

USER MANUAL FOR STUDENT DIGITAL TWIN

A GUIDE TO USE THE STUDENT DIGITAL TWIN SYSTEM

DEVELOPMENT TEAM: InfoDevs

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Introduction

Thank you for choosing the Student Digital Twin (SDT) system, a personalized learning analytics platform designed to support student success at North-West University.

Background of the Application

Universities today are data-rich but information-poor. While institutions collect extensive data on student activities, academic performance, and engagement patterns, this information often remains fragmented across multiple systems including Learning Management Systems (LMS), student information systems, residence records, and financial systems. This fragmentation makes it difficult to identify at-risk students early and provide timely, personalized support.

The Student Digital Twin addresses this challenge by creating a dynamic virtual model that replicates and tracks each student's academic journey. By integrating data from various sources, the SDT provides a unified, real-time view of student engagement, social interactions, academic performance, and well-being indicators. This enables both students and support staff to detect early warning signs of stress, isolation, burnout, and declining productivity before they escalate into serious academic problems.

Purpose of the Application

The SDT system serves multiple critical purposes:

- **Student Empowerment:** Provides students with personalized, real-time insights into their own learning patterns, engagement levels, and social interactions, enabling self-awareness and proactive behaviour change.
- **Early Intervention:** Enables early identification of students experiencing disengagement, social isolation, or academic difficulty through predictive analytics and behavioural indicators.
- **Personalized Support:** Delivers tailored recommendations and feedback based on individual student patterns, helping students establish healthy learning routines and maintain academic balance.
- **Data-Informed Decision Making:** Transforms fragmented institutional data into actionable insights that support student success strategies and institutional planning.
- **Retention and Throughput:** Improves student retention rates and academic outcomes by facilitating timely, appropriate interventions before students fall through the cracks.

The system empowers students to take ownership of their academic journey while providing the university with tools to offer proactive, personalized support at scale.

System Capabilities

The Student Digital Twin system offers comprehensive functionality across multiple dimensions:

For Students:

- Access personalized dashboards showing engagement, interactivity, and academic performance metrics
- View real-time status indicators (Thriving, Coping Well, or Burnout Risk)
- Track daily, weekly, and semester-based trends in learning activities
- Monitor social interaction patterns through the Social Garden visualization
- Receive personalized recommendations for learning balance and engagement
- Review academic predictions and confidence levels
- Access detailed interaction timelines and activity breakdowns

System Features:

- Multi-dashboard architecture covering Profile, Engagement, Interactivity, and Academics
- Interactive visualizations including line charts, pie charts, and bar graphs
- Digital twin avatar that responds to student performance status
- Predictive analytics for academic outcomes
- Integration with existing university data systems
- Real-time data processing and live indicators
- Week-by-week filtering and historical trend analysis
- Comprehensive analytics on learning patterns and behavioural indicators

Data Integration: The system integrates data from multiple sources including:

- Learning Management System (eFundi) activity
- Academic records and assessment results
- Campus access and attendance data
- Social interaction detection in classroom environments
- Homepage and content viewing patterns

The following sections will guide you through accessing and using each component of the Student Digital Twin system to maximize your academic success and well-being.

Login Page

Overview:

For secure authorization, authentication and access control a login page allows only students registered to the university (that has a student number and a password) to login.

Login Form

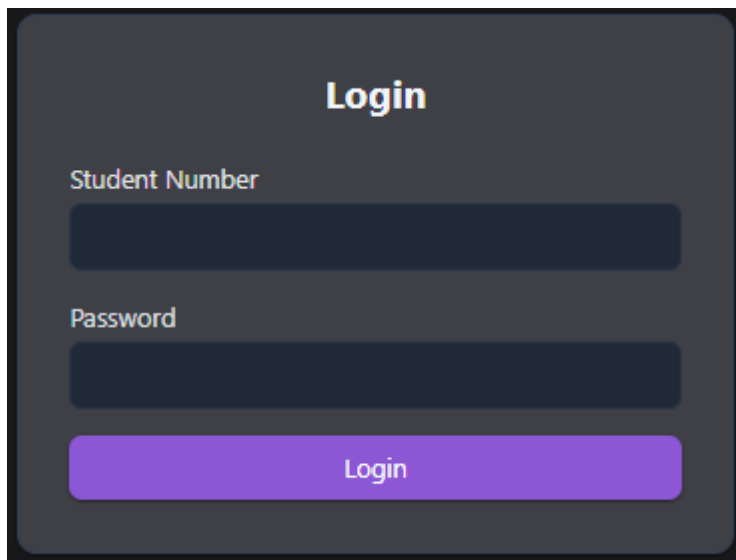
The image shows a login form with a dark gray background. At the top, the word "Login" is written in a bold, white font. Below this, there are two input fields. The first is labeled "Student Number" in a light gray font, and the second is labeled "Password" in a light gray font. Both input fields have a dark blue background. Below the input fields is a purple button with the word "Login" written in white. The entire form is enclosed in a dark gray border.

Figure 1. Login Page

Location: Middle of page.

Student Number: The first textbox requires the user to enter their student number.

Password: The second textbox requires the student to enter their password associated with the student number.

Input Validation: The student is required to fill in all the fields (If login button is clicked but one or both of the fields are not filled in, they will receive an error message "Please fill in this field").

Password verification: If the password they entered is incorrect the student will receive an error message “Login failed” until they entered the correct password.

Student Digital Twin Navigation

Overview:

The sidebar allows for easy navigation between dashboards. It clearly identifies and separates the different components of the Student Digital Twin System.

Student Digital Twin Navigation Bar

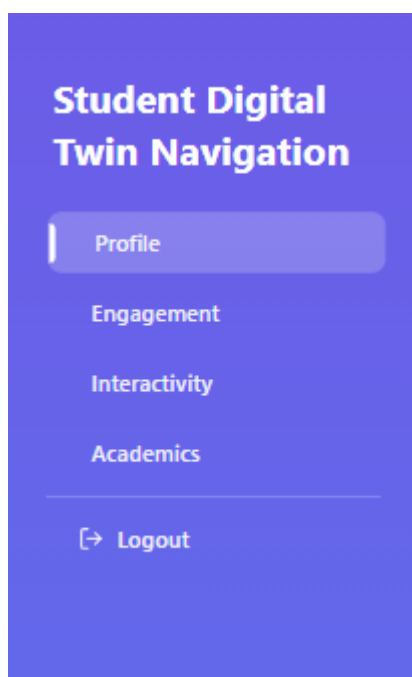


Figure 2. Navigation Bar

Location: Left of the page

Profile: This tab will take the student to the profile page, where they will be able to view their overall and summarised results, status and the digital twin. It also contains a social garden, illustrating their social interaction progress.

Engagement: This tab will take the student to the student analytics dashboard where they will be able to track their learning progress and compare with class averages.

Interactivity: This tab will navigate the student to the student interaction dashboard where they can evaluate their social interaction stats.

Academics: This tab directs the student to the weekly prediction tracker allowing them to follow their predicted outcome changes across the term.

Logout: This button will logout the student and direct them to the login page.

Profile

Overview:

The Profile Dashboard is where students can view their summarised and combined status. It displays the student's overall engagement, interactivity and academic performance score. It does this with interactive and personalized functionality.

Profile Dashboard Header



Figure 3. Profile Dashboard Header

Location: Top of the dashboard

The header welcomes the student to their student digital twin.

Title Section: Shows "Welcome" and the student's name. Below it is the name of the page "Your Digital Twin Learning Profile".

