RCHG LMS Analytics Report

1. Executive summary

Rychtenshane Community Housing Group (RCHG), Chester's largest social housing provider, is launching its first Learning Management System (LMS) to enhance staff training and performance. As part of this initiative, our team was engaged to deliver a full analysis that supports evidence-based decision-making around employee learning and development.

This report analyzes LMS data collected from January 2018 to June 2025, covering a wide range of variables including course enrollment and completion statuses, training timelines, scores and feedback and device usage. The analysis focuses on identifying trends in training engagement, evaluating skill development across teams and roles, and providing predictive and inferential insights to shape future learning strategies.

Key business questions guiding this work include:

- What is the current completion rate of mandatory courses across departments and locations?
- How actively are employees engaging with the LMS?
- What trends are evident in skill development, feedback and review scores?
- Are there statistically significant differences in skill scores across teams or roles?
- Can historical data predict future training needs or compliance risks?
- How do course engagement levels relate to performance review outcomes?
- What actionable insights can drive future learning strategies?

To address these questions, statistical techniques such as forecasting, regression analysis, and ANOVA were applied. Power BI was used extensively for data cleaning, modeling and dashboard creation, while Excel supported some of the statistical testing.

Core findings from the analysis include:

- **Compliance risk is rising** → *402 courses overdue,* e.g. **102 in compliance training**, with the Finance team trailing at just **78.8% completion**
- **Major skill gaps across the workforce** → *69% of employees* show training gaps, opening doors for specialized upskilling by role and department
- **Seasonal windows boost learning** → Feedback and engagement peak from *May to August,* ideal timing for new course rollouts
- **Course length impacts completion** → Modules over *75 minutes* see fewer completions, especially in Housing roles; shorter formats prove more effective
- **Accessible but room to grow** → *20% of users* rely on screen readers and report similar satisfaction as non-users, but average feedback scores suggest **content tailoring and user support** might need refinement

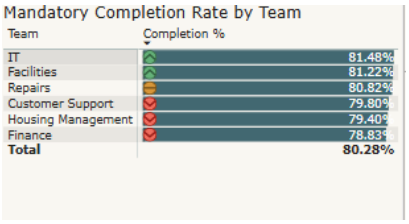
The remainder of the paper is structured as follows:

2. **Insight Narratives:** Visual and contextual exploration of the data
3. **Advanced Analytics:** Application of statistical models and predictive techniques
4. **Strategic Recommendations:** Proposed actions based on insights
5. **Appendix:** Reflections on methodology, collaboration and future learning opportunities

2. Insight narratives

2.1 Compliance & Training Overview

The current completion rate for mandatory courses sits at 80.3% across all departments and locations. IT leads with 81.5%, while Finance trails at 78.8%, making it the lowest-performing team in terms of training compliance.

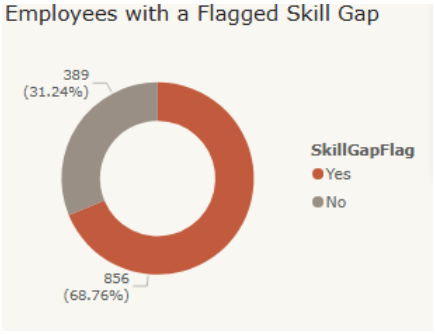


There are 402 overdue courses, with the most pressing category being Compliance, accounting for 102 of them. This poses a serious risk, especially for key teams like Finance, Housing Management and Repairs.

- For Finance, the lag in compliance training could result in regulatory fines if standards aren't maintained.
- For Housing Management and Repairs, the concern is more about safety. If properties aren't kept to proper standards or staff aren't adequately trained, there could be real dangers to tenants; especially in areas connected to Health & Safety, which currently has 75 outstanding courses.

