

365 Customer Engagement Analysis Report

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Business Objective

As data analysts, our objective is to identify potential improvements and recommendations to help elevate the platform based off of data that was collected from the 365 Data Science website between January 1, 2022 – October 31, 2022, which include career track, course, and student engagement data.

Key Questions

- How engaged are the students inside the platform, and how can this metric be improved?
- How long do students stay engaged on the platform, and how can this period be extended?
- What's the difference in behavior between free and paid students?
- Which are the most popular courses on the platform?
- How many students sit for an exam?

Interpreting the Data

'Overview' Page Insights:

Number of Engaged Students (All): 19,332

Free: 18,032

Paid: 2,178

- The total of free and paid students is greater than the number of all engaged students because some free plan students converted to paying ones. So, in the report, they're counted as having engaged as both free plan and paying students.
- This means that 878 students initially registered as free students, then later became paying students.

Average Minutes per Student (All): 81.40 minutes

Free: 21.06 minutes

Paid: 543.7 minutes

Number of Certificates Issued (All): 3,683

Free: 813

Paid: 2,870

Top 5 Courses Based On...

Total Overall Minutes Watched:

1. Introduction to Data and Data Science (297,198 minutes)
2. SQL (215,894 minutes)
3. Statistics (199,006 minutes)
4. Introduction to Excel (194,196 minutes)
5. Python Programmer Bootcamp (150,892 minutes)

Average Minutes per Student:

1. Data Literacy (117.68 minutes)
2. SQL (114.72 minutes)
3. Python Programmer Bootcamp (107.55 minutes)
4. Data Preprocessing with NumPy (99.35 minutes)
5. Negotiation (84.45 minutes)

Completion Rate:

1. Negotiation (95%)
2. Marketing Strategy (64%)
3. Git and GitHub (49%)
4. Mathematics (48%)
5. Data Literacy (47%)

Bottom 5 Courses Based On...

Total Overall Minutes Watched:

1. Machine Learning with Ridge and Lasso Regression (1,697 minutes)
2. Data-Driven Business Growth (1,089 minutes)
3. Blockchain for Business (454 minutes)

4. Marketing Strategy (341 minutes)
5. Negotiation (84 minutes)

Average Minutes per Student:

1. SQL + Tableau + Python (22.09 minutes)
2. AI Applications for Business Success (19.21 minutes)
3. Introduction to Jupyter (15.53 minutes)
4. SQL for Data Science Interviews (13.17 minutes)
5. Data-Driven Business Growth (11.84 minutes)

Completion Rate:

1. Python for Finance (11%)
2. SQL for Data Science Interviews (9%)
3. SQL + Tableau + Python (8%)
4. Machine Learning in Excel (8%)
5. Data-Driven Business Growth (6%)

Overall Course Ratings:

5 Star: 2,289 ratings

- Makes up 83.8% of the reviews

4 Star: 353 ratings

- Makes up 13.0% of the reviews

3 Star: 64 ratings

- Makes up 2.3% of the reviews

2 Star: 20 ratings

- Makes up 0.7% of the reviews

1 Star: 5 ratings

- Makes up 0.2% of the reviews

Overall Average Course Rating: 4.79

'Engagement' Page Insights:

Daily View:

Average Number of Engaged Students per Day (All): 224

Free: 98

Paid: 126

- sum of engaged students daily
months recorded

Number of Engaged Students Outliers (All):

- **August 15th:** 805 students
- **August 16th:** 806 students
- **August 17th:** 743 students

- August 15th, 365 Data Science opened its platform free of charge for all students for three days.

Excluding the August outlier, the engagement trends slightly upwards for all students.

January: Approximately 115 students daily

October: Approximately 340 students daily

Excluding the August outlier, engagement follows a fairly linear pattern in the beginning of the year, then trends upwards after August for free students.

January: Approximately 70 students daily

July: Approximately 80 students daily

August: Approximately 120 students daily

October: Approximately 150 students daily

There was no discernible effect of the engagement trends for paying students following the August promotional period. This is likely due to the fact that they already have paid access to all content. Nonetheless, engagement shows an upwards trend over time.

January: Approximately 45 students daily

October: Approximately 190 students daily

September 16th, a new gamified feature was integrated into the platform.

After the September 16th update...

Average number of engaged students per day (All): 320 students

Free: 137

Paid: 185

- $$\frac{\text{sum of engaged students daily (sept 16 – oct 31)}}{\text{number of days within that period}}$$

This could be a contributing factor to the increase in the average number of engaged students per day among paying students, as this feature is fully accessible to paying students only. Compared to the period before September 16th, it increased the average number of engaged students by about 37% for paying students.