Digital Twin Section

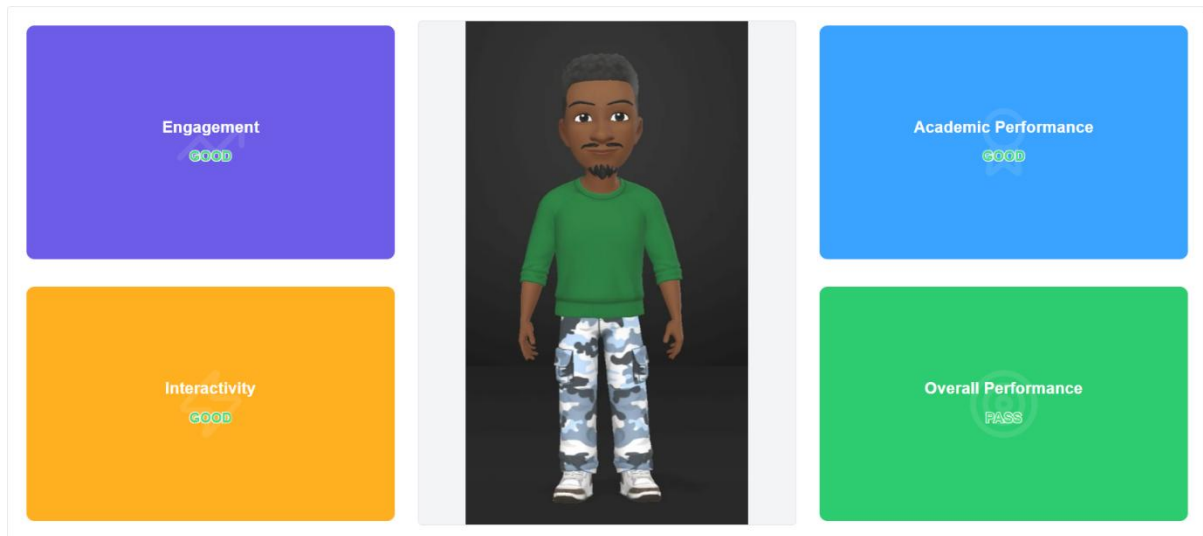


Figure 4: Digital Twin Avatar (Green) with a summary of all the different score metrics.

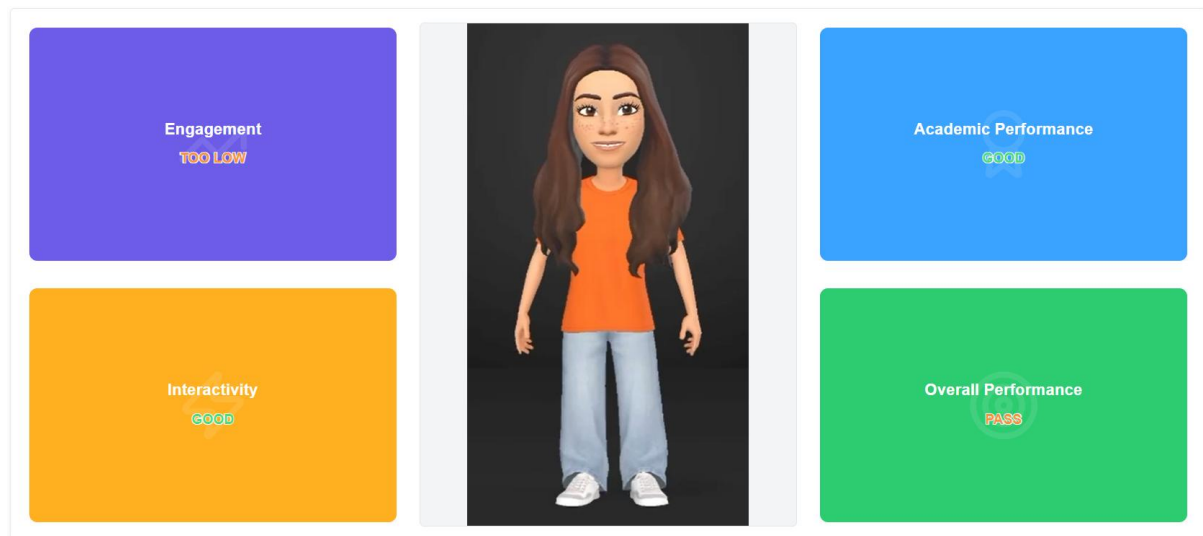


Figure 5: Digital Twin Avatar (Orange) with a summary of all the different score metrics.

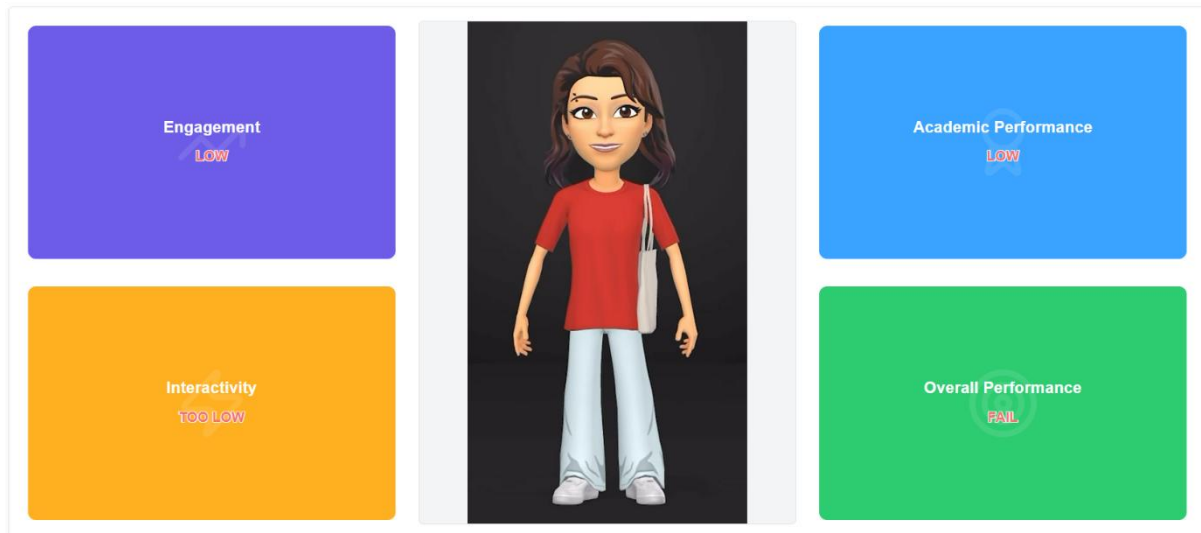


Figure 6: Digital Twin Avatar (Red) with a summary of all the different score metrics

Engagement

- **Icon:** Purple block with increasing trend icon.
- **Content:** Heading titling the block as the overall engagement metric. Below is a green font for status “Good”, an orange font for status “Pass” or a red font with status “Low” or “Too Low”.

Interactivity

- **Icon:** Orange block with lightning icon.
- **Content:** Heading titling the block as the overall interactivity metric. Below is a green font for status “Good”, an orange font for status “Pass” or a red font with status “Low” or “Too Low”.

Academic Performance

- **Icon:** Blue block with medal icon.
- **Content:** Heading titling the block as the overall academic performance metric. Below is a green font for status “Good”, an orange font for status “Pass” or a red font with status “Low” or “Too Low”.

Overall Performance

- **Icon:** Green block target icon.

- **Content:** Heading titling the block as the overall performance metric. Below is a green font for status “Pass”, an orange font for status “Pass” or a red font with status “Fail”.

Digital Twin Avatar

- **Interactive:** Looks at the block in focus and when the mouse is hovering over the avatar, it waves.
- **Shirt colour:** The avatar wears a green shirt if the overall performance status of the student is “Thriving”, an orange shirt when the student is “Passing” and a red shirt if the student has an overall performance status as “At Risk”.