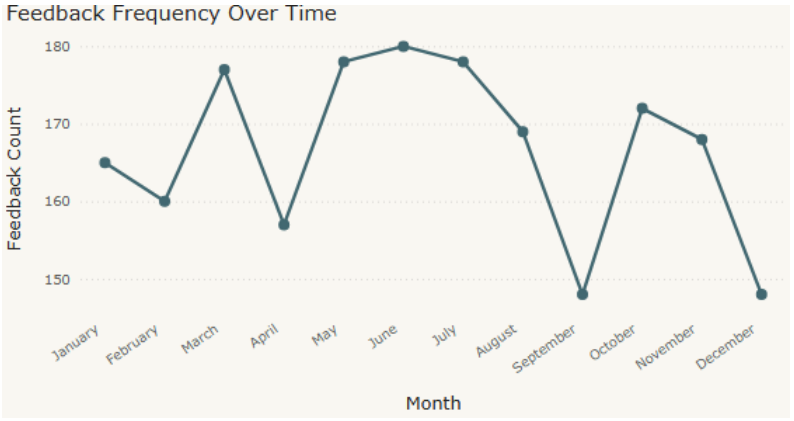
This paints a clear picture. While some departments are on track, others need urgent attention to avoid consequences that affect both legal standing and physical safety.

2.2 Performance Analysis



There is significant potential to implement targeted training initiatives, as about 69% of the workforce has been identified with notable skill gaps. Analysis of feedback frequency reveals a substantial decline in December, likely attributed to the busy end-of-year period and holiday season. Similarly, September shows a drop in engagement, possibly due to seasonal workload increases related to student accommodation demands within the housing sector.

Conversely, from May through August, feedback volume is markedly higher, suggesting that the relative lull in the housing market may offer employees more flexibility to participate in training. This period may represent a strategic window for course delivery.

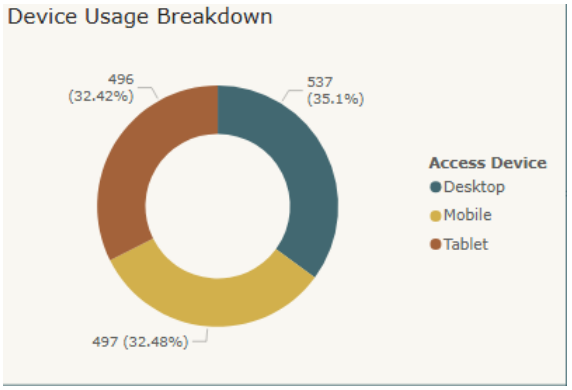


The average feedback rating of 3 out of 5 indicates that current courses are satisfactory but could benefit from refinement. This presents an opportunity to engage directly with employees to better understand their evolving needs and tailor programs accordingly.

Skill scores across key competencies — teamwork, technical efficiency and communication —remain consistent across departments, reflecting a uniform baseline of training effectiveness. However, this also signals an opportunity to enhance specialization: for instance, prioritizing advanced technical skills within IT teams, and strengthening communication capabilities for customer service and housing management staff.

2.3 Engagement Patterns

Employees interact with learning modules across desktop, mobile and tablet devices at relatively similar rates, with desktop usage leading by 2.5 percentage points (35%). This suggests the platform interface is well-optimized across formats. However, given its slight lead in usage, desktop may be the preferred channel for future UI enhancements or feature updates.



The average course duration sits at 75 minutes, ranging narrowly between 70 and 78 minutes. Although the time variation seems minimal, deeper analysis reveals a stronger impact when cross-referenced with completion data.

Specifically, longer courses (particularly those tied to housing management roles such as Lettings Coordinator and Housing Officer) correlate with lower completion rates. In contrast, IT and Facilities teams demonstrate higher completion rates, supported by shorter course lengths.

Interestingly, the Finance team shows low completion rates despite shorter course durations, indicating that additional factors may be influencing engagement, warranting further investigation.

