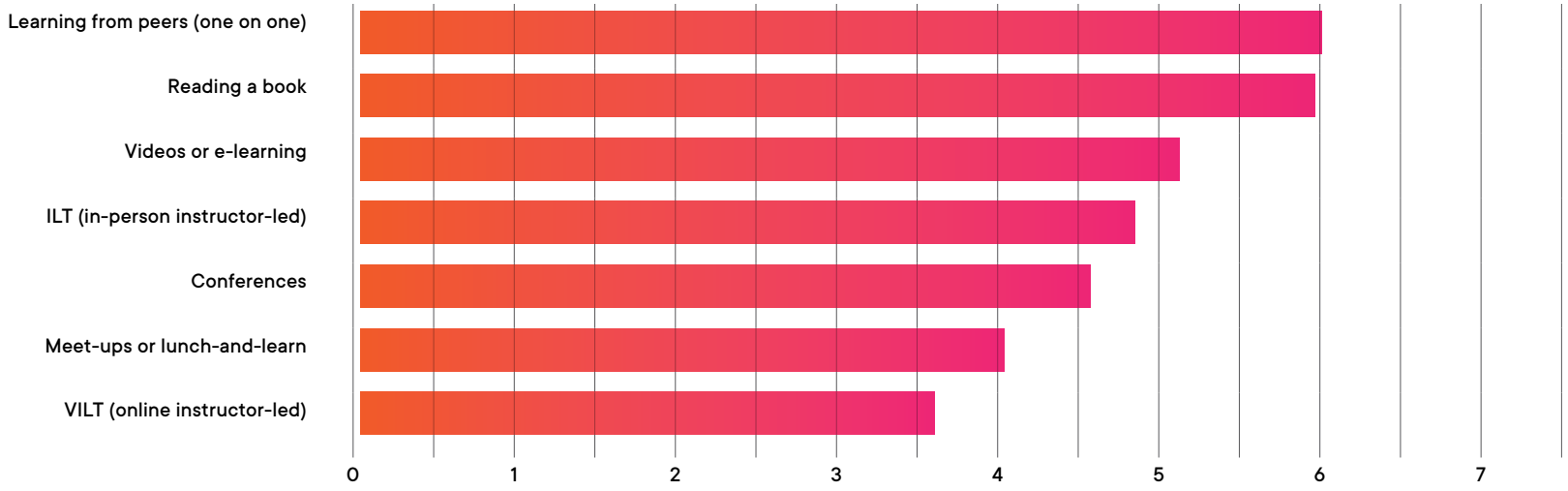
How do your technical teams prefer to learn?

The last thing you want to do from a learning leadership perspective is create a learning strategy you think is top-notch and super efficient from an execution perspective . . . and then have learners reject it.

It's important to get input on how employees prefer to learn before investing significant time and money into a learning strategy. Every 12 to 18 months, ask for feedback. What are the broader learning preferences of the organization? Are there differences based on role or tenure? The results may (will) surprise you. A senior engineer versus a recent college grad often have very different learning needs and preferences.

In one organization, engineers reported that they prefer learning from their peers over formal classroom instruction. How can you incorporate this preference when designing a learning strategy?

One organization's learning preferences



Are you designing learning events or experiences?

Learning events happen at a particular point in time. For example, many organizations require employees to complete compliance training, using one-time online courses or instructor-led training. The learner sits in the program and often takes a quiz immediately after to demonstrate knowledge retention, then returns to their everyday work. A month or two later, they've most likely forgotten some (or most) of what they learned.

In contrast, a *learning experience* takes place continuously over time. It may include events but not in isolation. The program designer asks, "What do we need to bake into the design before the event occurs and incorporate into the design post-event?"

Suppose you need to get new university grads up to speed on the engineering culture within the organization. A company arranging a new grad event might send new hires through 2 – 10 days of formal training at the beginning of their employment and then deploy them to their team—a typical *learning event*.

Or you can design a *learning experience*. The new-grad centerpiece may still be a multi-day training event. But before the event, you could include some pre-work and formal introductions to their new teams. After the event, host monthly check-ins that include a day of instructor-led training on a specific technical or soft skills topic and a social event to promote networking and relationship building. Employees who have close friends at work tend to stay in their jobs longer; best-practice onboarding programs include methods that promote connection.

Experiences can also include learning sprints: An organization gives team members curated content assignments to do over time and offer badges, awards or celebrations to reward ongoing participation—an easy and fun way to promote continuous learning.

Do you provide dedicated learning time during business hours?

Engineering leadership wants you to equip your engineers so they can be more effective in their job, but the projects you're working on are so important that your team can't take time away from work to learn new skills. Sound familiar? A strong focus on delivery means employees may not feel free to engage in training, even if you invite them to take part.

A manager may also believe it's best for engineers to learn on their own after hours, between meetings and on weekends. But many employees have family responsibilities and other commitments outside work that make this impractical.

Sometimes an organization realizes mid-project that the focus on self-learning is yielding uneven results with team members not prepared for the work at hand.

Even if an organization discovers that it needs to carve out dedicated learning time, the focus is often on the immediate need and not forward-looking.

How do you come up with creative ways to combine formal training and self-directed resources without sacrificing the project? Good question—one that provides a unique opportunity for leaders like you.

How do you ensure your learning content stays current?

Ten to 15 years ago, an organization might have had a large technology staff with content developers and instructional designers. Staff instructors would operate as an internal training business that supported the broader organization.