Social Garden

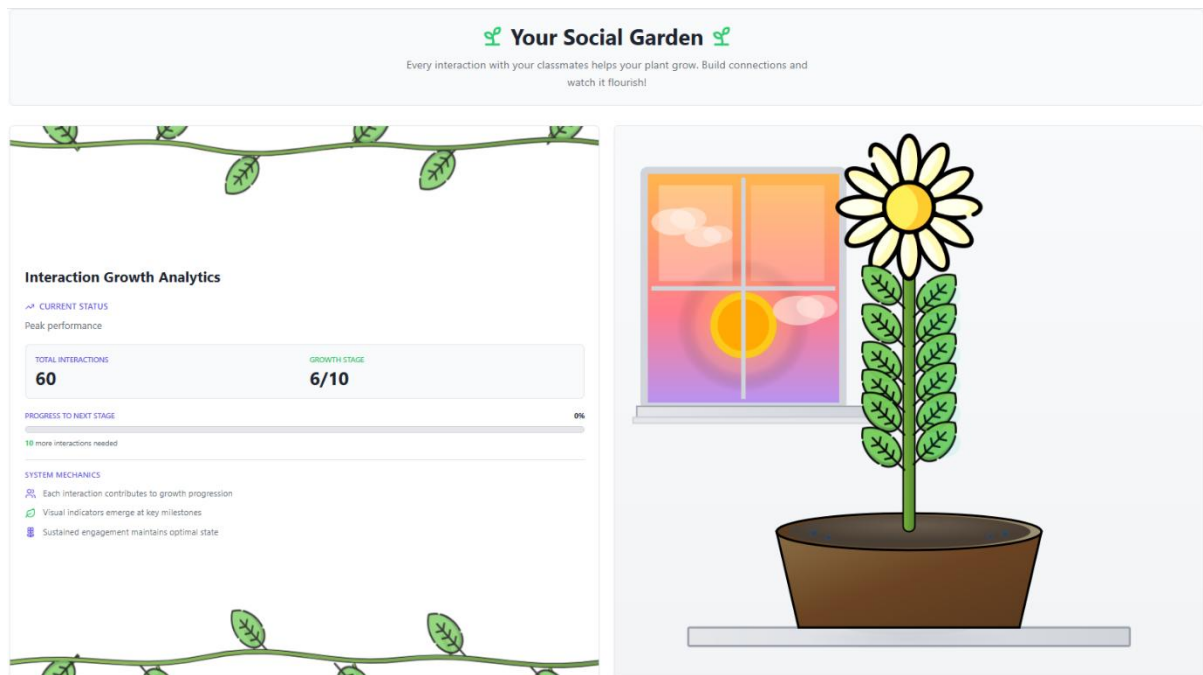


Figure 7: Garden illustrating the students' overall social performance.

Purpose

- Allows students to visualize their social performance and to be more motivated to improve it. The flower grows as the amount of interactions of the student increases.

Heading

- Section labelled as “Your Social Garden” and an explanation of how the garden works “Every interaction with your classmates helps your plant grow. Build connections and watch it flourish!”.

Content

- **Location:** It is positioned to the left of the card.
- **Purpose:** To give the student more detail about the metrics regarding social interactions and at what growth stage the plant is at.
- **Heading:** It is labelled “Interaction Growth Analytics”.
- **Current status:** The plant’s current status is identified under the subheading “Current Status” as either “Growth initiated”, “Halfway there”, “Peak Performance” and “Mature”. This allows the student to relate their social interactions to the plant.
- **Metric card:** Contains the total social interactions that the student has and then represents that as a number out of ten (“Growth Stage”).
- **Progress bar:** Labelled “Progress to next stage”, the percentage displayed on the progress bar and how many interactions are still needed to progress to next stage.
- **System mechanics:** Explains how the garden works. Explains that each interaction contributes towards the growth progression, visual indicators emerge at key milestones and that sustained engagement maintains optimal state.

Plant

- The plant displays the social interaction level of the student. It grows as the student interacts more with other students.

Student Analytics Dashboard

Overview:

The Student Analytics Dashboard is a comprehensive learning analytics platform that tracks and visualizes student engagement with course materials. It provides real-time

insights into learning patterns, behavioral indicators, and personalized recommendations to support student success.

Dashboard Header

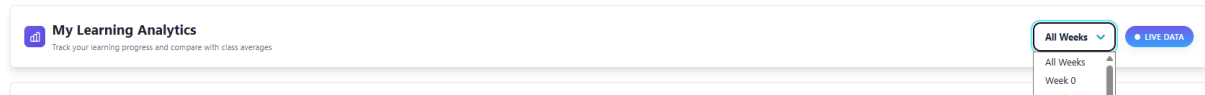


Figure 8: Dashboard Header

Location: Top of the dashboard

The header displays your current view title and key status information:

- **Title Section:** Shows either "My Learning Analytics" (for students) or "Student Analytics Dashboard" (for instructors)
- **Subtitle:** Provides context about the data being displayed
- **Week Selector:** Dropdown menu to filter data by specific weeks or view all weeks combined
- **Live Data Indicator:** A pulsing green dot with "LIVE DATA" text confirms you're viewing current information

Week Selector (located in figure 8)

Purpose: Filter analytics data by specific time periods

The Week Selector allows you to focus on particular weeks of the course or view aggregated data across all weeks.

How to Use:

1. Click on the dropdown labelled "Week:" in the top-right area of the dashboard
2. Select "All Weeks" to see cumulative data across the entire course period
3. Choose a specific week number (Week 0, Week 1, Week 2, etc.) to view data for that week only
4. The dashboard automatically updates all charts and metrics when you change the selection

Note: The Week Selector only appears when viewing individual student data.

Digital Twin Status

Purpose: Visual representation of student wellbeing and engagement state

The Digital Twin Status provides an at-a-glance understanding of a student's current learning state through a visual avatar and status badge.

Status Types:

Thriving

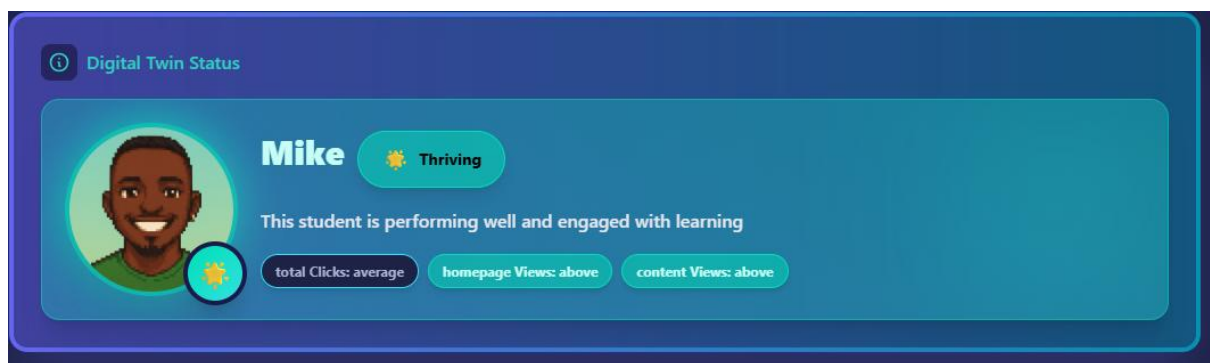


Figure 9: Thriving status

- **Visual Indicator:** Happy, energetic avatar with green/teal background and star icon
- **Badge Color:** Green with "Thriving" label
- **Meaning:** The student is performing well and actively engaged with learning materials
- **Metric Tags:** Shows which specific metrics are performing above average
- **Description:** "This student is performing well and engaged with learning"