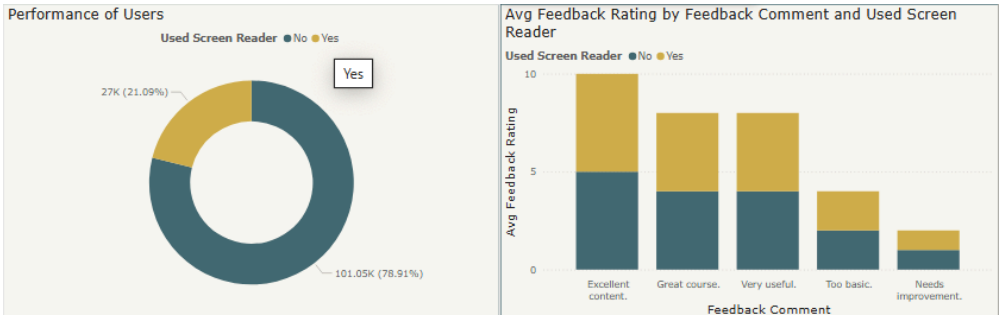
Enrollment volumes have remained stable over the past five years; however, a persistent gap between enrollments and actual access behavior suggests many users interact with the LMS only briefly or as a one-time activity. This pattern may point to a focus on completion rather than ongoing learning.

Notably, the last quarter experienced a sharper-than-usual decline in engagement, signaling a possible shift in user behavior or external factors that should be examined further.

2.4 Accessibility Overview

Approximately 80% of employees do not use a screen reader, while 20% do, showing why it is vitalto keep the platform accessible for all users. When examining feedback ratings across this divide, screen reader users are evenly distributed across the full spectrum of scores (1 to 5), aligning closely with non-users.

This suggests that screen reader usage is not a determining factor in positive or negative feedback. Otherwise, we would expect clustering at one end of the scale. This trend speaks to the effectiveness of the screen reader interface and the inclusivity of the training experience overall.

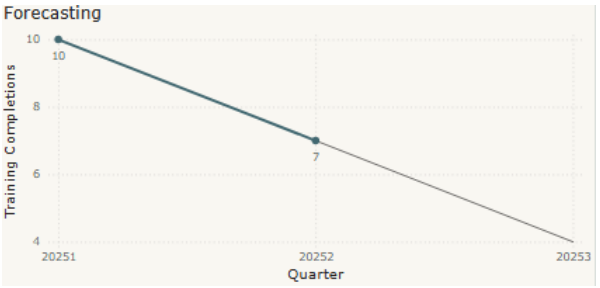


At the same time, the absence of negative bias linked to screen reader usage presents an opportunity for reflection. If the interface is not a source of dissatisfaction, lower ratings may stem from other factors: such as content relevance or support availability. These insights suggests we should look more closely at why it is happening to ensure design enhancements continue to meet varied accessibility needs.

3. Advanced analytics

3.1 Forecasting

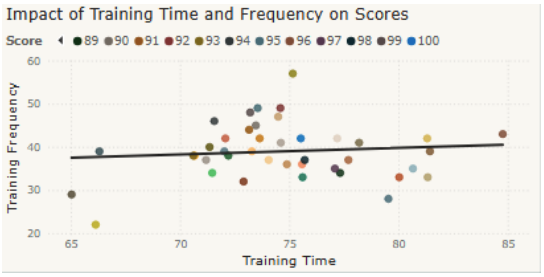
In Q1 2025, 10 training courses were completed, followed by 7 in Q2, a downward trend that suggests a projected participation of 4 courses in Q3. While this aligns with a noted decline in engagement, historical data shows that course participation is largely ad hoc rather than consistently sustained. Therefore, this shift doesn't yet indicate a major concern, though it warrants monitoring.



Only Q1 and Q2 2025 data were used to inform this forecast, as prior historical data patterns are too irregular and fragmented to yield meaningful projections. The inconsistency in past participation renders long-term forecasting unreliable, reinforcing the focus on recent trends for short-term planning.

3.2 Regression Analysis

Performance review trends suggest that an average course engagement frequency of about 40 accesses tends to yield the highest scores. Beyond that threshold, additional interactions do not appear to significantly enhance outcomes, indicating a possible saturation point for learning impact.