- $$\frac{\text{value after update} - \text{value before update}}{\text{value after update}} \times 100$$

Onboarding Graph:

Onboarding to Registered Rate:

- $$\frac{\text{number of onboarded students}}{\text{number of registered students}} \times 100$$

Onboarding rate varies between 40-60% for the majority of the months.

It's also apparent that the changes made on the platform in mid-September have increase the onboarding rate to about 70%.

Monthly View:

Average Number of Engaged Students per Day (All):

- sum of engaged students daily within the month
number of days within the month

January: 115

February: 164

March: 196

April: 195

May: 184

June: 231

July: 224

August: 330

- **Excluding promotional days:** 281

September: 265

October: 338

Average Number of Engaged Students per Day (Free):

- sum of engaged students daily within the month
number of days within the month

January: 70

February: 79

March: 86

April: 77

May: 75

June: 90

July: 81

August: 171

- **Excluding promotional days:** 123

September: 107

October: 148

Average Number of Engaged Students per Day (Paid):

- sum of engaged students daily within the month
number of days within the month

January: 46 students

February: 85 students

March: 111 students

April: 118 students

May: 109 students

June: 141 students

July: 143 students

August: 159 students

- **Excluding promotional days:** 158 students

September: 158 students

October: 190 students

Yearly View:

We can see that the last three months are stronger in terms of the number of all engaged students by approximately 40%.

- $$\frac{(\text{value for January – July}) - (\text{value for August – October})}{\text{value after update}} \times 100$$

Number of Engaged Students per Month (All):

January: 1,718

February: 1,853

March: 2,263

April: 2,065

May: 2,092

June: 2,598

July: 2,372

August: 3,882

September: 2,991

October: 3,895

Number of Engaged Students per Month (Free):

January: 1,540

February: 1,553

March: 1,835

April: 1,577

May: 1,574

June: 1,995

July: 1,712

August: 3,177

September: 2,235

October: 3,111

Number of Engaged Students per Month (Paid):

January: 255

February: 365

March: 502

April: 547

May: 589

June: 662
July: 742
August: 782
September: 844
October: 870

Onboarding Graph:

Average Onboarding-to-Registered Rate per Month (All):

- $\frac{\text{sum of daily onboarding to registered rates within the month}}{\text{number of days within the month}}$

January: 55%
February: 51%
March: 50%
April: 48%
May: 50%
June: 46%
July: 50%
August: 49%
September: 55%
October: 64%

‘Cohorts’ Page Insights:

Retention Rate After the Onboarded Month (All):

- $\frac{\text{number of engaged students within a given period}}{\text{number of onboarded students within the given month}} \times 100$

January: 10.3%
February: 11.3%
March: 9.2%
April: 9.9%
May: 9.5%
June: 10.8%
July: 13.1%
August: 6.6%
September: 7.2%
October: no data

Retention Rate After the Onboarded Month (Free):

- $\frac{\text{number of engaged students within a given period}}{\text{number of onboarded students within the given month}} \times 100$

January: 3.0%
February: 4.5%

March: 3.3%
April: 4.6%
May: 3.1%
June: 5.6%
July: 5.8%
August: 3.7%
September: 3.2%
October: no data

- **Note that a fraction of these students switches to paying ones.**

Retention Rate After the Onboarded Month (Paid):

- $\frac{\text{number of engaged students within a given period}}{\text{number of onboarded students within the given month}} \times 100$

January: 51.8%
February: 61.8%
March: 48.7%
April: 46.9%
May: 50.7%
June: 51.4%
July: 51.5%
August: 45.4%
September: 35.4%
October: no data

‘Exams’ Page Insights:

Exams Taken Outlier: August

Total Attempts (All): 7,234

- **Pass:** 64.9% of attempts (4,696)
- **Fail:** 35.1% of attempts (2,538)

Total Attempts (Practice): 5,532

- **Pass:** 65.8% of attempts (3,640)
- **Fail:** 34.2% of attempts (1,892)

Total Attempts (Course): 1,666

- **Pass:** 62.5% of attempts (1,042)
- **Fail:** 37.5% of attempts (624)

Total Attempts (Career Track): 36

- **Pass:** 38.9% of attempts (14)
- **Fail:** 61.1% of attempts (22)

Excluding the August Outlier...

Total Average Exam Attempts per Month (All):

Total Average Attempts: 3,125

- **Pass:** 71.6% of attempts (2,239)
- **Fail:** 28.4% of attempts (886)

Total Average Attempts (Practice): 2,690

- **Pass:** 71.7% of attempts (1,930)
- **Fail:** 28.3% of attempts (760)

Total Average Attempts (Course): 426

- **Pass:** 71.6% of attempts (305)
- **Fail:** 28.4% of attempts (121)

Total Average Attempts (Career Track): 7

- **Pass:** 42.9% of attempts (3)
- **Fail:** 57.1% of attempts (4)

Certificates Issued Chart:

Number of Certificates Issued – Outlier: August

All: 1,017

Course: 1,005

Career Track: 12

Excluding the August Outlier...

