

# *Calculating Free-to-Paid Conversion Rate with SQL*

*Dataset Source: 365DataScience*  
*Tools: MySQL.*

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# EXECUTIVE SUMMARY

*This project **analyzes the student funnel of an edtech platform using SQL.***

*The **funnel tracks three stages per student:***

- (1) Registration,***
- (2) First Engagement (first lecture watched), and***
- (3) First Purchase (first paid subscription).***

***Key Results (from SQL):***

- ***Total registered students: 40,979***
- ***Engaged (at least one watch): 20,778 ( $\approx 50.70\%$  of registrants)***
- ***Engaged cohort used for conversion (watch date  $\leq$  purchase date or no purchase): 20,255 (sanity-check passes)***
- ***Unique purchasers (overall): 3,138 ( $\approx 7.66\%$  of registrants)***
- ***Free→Paid conversion among engaged cohort: 11.3% (= 2,286 / 20,255) (only who purchased after engagement)***
- ***Avg. days: Registration → First Watch: 3.42***
- ***Avg. days: First Watch → First Purchase: 26.25***

***Notable drop-offs & anomalies:***

- *Registered but never engaged: 20,201*
- *Engaged but never purchased: 17,969*
- *Purchased with no recorded engagement: 329 (possible data logging gaps or atypical flow)*

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## OBJECTIVE & BUSINESS QUESTIONS

*The platform wants **to understand how students progress from registering to engaging with content and eventually purchasing a subscription.** The analysis seeks to:*

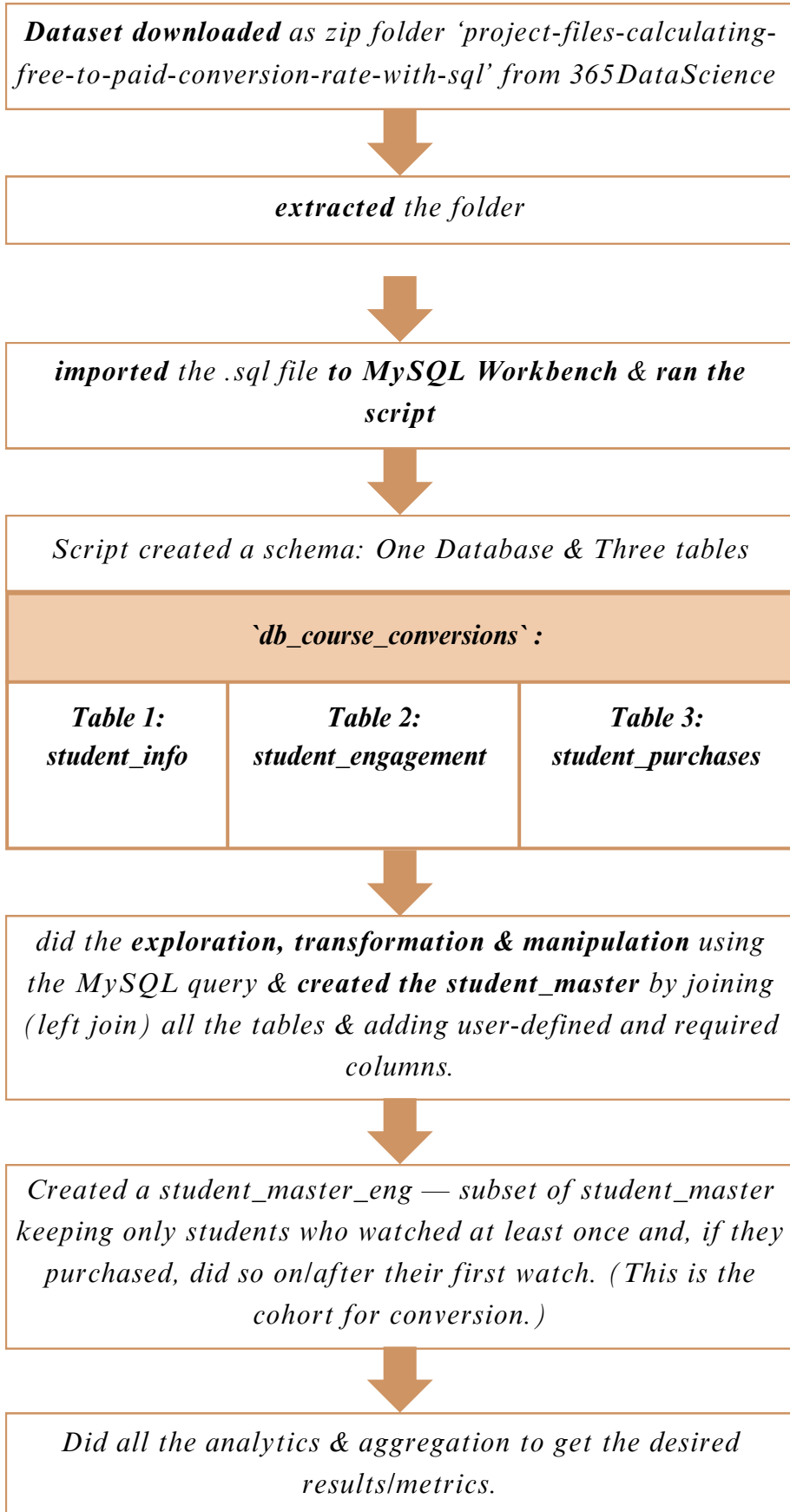
- *Quantify drop-offs at each stage of the funnel.*
- *Measure the conversion from engagement to paid.*
- *Estimate time-to-first-watch and time-to-purchase.*
- *Provide actionable insights to improve onboarding, engagement, and monetization.*