Top-performing individuals complete their courses in 70 to 80 minutes, matching the average course duration observed across the platform. This implies that most users can successfully absorb and retain material within a single study session, which may speak to the clarity of course design and the usability of the learning interface.

While a small number of outliers exist in the dataset, they do not impact the broader strategy. However, they may offer valuable insight into individual learning differences. For example:

- Employees with ADHD may revisit modules more frequently due to attention variability.
- Those with dyslexia might spend slightly more time reading and processing course materials.
- Others may complete modules more quickly due to prior subject knowledge.

These patterns may reflect neurodiverse learning styles, and highlight the importance of maintaining flexible, inclusive design in future course development.

3.3 ANOVA

The ANOVA results show no statistically significant differences in skill scores across teams or roles. The between-group comparison yielded an F-value of 1.11 and a p-value of 0.41, indicating that group-level score variations are minor and likely attributable to chance.

Row-level variation, with an F-value of 2.18 and a p-value of 0.16, also falls short of significance.

Overall, this suggests consistent performance levels across groups, with no evidence that team or role membership influences outcomes. These findings support the idea that the learning approach is broadly effective and evenly applied across the organization.

4. Strategic recommendations

4.1 **Strengthen compliance training where risk is highest**

- Prioritize overdue compliance and health & safety courses for teams with operational or regulatory exposure, especially Finance, Housing Management and Repairs
- Introduce automated reminders and manager-led follow-ups to ensure completion

4.2 **Launch targeted skills development**

- Use the identified 69% skill gap to guide targeted training: align specialized content to team needs (e.g. technical modules for IT, communication for support teams)
- Run pulse surveys to gather employee input on desired development areas

4.3 **Capitalize on seasonal engagement windows**

- Schedule training initiatives between May and August, when feedback and participation rates are historically higher
- Use low-demand periods to pilot new course formats or engagement campaigns

4.4 **Enhance engagement by reducing passive use**

- Bridge the gap between enrollment and active participation by introducing lightweight onboarding flows, nudges, and microlearning incentives
- Investigate why users are disengaging (especially in recent quarters)and address barriers

4.5 **Refine course design for efficiency**

- Maintain average course durations in the 70–80 minute range, which data shows supports optimal completion and performance
- Review longer modules for housing-related roles where completion rates are lower

4.6 **Ensure UI focus and accessibility continuity**

- Continue optimizing the desktop interface, the most-used format, but maintain full support for tablet and mobile usage
- Preserve screen reader functionality, and explore opportunities to enhance inclusivity by engaging neurodiverse users in design feedback

4.7 **Monitor learning impact without overload**

- Encourage engagement frequency around the 40-access mark, as higher repetition doesn't correlate with improved review scores
- Promote clarity and confidence in course content to reduce reliance on multiple revisits

5. Appendix : project reflections

5.1 Team roles and division of work

The team consisted of Ciruthika Nithusyanthan, Tongai Zinaka, Aamina Patel and Elena Losavio, each bringing valuable perspectives and strengths to the project.

- Nithusyanthan built a comprehensive data model, by designing a snowflake schema to support flexible slicing and advanced analytics across multiple dimensions.
- Zinaka built the Power BI dashboard, including compliance, training, performance and engagement views. He openly invited feedback and implemented the team suggestions.
- Patel contributed statistical insights (forecasting, regression, ANOVA) and an accessibility overview. She jugled competing priorities while maintaining effective team communication.
- Losavio compiled the business report, coordinated meetings and stand-ups, set up the Jira dashboard, and supported the team through planning and project alignment.

Responsibilities were distributed based on each team member's expertise, previous commitments and time availability.

5.2 Strengths and contributions

Nithusyanthan leveraged her knowledge in data structure, relationships and DAX calculations to build a normalised data model. Zinaka led dashboard design using Power BI, applying lessons from past tasks and peers in the mentorship program to add real-world insights.