Coping Well

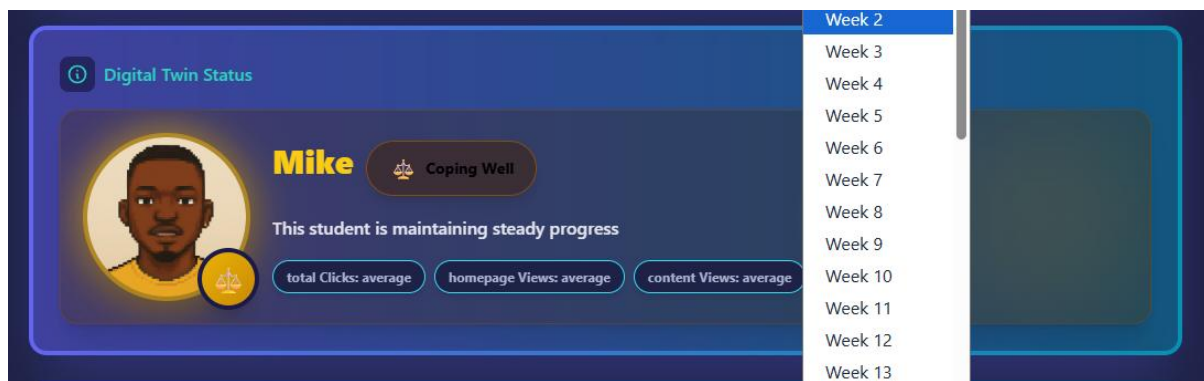


Figure 10: Coping well status

- **Visual Indicator:** Neutral, focused avatar with yellow/amber background and balance scale icon
- **Badge Color:** Yellow with "Coping Well" label
- **Meaning:** The student is maintaining steady progress with balanced engagement
- **Metric Tags:** Shows metrics that are at average levels
- **Description:** "This student is maintaining steady progress"

Burnout Risk

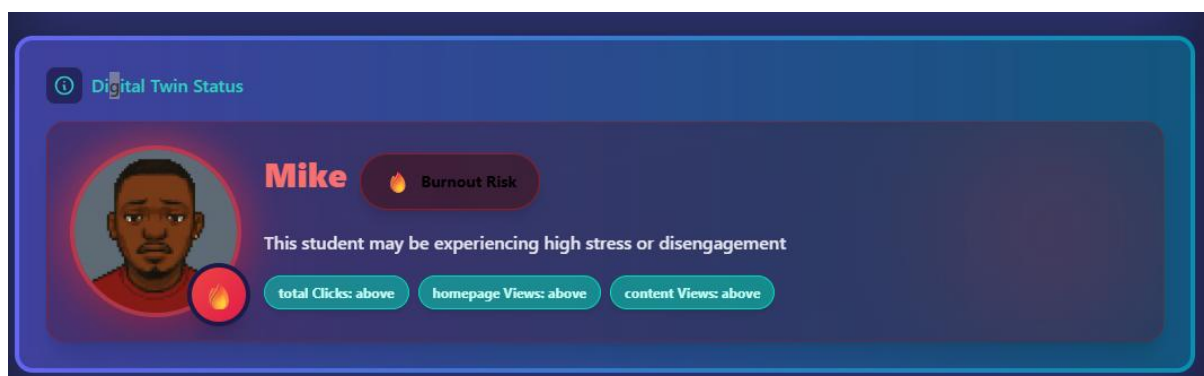


Figure 11: Burnout status

- **Visual Indicator:** Stressed, tired avatar with red background and flame icon
- **Badge Color:** Red with "Burnout Risk" label
- **Meaning:** The student may be experiencing high stress or disengagement

- **Metric Tags:** Shows concerning metrics that are significantly above or below average
- **Description:** "This student may be experiencing high stress or disengagement"

Learning Assessment Panel

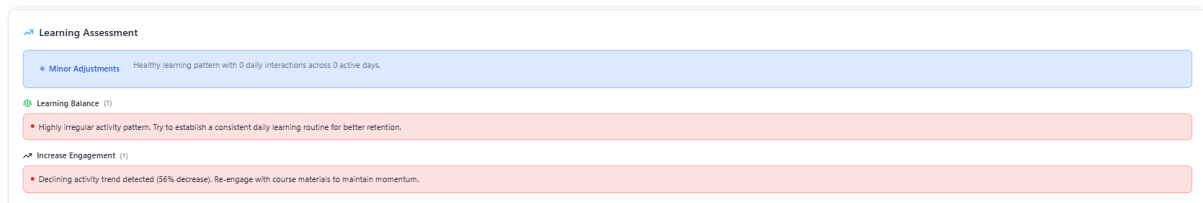


Figure 12: Learning assessment

Purpose: Provide personalized recommendations and risk analysis

The Learning Assessment analyses your activity patterns and provides tailored suggestions to improve learning outcomes.

Panel Structure:

Header Section

- **Assessment Title:** "Learning Assessment"
- **Summary Message:** Brief description of overall learning pattern and activity level.

Risk Levels

High Attention (Red)

- **Background:** Red gradient
- **Message Example:** "High attention needed with [X] total interactions — consider workload adjustments"
- **Typical Causes:** Excessive activity indicating possible stress, or very low activity indicating disengagement

Moderate Attention (Yellow/Amber)

- **Background:** Yellow gradient

- **Message Example:** "Moderate activity pattern across [X] active days — establish consistent routines"
- **Typical Causes:** Irregular patterns or slight deviations from healthy engagement

Minor Adjustments (Blue)

- **Background:** Teal gradient
- **Message Example:** "Moderate activity level with [X] total interactions — room for enhancement"
- **Typical Causes:** Generally healthy patterns with opportunities for optimization

No Concerns (Green)

- **Background:** Green gradient
- **Message:** "Great Learning Balance - Your learning activity looks healthy and consistent. Keep up the excellent work!"

Recommendation Categories

Each category is displayed in an expandable card with:

- Category icon and title
- Number of recommendations
- Color-coded background matching the recommendation type

Learning Balance

- **Icon:** Balance scales
- **Focus:** Creating sustainable learning routines
- **Example Recommendations:**
 - Establish consistent daily learning times
 - Maintain regular activity patterns
 - Balance different types of learning activities

Increase Engagement

- **Icon:** Trending up arrow
- **Focus:** Boosting participation and interaction
- **Example Recommendations:**
 - Re-engage with course materials
 - Increase forum participation
 - Explore additional learning resources

Your Daily Activity (Line Chart)

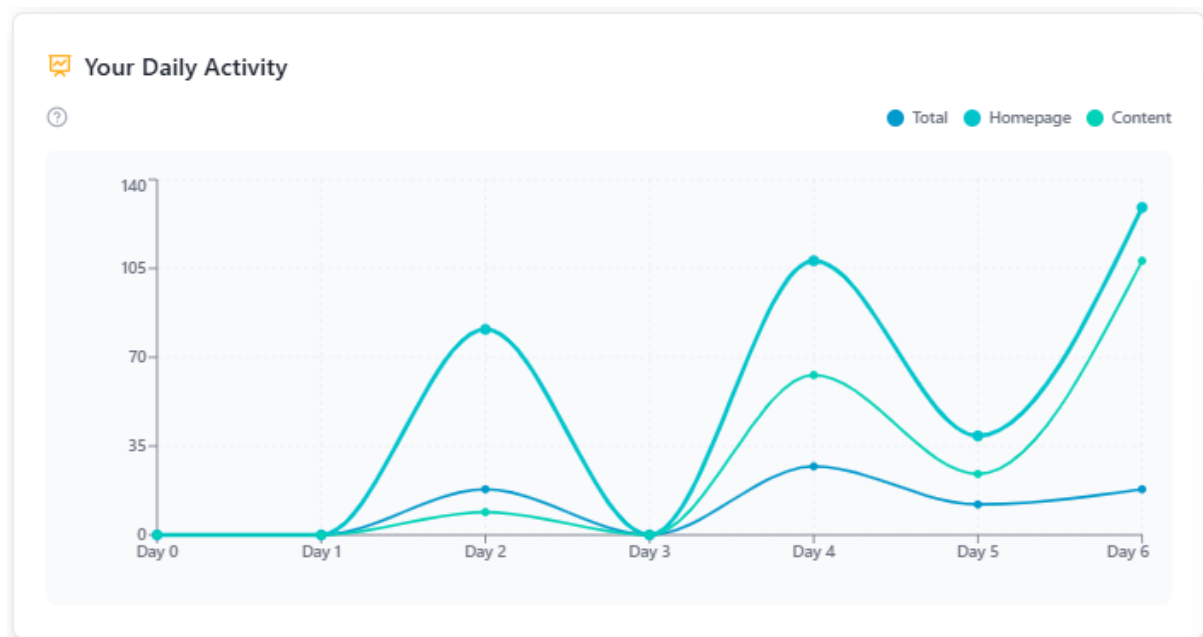


Figure 13: Daily activity chart

Purpose: Visualize daily engagement trends over time

The Daily Activity chart shows how learning activity changes from day to day, making it easy to spot patterns and trends.