Average Number of Certificates Issued:

All: 296

Course: 293

Career Track: 3

Number of Certificates Issued per Month (Course):

January: 91

February: 178

March: 277

April: 258

May: 207

June: 335

July: 348

August: 1,005

September: 405

October: 536

Number of Certificates Issued per Month (Career Track):

January: 0

February: 0

March: 3

April: 2

May: 3

June: 6

July: 7

August: 12

September: 4

October: 6

- No career track certificates are issued in January and February, as no track exams are attempted during these months from students who signed up that same year. It takes students around a month, on average, to complete a course, and career track requires passing nine courses before sitting for the exam.

The number of exams passed doesn't perfectly match the number of certificates issued. Reasons include delayed certificate issuance, name corrections requested by the students leading to reissued certificates the following month, and students retaking exams to improve grades, which changes the grade in the system, but doesn't issue another certificate.

Career Track Funnel Graph:

Number of Students Who (All) ...

Enrolled in a Track: 7,874

Attempted a Course Exam: 928

- 11.8% of those who enrolled in a career track

Completed a Course Exam: 856

- 10.9% of those who enrolled in a career track

Attempted a Final Exam: 74

- 0.9% of those who enrolled in a career track

Earned a Career Track Certificate: 43

- 0.5% of those who enrolled in a career track

Number of Students Who (Data Scientist) ...

Enrolled in a Track: 2,999

Attempted a Course Exam: 406

- 13.5% of those who enrolled in a career track

Completed a Course Exam: 365

- 12.2% of those who enrolled in a career track

Attempted a Final Exam: 24

- 0.8% of those who enrolled in a career track

Earned a Career Track Certificate: 16

- 0.5% of those who enrolled in a career track

Number of Students Who (Data Analyst) ...

Enrolled in a Track: 3,915

Attempted a Course Exam: 339

- 8.7% of those who enrolled in a career track

Completed a Course Exam: 323

- 8.3% of those who enrolled in a career track

Attempted a Final Exam: 33

- 0.8% of those who enrolled in a career track

Earned a Career Track Certificate: 15

- 0.4% of those who enrolled in a career track

Number of Students Who (Business Analyst) ...

Enrolled in a Track: 960

Attempted a Course Exam: 183

- 19.1% of those who enrolled in a career track

Completed a Course Exam: 168

- 17.5% of those who enrolled in a career track

Attempted a Final Exam: 17

- 1.8% of those who enrolled in a career track

Earned a Career Track Certificate: 12

- 1.3% of those who enrolled in a career track

'Learning' Page Insights:

Total Minutes Watched per Month (All):

January: 72,542

February: 105,266

March: 146,228

April: 141,788

May: 133,123

June: 158,770

July: 166,768

August: 241,779

September: 162,718

October: 228,609

Average Minutes Watched per Student per Month (All):

January: 42.5

February: 57.6

March: 65.3

April: 69.2

May: 64.0

June: 61.7

July: 71.3

August: 63.4

September: 54.8

October: 59.2

Total Minutes Watched per Month (Free):

January: 24,223
February: 25,105
March: 29,988
April: 28,695
May: 27,484
June: 28,632
July: 29,940
August: 97,695
September: 32,288
October: 51,495

Average Minutes Watched per Student per Month (Free):

January: 15.9
February: 16.4
March: 16.5
April: 18.4
May: 17.6
June: 14.5
July: 17.8
August: 31.4
September: 14.6
October: 16.7

Total Minutes Watched per Month (Paid):

January: 48,319
February: 80,162
March: 116,241
April: 113,093
May: 105,640
June: 130,138
July: 136,829
August: 144,084
September: 130,430
October: 177,113

Average Minutes Watched per Student per Month (Paid):

January: 189.5
February: 223.3
March: 232.0
April: 206.8
May: 179.7
June: 197.8
July: 185.2
August: 185.0

September: 154.9

October: 204.5

Conversion Rate Graph:

Number of Students Based on the Number of Minutes Watched:

0 Minutes: 18,771

0-5 Minutes: 8,428

5-10 Minutes: 2,044

10-15 Minutes: 1,202

15-20 Minutes: 855

20-25 Minutes: 593

25-30 Minutes: 526

30-40 Minutes: 1,036

40-50 Minutes: 1,164

50-60 Minutes: 580

60-70 Minutes: 421

70-80 Minutes: 309

80-90 Minutes: 227

90-100 Minutes: 188

100-110 Minutes: 163

110-120 Minutes: 138

120-240 Minutes: 594

240-480 Minutes: 186

480-1000 Minutes: 49

1000-2000 Minutes: 13

2000-3000 Minutes: 3

Free-to-Paid Conversion Rate Based on the Number of Minutes Watched:

- $\frac{\text{number of paying students}}{\text{number of registered students}} \times 100$

0 Minutes: 3.0%

0-5 Minutes: 2.3%

5-10 Minutes: 7.2%

10-15 Minutes: 8.8%

15-20 Minutes: 7.8%

20-25 Minutes: 12.0%

25-30 Minutes: 10.5%

30-40 Minutes: 15.4%

40-50 Minutes: 14.3%

50-60 Minutes: 18.6%

60-70 Minutes: 23.8%

70-80 Minutes: 22.3%

80-90 Minutes: 30.4%

90-100 Minutes: 28.2%

100-110 Minutes: 39.3%
110-120 Minutes: 45.7%
120-240 Minutes: 41.2%
240-480 Minutes: 16.1%
480-1000 Minutes: 6.1%
1000-2000 Minutes: 7.7%
2000-3000 Minutes: 0.0%

This means that about 560 students converted from free to paid without watching any content...

- $18,771 \times 3\% \approx 560$ students

...and about 42% of free students who have watched about 2 hours of content have converted to paying students.

- number of free students who converted to paid plan for buckets
 (110,120] and (120,240]
 number of students for buckets (110,120] and (120,240] $\times 100$
 - Example: bucket (110,120]
 $138 \times 45.7\% \approx 63$ students

Subscription Duration Graph:

Number of Students Based on the Number of Minutes Watched Post-Subscription:

0 Minutes: 164
0-30 Minutes: 220
30-60 Minutes: 153
60-120 Minutes: 239
120-240 Minutes: 343
240-480 Minutes: 382
480-1000 Minutes: 408
1000-2000 Minutes: 256
2000-3000 Minutes: 84
3000-4000: 55
4000-6000: 27
6000+: 7

Average Subscription Duration in Days Based on the Number of Minutes Watched Post-Subscription:

0 Minutes: 96.3
0-30 Minutes: 102.4
30-60 Minutes: 112.4
60-120 Minutes: 111.6
120-240 Minutes: 114.8
240-480 Minutes: 126.8
480-1000 Minutes: 134.2

1000-2000 Minutes: 158.1
2000-3000 Minutes: 166.1
3000-4000: 193.0
4000-6000: 200.3
6000+: 192.3

Actionable Insights and Recommendations

After analyzing 19,332 engaged students, we found that only about 11% are paying. To boost the number of paying students and overall engagement, we propose several strategies. Our registered-to-onboarding rate of 40-60% exceeds industry benchmarks, indicating strong initial engagement. We should focus on attracting more new students. Engagement has increased by 40% in recent months, with a 33% rise in engaged free students following an August promotion, highlighting the effectiveness of promotions. Targeted campaigns during low engagement periods, like the successful August peak, can significantly boost engagement.

Gamification introduced on September 16th raised the onboarding rate to 70%. By highlighting the benefits of earned points, we can enhance the free-to-paid conversion rate. Post-gamification, paying student engagement rose by 37%. Monitoring this trend is essential to ensure it's not a temporary effect. Students who watched more content were more likely to convert to paying students, with conversion rates as high as 45.7%. Increasing content consumption can lead to higher conversions.

Retention drops from 35% in the second month to 25% in later months. Enhancing the value proposition in the early months could improve retention. Low attempt and pass rates for career track exams suggest potential barriers. Investigating these issues and running A/B tests can help identify improvements. Despite low exam engagement, course ratings are excellent, averaging 4.79 stars, indicating that content quality is not the issue.

In summary, we recommend increasing marketing campaigns during low engagement periods, advertising gamification features to boost free-to-paid conversion rates and monitoring the impact of gamification on engagement to avoid novelty effects. Additionally, we should investigate and improve the career track exam process to increase pass rates and engagement and maintain high course quality while addressing any identified issues from low ratings.

Project Summary

We used MySQL to extract relevant data in the form of CSV files and Tableau to create a story-based [dashboard](#) for our analysis. Cohort analysis was employed to track student engagement levels, monitor retention rates, assess the effectiveness of marketing campaigns, and measure the success of new platform features. Understanding these metrics is crucial for subscription-based businesses, as they rely on recurring revenue from subscribers to drive increased overall business revenue over time.

Our analysis revealed that marketing campaigns are highly effective at attracting new students. Additionally, the gamification of the platform positively impacted engagement levels among paying students. Given this success, we recommend advertising gamification features to free-plan students to spark their interest and increase the free-to-paid conversion rate. To ensure this positive change is not merely due to the "novelty effect," we suggest continuous monitoring of paying student engagement.

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