***Please visit the github url for complete project detail:***

***<https://github.com/payalgupta02/Calculating-Free-to-Paid-Conversion-Rate-with-Mysql>***

# PROCESS



***Why filter by order?** The project requires purchase to occur on/after first watch. Students who purchased first and watched later are excluded from the conversion cohort.*

# SQL PREPARATION

- **Master Table Creation** - Joining all the three tables with respect to the *student\_id* column:

```
Create table student_master
as
select
i.student_id,
i.date_registered,
min(e.date_watched) as First_date_watched,
min(p.date_purchased) as First_date_purchased,
datediff(min(e.date_watched),i.date_registered) as Date_diff_reg_watched,
datediff(min(p.date_purchased),min(e.date_watched)) as Date_diff_watch_purchase
from student_info i
left join student_engagement e
on i.student_id = e.student_id
left join student_purchases p
on i.student_id = p.student_id
group by i.student_id, i.date_registered;
```

- **Creation of Master Table Subset** - keeping only those *student\_id* records whose *first\_date\_watched* is not null + *First\_date\_purchased* is null or greater than or equal to *first\_date\_watched* (removing all the records where the *first\_date\_watched* is null+ *First\_date\_purchased* is before *First\_date\_watched*):

```
Create table student_master_eng
as
select * from student_master
HAVING First_date_watched is not null
and (First_date_purchased is null or First_date_purchased >= First_date_watched);
```

# 1. Free to paid conversion - 11.29

```
select
round(
count(First_date_purchased) *100/count(*),
1) as Free_to_paid_con
from student_master_eng;
```

# 2. Average Duration Between Registration and First Engagement - 3.42

```
select
Round(avg(Date_diff_reg_watched),2) as Average_Reg_Eng
from student_master_eng;
```

# 3. Average Duration Between First Engagement and First Purchase - 26.25

```
Select
Round(avg(Date_diff_watch_purchase),2) Average_Eng_Purch
from student_master_eng;
```

# FINDINGS

## **-Registrations:**

*Total registered students = 40,979.*

## **-Engagement:**

*Unique students who engaged (watched at least once) = 20,255 (~49.4% of registrants).*

*Non-engaged registrants = 20,201 (~49.2%).*

## **-Purchases (Overall):**

*Unique purchasers = 3,138 (~7.66% of registrants).*

*Purchasers without any engagement = 329 (~10.5% of purchasers).*

## **-Purchases (Engaged Funnel Only):**

*Engaged students who converted to paid = 2,286.*

*Free→Paid conversion rate among engaged = 11.29%.*

*Purchasers who engaged but purchased before their first engagement date  $\approx$  523 (~16.7% of purchasers).*

## **-Timeline Metrics:**

*Avg. days from registration → first engagement = 3.42 days.*

*Avg. days from first engagement → first purchase = 26.25 days.*

# INTERPRETATION

## **-Registration vs Engagement Gap:**

*Nearly half of the registered students (20,201 out of 40,979) never engaged with any content. This suggests that the onboarding or initial motivation to interact with the platform is weak.*

## **-Engagement Funnel Drop-off:**

*While ~49% of registrants engaged, only ~11.3% of them converted to paying customers. Engagement helps, but it is not sufficient to ensure purchase — other friction points likely exist.*

## **-Purchases without Engagement:**

*The presence of 329 purchasers who never engaged and ~523 who purchased before first engagement indicates anomalies in user behavior or data capture. Some users may be “ready-to-buy” without free exploration, while others may face tracking inconsistencies.*

## **-Time to Engagement & Conversion:**

*Students take, on average, 3.4 days to engage after registering, indicating a delay in initial interaction.*

*The long 26-day average gap between first engagement and purchase suggests that purchase decisions are slow — learners likely want prolonged free use before paying.*

## **-Overall Conversion is Weak:**

*Only 7.7% of total registrants become paying students.*

*This highlights inefficiencies in converting the large top-of-funnel into revenue.*

# RECOMMENDATIONS

## **-Strengthen Onboarding Experience:**

*Introduce immediate post-registration nudges (welcome email, quick-start video, sample lessons).  
Use gamification (streaks, progress bars) to push users into first engagement faster (<24 hours).*

## **-Target Non-Engagers:**

*Re-engagement campaigns (emails, WhatsApp, push notifications) for the ~20k registrants who never engaged.  
Offer incentives such as free trial lessons or live demo sessions.*

## **-Shorten Engagement-to-Purchase Gap:**

*Introduce limited-time offers or discounts within the first week of engagement.  
Use in-app reminders highlighting premium benefits while engagement is fresh.*

## **-Optimize Conversion Funnel:**

*Track and analyze the ~523 students who purchased before engaging to understand motivation — replicate that journey.  
Investigate the 329 non-engaged purchasers for data quality issues or edge-case buyer personas.*

## **-Cohort-Based Retargeting:**

*Segment users into: never engaged, engaged but unpaid, engaged and converted.  
Build targeted campaigns: e.g., free learners who watched >5 lessons but never purchased are prime upgrade candidates.*