Chart Components:

Lines Displayed

- **Total (Thick cyan line):** Overall daily interactions combining all activity types

- **Homepage (Blue line):** Daily homepage visits
- **Content (Teal line):** Daily content viewing activity

Legend

Located in the top-right corner of the chart:

- Color-coded dots matching each line
- Labels for Total, Homepage, and Content

Interactive Features

- **Hover over data points:** See exact values for that specific day
- **Day labels:** X-axis shows "Day 0," "Day 1," "Day 2," etc.
- **Grid lines:** Horizontal lines help read values accurately

Reading the Chart:

- Higher peaks indicate days with more activity
- Valleys show days with lower engagement
- Compare the three lines to see which types of activities dominate
- Look for consistent patterns or sudden changes that might need attention

Your Activity Breakdown (Pie Chart)

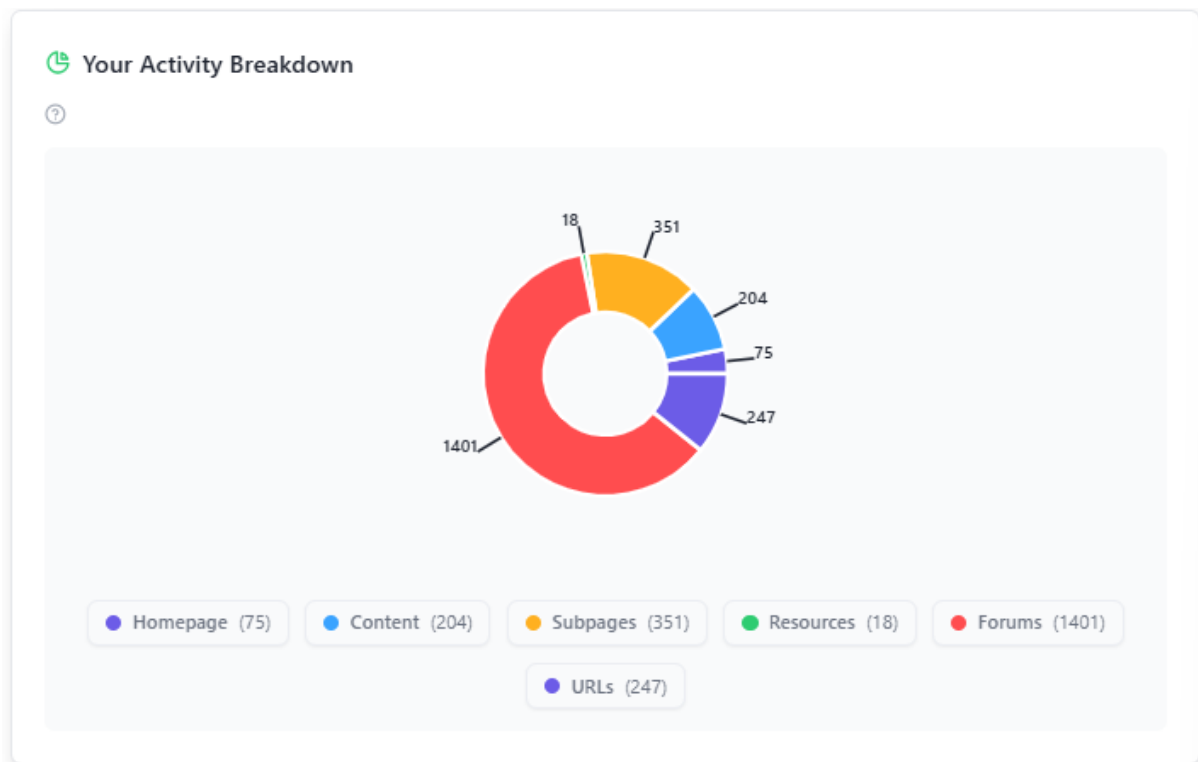


Figure 14: Breakdown chart

Purpose: Show proportional distribution of different activity types

The Activity Breakdown displays how your total interactions are divided among different categories, helping you understand where you spend most of your learning time.

Chart Features:

Segments

Each colored slice represents a different activity category:

- **Forums (Red):** Typically the largest segment for collaborative learning
- **Content (Light blue):** Learning material views
- **Subpages (Yellow):** Navigation to course subpages
- **Homepage (Purple):** Main course page visits
- **Resources (Green):** Resource downloads and views
- **URLs (Purple):** External link clicks

Labels

- Each segment shows the category name and its percentage of total activity
- Percentages are calculated automatically and displayed directly on the chart
- Labels extend outward with connecting lines for clarity

Reading the Chart:

- Larger segments indicate more frequent activity types
- The donut hole in the center creates a cleaner, modern appearance
- Hover over any segment to see detailed information including:
 - Category name
 - Exact count
 - Percentage of total activity

Interpreting Results:

- High forum activity suggests strong peer collaboration
- Balanced distribution across categories indicates diverse engagement
- Heavily skewed charts might indicate focused work on specific materials

Your Detailed Activity Pattern (Bar Chart)



Figure 15: Daily activity bar chart

Purpose: Provide detailed daily breakdown of activity by category

The Detailed Activity Pattern chart uses grouped bars to show exactly how many interactions of each type occurred on each day.

Chart Components:

Bar Groups

Each day displays three colored bars side by side:

- **Homepage (Blue gradient):** Daily homepage visits
- **Content (Purple gradient):** Daily content views
- **Subpages (Teal gradient):** Daily subpage navigation

Interactive Tooltip

Hover over any bar to see a detailed breakdown:

- Day number as the header
- List of all activity types with exact counts

- Each type shown with its color indicator
- Total interactions for that day at the bottom

Visual Styling

- Bars have rounded tops for a modern appearance
- Gradient fills from darker to lighter shades
- Maximum bar width is limited for consistency
- Spacing between bar groups and between bars within groups

Chart Layout:

- X-axis shows day labels ("Day 0," "Day 1," etc.)
- Y-axis shows interaction counts
- Grid lines help read values accurately
- Purple/indigo grid provides subtle guidance

Reading the Chart:

- Compare bar heights within a day to see which activities dominated
- Compare bars across days to identify trends
- Look for days with no bars (no activity) versus days with tall bars (high activity)
- The grouped format makes it easy to spot patterns in specific activity types

Performance Metrics Cards

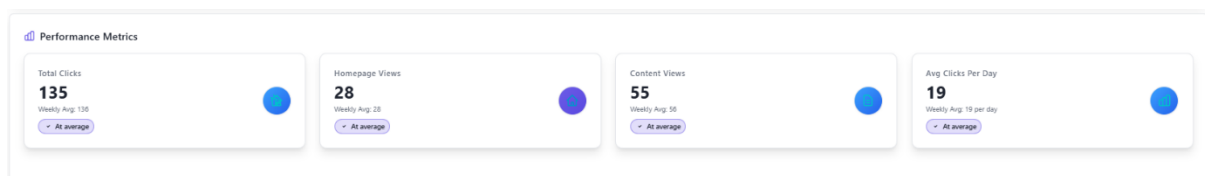


Figure 16: Metrics Cards

Purpose: Display key performance indicators with comparative analysis

The Performance Metrics section shows four primary metrics in individual cards, each with visual indicators and comparison data.