The challenge: Over time, the training service can become slightly disconnected from the current skills in the marketplace and outdated in its approach to building and delivering new content. Internal or external SMEs need to review technical learning content for freshness on a regular basis. Do you have a formal process in place for ensuring content is up-to-date?

Is your organization inadvertently shaming learners?

Ideally, an organization communicates that it's okay to learn and okay to fail. Employees need to feel safe asking questions without fear of ridicule.

Failure is one of the best ways to learn, but some managers subtly or overtly convey that it's not okay to fail. Maybe the manager feels stressed or communicates abruptly when employees make mistakes. Even if unintentional, these unsupportive responses make employees cautious about taking risks and trying new approaches.

Here's another example: Some leaders believe that senior technical people don't need formal courses. They should be able to figure out things on their own. This creates an environment where a senior engineer may feel uncomfortable asking for technology skill development opportunities.

What do you want to measure?

The purpose of measurement is to gauge the effectiveness of learning journeys in meeting stated goals. This requires getting clear on the business objectives before any program design takes place.

At the very least, most organizations track L&D efficiency measures, such as:

- Cost per learner
- Cost per learning hour
- Online course utilization
- Employee satisfaction with courses and instructors
- Self-reported preparedness to apply a new skill on the job
- Manager confirmation that engineers have mastered new skills adequately

Even with ad hoc technical learning approaches, it is relatively easy to do the math to determine efficiency. These metrics tell how well you're deploying a budget, but if you measure only L&D efficiency, you're missing the broader picture.

“We won't get funding for learning if we can’t link it back to the business strategy. What outcome will it deliver? What impact will it make if we do it or don't do it? What's the ROI?”

—An increasing number of L&D professionals

Organizations must plan carefully up front what they want to measure. This involves asking an important question: Are you trying to impact the culture, move the needle on engineering metrics or both?

On the cultural side, HR leaders look at metrics such as employee engagement, how long it takes to attract new technical talent and internal mobility and growth (who gets promotions, who serves as a mentor). These measures paint a picture of career development within the organization.

In contrast, engineering leaders may ask how long it takes a team to build something after adopting a new skill. They’re focused on productivity and proficiency measures.

If you compare a team who’s going through formal training with a team who’s adopting the same new skill without formal training, can you accurately measure efficiency?

Technical organizations track engineering metrics through tools such as Jira and Pluralsight Flow. They want to know:

- How many defects is the team producing?
- Can technology skill development reduce that number?
- What’s our velocity?
- Can training make us faster so we can get our products to market more quickly?
- Have we increased product quality or improved communication within our teams?

Executives want to know:

- Did our learning programs move the strategic needle for the organization?
- Did we accelerate innovation?
- Did we reduce the overall cost of business through our learning initiatives?

It’s time to get better at tying the ROI story back to the business. From a continuous improvement perspective, the more you measure and analyze, the better your learning strategy. Measure continuously, collect data, get stakeholder input and use that information to improve your approach. Find out what’s working and what changes you need to make in your learning program.

What data do you need and where is anecdotal evidence sufficient?

Once you've figured out what to measure, you need to determine how to measure. At the very least, ask employees 30, 90 and 180 days post-training to self-assess on this question:

Am I able to do my job more effectively than I was six months ago?

Have conversations with engineering managers and other stakeholders to get their feedback on whether the learning moved the needle. Decide what measurement tools and methods you'll use. Skill assessments can help gauge knowledge retention, but they don't measure employee retention, team velocity or other macro results.

Think about what you really need. Many organizations, eager to measure, try a variety of measurement activities, leading to measurement fatigue (whew!). Start with a measurement plan that is simple and laser-focused.

You'll hone your approach over time as you find what works well and what needs adjustment. Be patient—dialing in your measures may take a while.

How do you build in feedback loops?

Some organizations measure usage of online learning resources. Are employees engaging with the content? If employees aren't utilizing a resource to the degree you expect, initiate in dialogue to discover what's wrong. Is it the right course for their needs? Is it preparing them for the specific work they need to do? If not, where is it falling short? Is it engaging? If not, what fell flat and what would make it more inspiring and useful?

Be prepared to replace or completely overhaul content that isn't working.

What help do you need to measure learning outcomes?

Do you find that your organization has metrics in place that you can leverage in your calculus? Or must you push the organization to define and capture metrics that you can then use?

If certain measures don't exist in your organization, partner with HR, recruiting, engineering or other stakeholders to get the baseline information necessary for effective measurement. If they don't already have the data, they may need to build a mechanism for capturing it.

The question is, do you wait for solid baseline data, or do you launch your learning program without it?

In large organizations, different business units may track data in different ways. Silos make it challenging to obtain and aggregate data to create a baseline measure and can create an obstacle to measuring the effectiveness of learning programs.

Not every organization is structured to measure the impact of their learning programs. If you want to measure the harder things—to determine the true return on investment or impact on the organization—coach engineering leaders to build their set of metrics first.

This will likely require process change, cultural change, tooling change or a combination of these. Engineering leaders will need to measure for a period of time before you conduct your learning measurements. That's the challenge and the opportunity. L&D leaders have to support other organizations and encourage those organizations to mature so you can do your job effectively.

Some will resist because they feel pressured, while others will be eager to set up mechanisms to capture the data you need for ROI calculations. The secret to measurement success? Show your stakeholders you're aligned with their goals.