Patel, confident in regression analysis, used the task to expand her skills, exploring Power BI and ANOVA for the first time in this context. Losavio leveraged her writing skills from a journalistic background, combined with her experience in project coordination, to lead the planning process and compile final outputs.

5.3 Weaknesses and gaps

Nithusyanthan deepened her understanding of data modelling best practices, especially in the contest of Power BI. She learned how critically it is to carefully manage relationships, for example when dealing with multiple dates in a fact table.

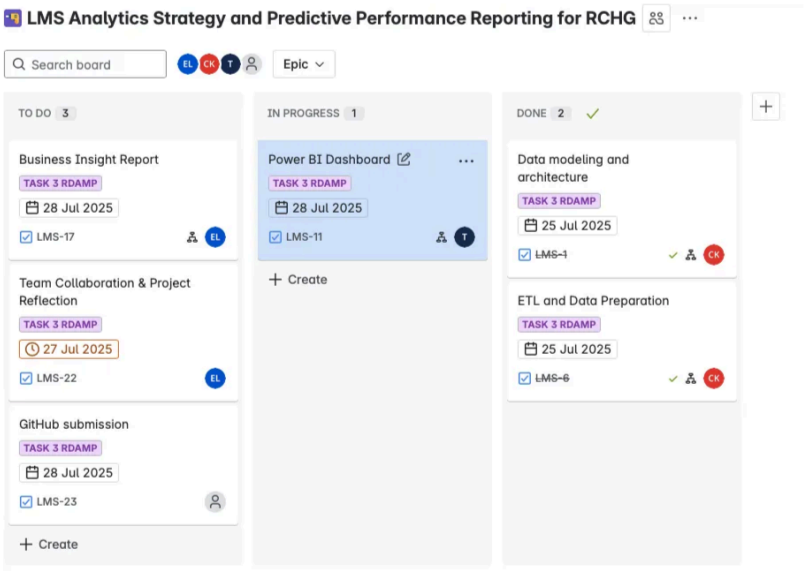
Zinaka recognized a gap in his theoretical understanding of data cleaning and preparation, inspired by Ciruthika's high-performing dashboard in Task 1. Previously taken for granted, he now aims to deepen his knowledge through targeted online courses.

Meanwhile, Patel identified ANOVA analysis as a learning gap and proactively used AI tools and online tutorials to build foundational skills and apply them effectively during the task.

Previously working in Tableau on macOS, Losavio set up a parallel Windows environment to run Power BI and collaborate effectively with her team. Inspired by their expertise, she pursued Microsoft's Power BI certification training to sharpen her skills.

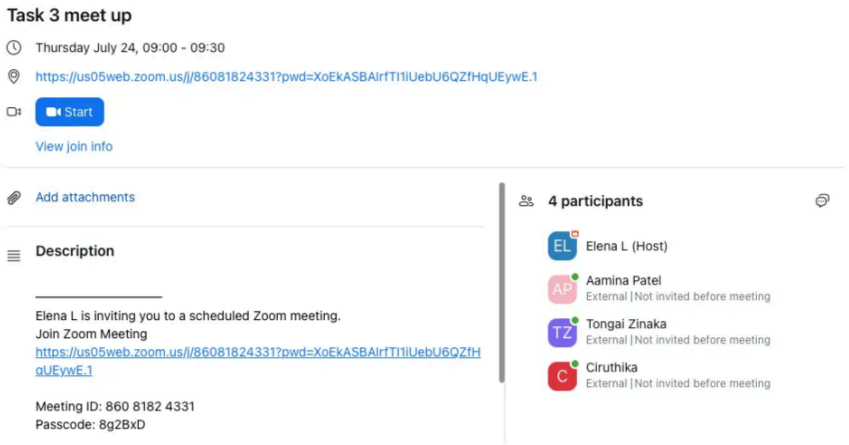
5.4 Team workflow and communication

Our team adopted a Kanban methodology to manage tasks and maintain visibility throughout the project. We used a shared **Jira** dashboard structured around five key task areas, each divided into subtasks aligned with the requirements of the brief. Tasks were organised into three columns: *To Do*, *In Progress* and *Done*. Losavio proposed the initial task framework based on the brief, and it was then approved during the kickoff meeting.