Total Clicks

- **Icon:** Blue chart/activity icon
- **Value:** Total number of all platform interactions
- **Weekly Average:** Shows the average clicks per week for context
- **Status Indicator:** Displays whether performance is "At average," "above avg," or "below average"
- **Tooltip Information:** Explains that this includes all platform interactions including homepage visits, content views, and resource access

Homepage Views

- **Icon:** Blue house icon
- **Value:** Number of times the course homepage was accessed
- **Weekly Average:** Average homepage visits per week
- **Status Indicator:** Percentage above or below class average
- **Tooltip Information:** Indicates frequency of course homepage access

Content Views

- **Icon:** Teal document icon
- **Value:** Number of times course content and learning materials were viewed
- **Weekly Average:** Average content views per week
- **Status Indicator:** Performance comparison with percentage difference
- **Tooltip Information:** Shows engagement with actual learning materials

Week Average/Day (for individual students)

- **Icon:** Teal activity bars icon
- **Value:** Average number of interactions per day

- **Weekly Average:** Typical daily activity level
- **Status Indicator:** Shows if daily engagement is on track
- **Tooltip Information:** Helps identify daily engagement patterns

Student Interaction Dashboard

Overview:

The Student Interaction Dashboard is a page where the student can view their social interaction data, indicating how well they are performing in that aspect. It contributes towards their overall social performance and is there important to evaluate, track and implement.

Dashboard Header



Figure 17: Dashboard Header

Location: Top of the dashboard

The header displays your current view title and the option to view your interaction timeline:

- **Back Button Icon:** Allows the user to go back to the Student Analytics Dashboard.
- **Title Section:** Shows "Student Interaction Dashboard", which is the title of the dashboard.
- **View Interaction Timeline Button:** Directs the user to the Interaction Timeline dashboard (see section "Interaction Timeline")

Current Week Stats

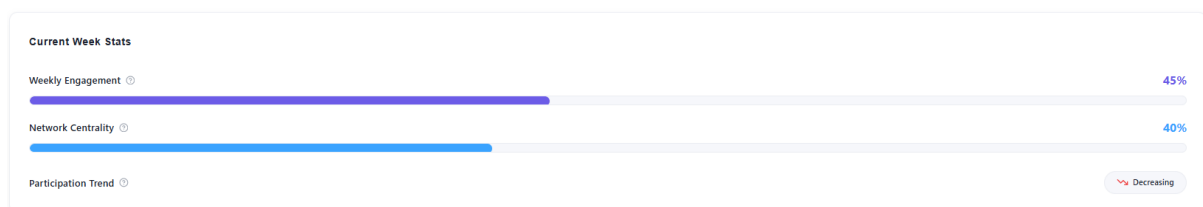


Figure 18: Current Week's Stats as a percentage

Purpose: Indicates the percentage of weekly engagements and network centrality and whether the participation trend is increasing, decreasing or stable.

This section provides the student with an overview of their interactions that week to briefly illustrate how well the student has engaged, the level of centrality and whether it is better, worse or the same as last week.

Weekly Engagement

- **Progress bar:** Illustrates the weekly engagements of the student as a percentage.
- **Value:** Percentage of weekly engagements are indicated at the top-right of the progress bar.
- **Tooltip Information:** Explains that this progress bar shows the percentage of time spent in social interactions with classmates this week compared to typical levels.

Network Centrality

- **Progress bar:** Illustrates the weekly network centrality of the student as a percentage. Higher values indicate more connections with peers.
- **Value:** Percentage of weekly network centrality are indicated at the top-right of the progress bar.
- **Tooltip Information:** Explains that this progress bar shows the percentage of how central the student is in the class collaboration network.

Participation Trend

- **Status Indicator:** Displays whether the participation trend is "Increasing", "Decreasing", or "Stable" at the far right to the label "Participation Trend".
- **Tooltip Information:** Explains that the participation trend shows whether your social interaction frequency with classmates is increasing, decreasing, or staying stable over recent weeks.

Interactivity Cards



Figure 19: Interactivity Metrics Cards

Purpose: Display key interactivity indicators with comparative analysis

The Interactivity Metrics section shows four primary metrics in individual cards, each with visual indicators and comparison data.

Total Interactions

- **Icon:** Purple message icon.
- **Value:** Total number of face-to-face interactions.
- **Tooltip Information:** Explains that this displays the total number of face-to-face social interactions that was detected in the classroom environment.

Average Duration

- **Icon:** Orange clock icon
- **Value:** Average duration of face-to-face interactions of this student. Longer durations may indicate deeper social connections.
- **Tooltip Information:** Explains that this card displays the average duration of face-to-face social interactions with classmates.

Active Partners

- **Icon:** Blue icon of two people.
- **Value:** Number of classmates this student has actively collaborated with, whether it is through discussions, group work or peer interactions.
- **Tooltip Information:** Explains that this card displays the number of classmates you've actively collaborated with through discussion, group work or peer interactions.

Sessions This Week

- **Icon:** Green bar graph icon.
- **Value:** Number of distinct social interaction sessions the student had this week. A session is a continuous period of face-to-face interactions.
- **Tooltip Information:** Explains that this card displays the number of distinct social interaction sessions with classmates this week.

Engagement Trend Over Time (Line Chart)

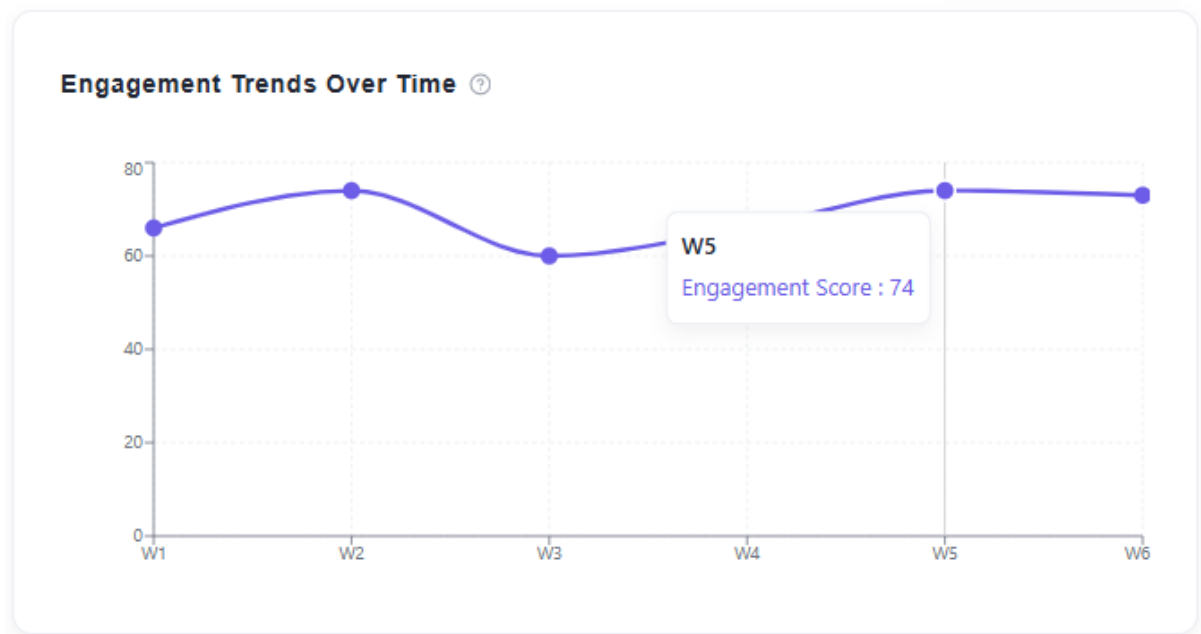


Figure 20: Engagement Trend Over Time chart

Purpose: Visualize weekly engagement over time

The Engagement Trend Over time chart indicates the students' weekly engagement score and allows for easy tracking and monitoring.

Chart Components:

Lines Displayed

- **Total (Thick purple line):** Overall weekly engagement scores.

Tooltip Information

- Explains that on this chart you can track your social interaction frequency and activity with classmates across recent weeks.

Interactive Features

- **Hover over data points:** See exact values for that specific week.
- **Week labels:** X-axis shows "W1" for week 1, "W2" for week 2, etc.
- **Y-axis:** Indicates the value of engagement score.

- **Grid lines:** Horizontal lines help read values accurately.

Reading the Chart:

- Higher peaks indicate weeks with more engagement.
- Valleys show weeks with lower engagement.
- Look for consistent patterns or sudden changes that might need attention.

Top Interaction Partners



Figure 21: Top Interaction Partners

Purpose: *Provides the top partners with whom the student has interacted the most.*

This section provides the student with a list of top interaction partners. This can be useful when analysing why the student has the interactivity and engagement scores that they have.

Tooltip Information

- Explains that this list is the five classmates with whom this person has interacted the most frequently with through face-to-face conversation and social activities in the classroom.

Content

- **Student number:** Formatted as “Student” and the number that is assigned to them (for identification), such as a university number.
- **Number of interactions:** Indicates the number of interactions the student had with the corresponding student.

Weekly Session |Activity (Bar Chart)

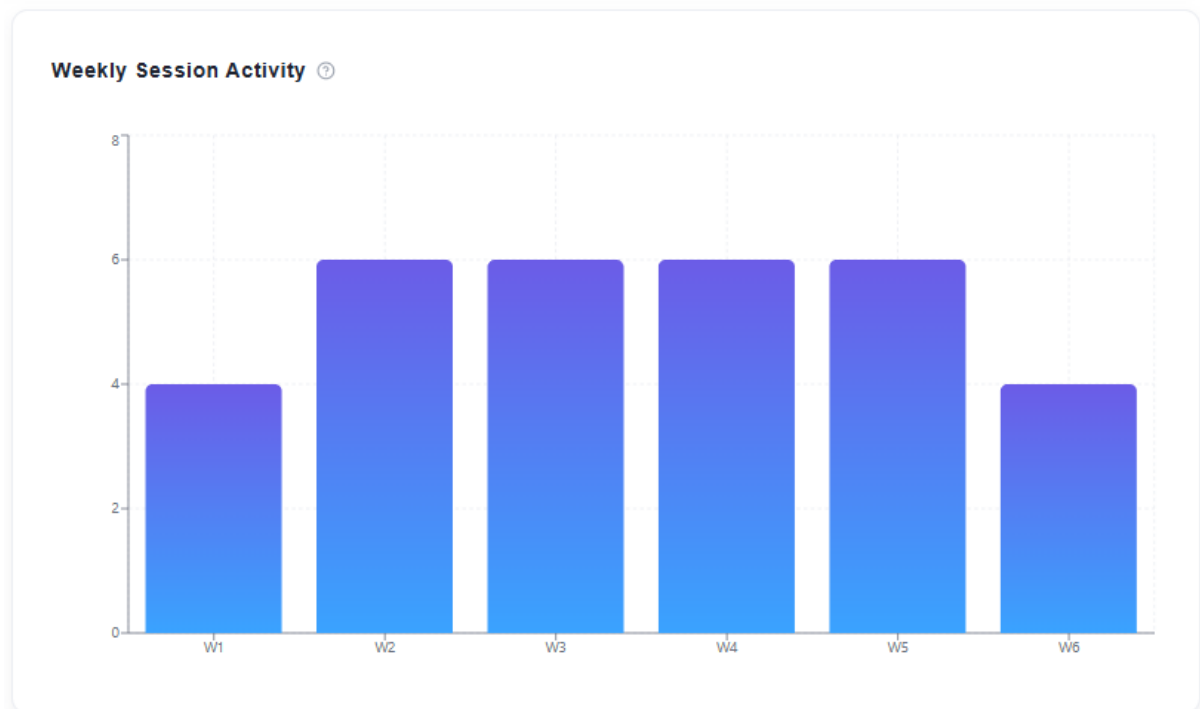


Figure 22: Weekly Session Activity bar chart

Purpose: Provide total number of social interactions per week.

The Weekly Session Activity indicates the total number of social interaction sessions with classmates the student had per week.

Chart Components:

Bar Groups

Each bar displays its corresponding weeks' total number of interactions. The higher the bar, the more social interactions the student had that week.

Interactive Tooltip

Hover over any bar to see a detailed breakdown:

- Week number as the header
- Total interactions for that week

Visual Styling

- Bars have rounded tops for a modern appearance
- Gradient fills from lighter to darker shades
- Maximum bar width is limited for consistency
- Spacing between bars within groups to allow for easy distinctions between weeks.

Chart Layout:

- X-axis shows week labels ("W1" being week 1, "W2" is week 2, etc.)
- Y-axis shows social interaction counts
- Grid lines help read values accurately

Reading the Chart:

- Compare bars across weeks to identify trends
- Look for weeks with no bars (no social interactions) versus weeks with tall bars (high activity)

Interaction Timeline Dashboard

Header



Figure 23: Interaction Timeline Dashboard Header

Location: Top of the dashboard

When the “View Interaction Timeline” button is clicked on the Student Interaction Dashboard header, it directs the user to this dashboard “Interaction Timeline”.

- **Back Button Icon:** Allows the user to go back to the Student Interaction Dashboard.
- **Title Section:** Shows "Interaction Timeline", which is the title of the dashboard.
- **View Dashboard Button:** Directs the user back to the Student Interaction Dashboard.
- **Refresh icon:** Located at the far-right of the header is a purple refresh icon. When pressed, it refreshes all the data on this page.

Interactivity Timeline Cards



Figure 24: Interactivity Timeline Metrics Cards

Purpose: Display more detailed interactivity indicators with comparative analysis

The Interactivity Metrics section shows three detailed metrics in individual cards, each with visual indicators and comparison data.

Total Interactions

- **Icon:** Purple message icon.
- **Value:** Total number of face-to-face interactions.

Average Duration

- **Icon:** Blue clock icon
- **Value:** Average duration of face-to-face interactions of this student. Longer durations may indicate deeper social connections.

Unique Partners

- **Icon:** Green icon of two people.
- **Value:** Number of classmates this student has actively collaborated with, whether it is through discussions, group work or peer interactions.

Filter Data Presented

▼ Filters

Search by Partner/Session

Enter partner ID or session...

Showing 56 of 56 interactions

Figure 25: Filter Section

Purpose: Filter through the dataset to only present a certain student with whom this user has interacted with or a specific session.

It automatically displays all the interactions, but the user can search/filter for a specific student or session.

- **Textbox:** Allows user to enter a partner ID or session code.

List of all/filtered interactions

Time	Partner	Duration	Session	Details
25/10/2025 15:06:06 - 15:13:29 7 days ago	 Student N18	 6m 14s	 ES825509	 1.7m Confidence: 82%
25/10/2025 15:06:06 - 15:25:00 7 days ago	 Student Z37	 18m 54s	 ES689514	 1.6m Confidence: 32%
23/10/2025 15:06:06 - 15:17:08 4 days ago	 Student N18	 11m 42s	 ES405738	 0.3m Confidence: 84%
22/10/2025 15:06:06 - 15:23:37 5 days ago	 Student F15	 17m 31s	 ES988084	 1.2m Confidence: 90%
22/10/2025 15:06:06 - 15:27:34 5 days ago	 Student N18	 21m 28s	 ES187712	 1.4m Confidence: 94%
21/10/2025 15:06:06 - 15:27:36 6 days ago	 Student C19	 21m 30s	 ES823444	 1.3m Confidence: 99%
21/10/2025 15:06:06 - 15:15:18 6 days ago	 Student M41	 7m 52s	 ES988088	 1.2m Confidence: 91%

Figure 26: List of all the interactions or filtered interactions.