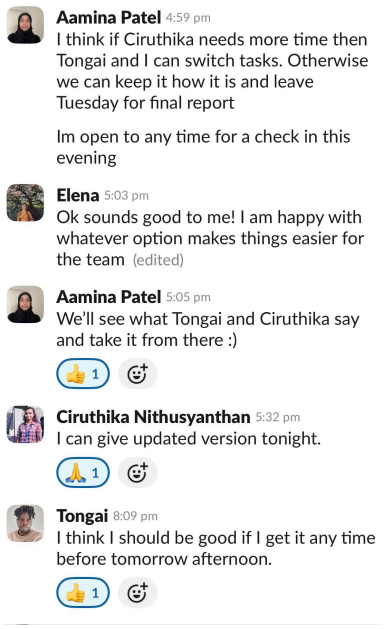


Our Jira dashboard

We held daily stand-up meetings each morning at 9am on **Zoom** to update one another, raise concerns and support shared decision-making. These sessions helped to maintain momentum and foster feedback. For day-to-day communication, we used a shared Slack channel, posting recaps for any teammates who missed a session.



Zoom Kick off meeting



Slack team chat

While most tasks were completed independently, we divided the Power BI deliverable between two members due to its size. Reviewing responsibilities were shared, with team members stepping in to assess submitted work. When a dataset change occurred on Friday, we briefly explored adjusting the timeline, but it wasn't necessary: thanks to Nithusyanthan, who was able to complete her task within the agreed timeframe.

Feedback was shared both during reflection sessions and asynchronously via Slack. The plan had built-in contingency time for unforseen circumstances and each teammate showed flexibility and ensured team support where needed.

5.6 Challenges faced

Nithusyanthan encountered initial difficulties managing multiple date relationships (e.g. *EnrolmentDate*, *CompletionDate*, *LastAccessDate*). This challenge was resolved by implementing a single DimDate table with several inactive relationships, which were selectively activated in DAX using the `USERELATIONSHIP()` function.

Assigning EmployeeHistoryID to fact records also posed a challenge for Nithusyanthan due to the absence of clear promotion and transfer dates. She addressed this by generating surrogate keys using a combination of employee attributes (*EmployeeID*, *Role*, *Location*, and *Team*) and performed mappings through Power Query merges.

Zinaka faced issues with the date dimension table, which appeared non-functional despite correct formatting and underlying data. To overcome this, he derived month and year categories manually. After flagging the problem to the team, they collectively agreed to proceed with Zinaka's proposed solution.

Patel, unfamiliar with ANOVA analysis, tackled the challenge by learning the concept from scratch using AI tools. She initially attempted the process in Power BI but ultimately optimized her workflow by utilizing Excel's built-in ANOVA functions for calculations, later exporting the results back into Power BI.

Losavio grappled with translating technical data into a compelling narrative for a non-specialist audience. She started by isolating key data points and building a clear strategic message, then returned to the team with follow-up questions to deepen the analysis and incorporate feedback.

5.7 Lessons learned

Nithusyanthan deepened her understanding of handling complex date relationships by using inactive relationships and selectively activating them via `USERELATIONSHIP()` in DAX. She also gained hands-on experience in dimension normalization to clean inconsistent data and enhance slicer usability.

Zinaka embraced the importance of continuous feedback and proactive communication. He learned that completing a task doesn't mark the end; it opens space for peer review, iteration and transparency in the learning process.

Patel highlighted the value of team communication, especially during unforeseen challenges whether personal emergencies or technical disruptions such as dataset changes. She recognized that team flexibility, rescheduling and reassigning tasks are key to maintaining progress.

Losavio observed how each team member consistently delivered high-quality contributions while aligning to shared expectations. Through regular check-ins and collaborative planning, the group fostered a supportive, well-organized environment where responsibilities were balanced and everyone felt empowered to maintain high standards.