Purpose: If the user would like to see a more detailed list of all the specific interactions, it is displayed in this list. If the data is filtered by partner ID it will only show interactions the student had with that specific partner and if the data is filtered according to session code, then only those interactions correlating to that session code will be displayed.

- **Time:** Displays the date, starting and ending time of interaction and how long ago it took place (E.g. “3 days ago”).
- **Partner:** Shows the specific partner ID that the student interacted with.
- **Duration:** How long the duration of the interaction took.
- **Session:** The session identifies which group of interactions the specific one belongs in.

- **Details:** This identifies the distance between the students interacting and the confidence level.

Academics Dashboard

Overview:

The academics dashboard provides the student with predicted academic outcomes and the confidence thereof.

Dashboard Header

Weekly Prediction Tracker

Follow how your predicted outcome changes across the term. Each week combines five study days so you can focus on the bigger picture.

Figure 27: Academic Dashboard Header

Location: Top of the dashboard

The header displays “Weekly Prediction Tracker” along with a subheading that explains what this dashboard is about and can be used for.

List Heading

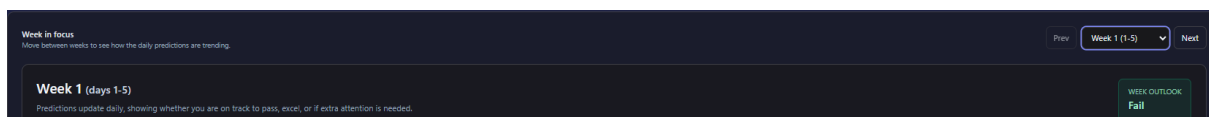


Figure 28: Heading allowing for week filtering, gives a final prediction and further information.

- **Heading:** “Week in focus” with a subheading explaining how to use the dropdown box, “Move between weeks to see how the daily predictions are trending”.
- **Select week dropdown:** Allows student to select a specific week (consisting out of five days) whose data will be displayed.
- **Next and Previous Button:** Allows student to quickly switch to next or previous week from the week that is currently selected.

- **Subheading:** This displays the week and days selected and more information on the predictions, “Predictions update daily, showing whether you are on track to pass, excel or if extra attention is needed”.
- **Overall prediction:** On the far-right side of the subheading is the final prediction of the student, “Week outlook” will either be “Pass” (Green outlined box), “Withdrawn” (Orange outlined box) or “Fail” (Red outlined box).

List of Prediction

DAY	OUTCOME	CONFIDENCE
Day 1	Withdrawn	43.0%
Day 2	Fail	71.1%
Day 3	Fail	57.6%
Day 4	Fail	51.3%
Day 5	Fail	56.5%

Figure 29: List of each day’s prediction and score, of week selected.

The list presents the five days of the week that student selected (automatically displays first five days before student

List of each day’s prediction and the confidence level thereof is displayed in the list. Columns are divided into:

- **Day:** Displays the five days of the week selected.
- **Outcome:** Shows the predicted outcome. This will either be Fail (Red), Withdrawn (Orange) or Pass (Green).
- **Confidence:** Provides the percentage confidence level of each day’s prediction.

Confidence Trend this week (Line Chart)

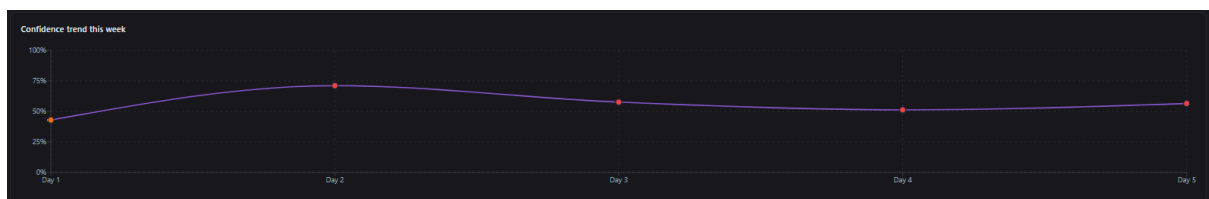


Figure 30: Confidence Trend Over Time chart

Purpose: Visualize the confidence level of each day as it changes through the week.

Chart Components:

Line Displayed

- **Total (Thick purple line):** Overall daily confidence scores.

Interactive Features

- **Hover over data points:** See exact values for that specific day.
- **Week labels:** X-axis shows the five days of the week selected.
- **Y-axis:** Indicates the value of confidence.
- **Grid lines:** Horizontal lines help read values accurately.

Reading the Chart:

- Higher peaks indicate days with higher confidence levels for the prediction.
- Valleys show weeks with weaker confidence levels.

Highlights and Instructions on how to apply the predictions

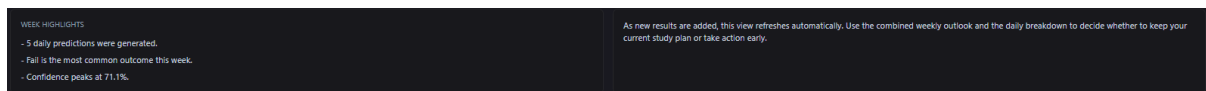


Figure 31: Highlights card along with instruction on how to use the predictions.

- **Week Highlights:** Confirms that five days of selected week, are predicted and restates what the most popular/final predicted academic outcome is for that week. Lastly it indicates what the maximum confidence level is.
- **Description and instructions:** Identifies that the view refreshes automatically as results are added. It also instructs the student to use the combined weekly outlook and daily breakdown to decide whether to keep the current study plan or to change it for better results.

Conclusion

The Student Digital Twin represents a transformative approach to student support in higher education. By providing you with a comprehensive, real-time view of your academic journey, the SDT empowers you to take proactive control of your learning, well-being, and success.

Making the Most of Your Digital Twin

To maximize the benefits of the SDT system:

1. **Regular Monitoring:** Check your dashboards regularly (at least weekly) to stay aware of your engagement patterns and academic trends.
2. **Act on Insights:** Use the personalized recommendations provided in the Learning Assessment panel to adjust your study habits and learning routines.
3. **Track Your Progress:** Utilize the week selector and historical views to understand your patterns over time and celebrate improvements.
4. **Social Engagement:** Pay attention to your Social Garden and interaction metrics—social connections are crucial for academic success and well-being.
5. **Early Intervention:** If your status shows "Burnout Risk" or you notice declining trends, reach out to academic support services early rather than waiting for problems to escalate.
6. **Data Privacy:** Your data is protected under POPIA regulations. The system is designed with privacy-first principles, and you maintain control over your information.

Support and Resources

If you encounter any issues not covered in this manual:

- **Technical Support:** Contact the IT Help Desk at [support contact]
- **Academic Support:** Reach out to your academic advisor or student success office
- **Wellness Support:** University counselling and wellness services are available when your digital twin indicates stress or burnout risk

System Evolution

The Student Digital Twin is continuously evolving based on user feedback and emerging research in learning analytics. Your input helps improve the system for all students. If you have suggestions or encounter any difficulties, please share your feedback through the appropriate university channels.

Looking Forward

Research shows that data-informed, personalized support significantly improves student outcomes. Institutions using similar systems have seen graduation rates increase by over 20 percentage points. By engaging actively with your Student Digital Twin, you are taking advantage of cutting-edge technology designed specifically to support your success.

Remember: The SDT is a tool to support you, not to judge you. It provides insights and recommendations, but you remain in control of your academic journey. Use it as a mirror for self-reflection, a compass for direction, and a partner in achieving your educational goals.

We wish you every success in your academic journey at North-West University.