

## INFLUENTIAL FACTORS FOR HIGH RATINGS OF EDUCATIONAL APPS\*

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### Abstract

Mobile applications are an integral part of our lives. As mobile applications proliferate, so do the number of categories and their functionalities to meet different needs. Increasingly, people are turning to mobile apps to help them learn things. The chosen data set for the study contains data on downloads, reviews, and ratings of educational apps. Data was analyzed by using Microsoft Power BI tool, charts was created to better understand the popularity of the educational mobile applications. Analyzing the data and looking at ratings, scores and downloads of the mobile apps, it was found that language learning apps are more popular and have more reviews or better ratings than other types of educational apps. And, according to the theory, the choice of apps is determined by their appeal and rating, which is how users choose their mobile apps. A high rating indicates a high-quality mobile app.

**Keywords:** *learning tools, educational apps, e-learning, app ratings*

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### 1. INTRODUCTION

These days, when technology has taken over the world and our daily lives, touchscreen mobile devices (eg, smartphones, tablets) have become ubiquitous for young children (Griffith et al., 2020), of course, such devices are used not only by children, but also by adults. As the popularity of smart devices continues to grow, the usage of mobile apps also sees a significant rise. In today's world, people rely on a multitude of apps for various purposes, such as ordering services, shopping, communication, and even learning. This rise in learning apps popularity can be attributed to the numerous features that make them attractive, including their portability, affordability, and ease of use. In this article, we will explore key features that determine high rating educational apps and whether app categories have an influence of app ratings.

#### 1.1. App categories

There are two main operation systems for most portable and probably most used devices, such as tablets and smartphones. These two operation systems are Android and iOS. Both operation systems have their own app stores. Android operations system has Google Play, iOS has App Store. In Google Play app store, apps can have categories and tags that help search for and discover the most relevant apps (Google Play Console Help, 2023). According to Google Play Console Help, there are 33 categories in Google Play store. According to App Store information, they have less categories that have broader descriptions, but it's possible for app publishers to add two categories for an app. At the

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moment they state that there 27 categories. A lot of people also have laptops that are easy to carry anywhere, and they can have one popular operation system that wasn't mentioned – Windows. However, phones are tablet are easier to pull out in any situation, anywhere. Even though there are a lot of app categories, not all of them get the same kind of attention from users. According to Statista 3rd quarter of 2022 data on Google Play app categories, 5 most popular app categories are: games, education, business, tools and entertainment. Furthermore, app categories can be decomposed into sub-categories. Focusing on the Education category, education apps can have lots of features, but it is common to divide them by the principal tuition purpose those apps are standing for: language leaning apps, corporate learning management systems, remote tuition platforms, education mobile apps for kids, learning apps for disabled people, learning apps for adults, and test prep apps (Altamira, 2020).

### **1.2. App ratings and review**

Nowadays there are millions of apps to choose from. The variety of them might be overwhelming. There is an app for everything and that can be viewed as a good thing, cause anyone with an access to a phone or a tablet can get help on basically anything, but it might be hard to choose an app and know which one is the best for certain needs and wants. App ratings and reviews come in handy when choosing an app. Apps with positive reviews have higher visibility and sales in the app store. Reviews help users choose which app to use and express their satisfaction or dissatisfaction through free text and star ratings (Maalej et al, 2015). User involvement, such as leaving ratings and reviews, is an important way to get feedback on software quality and identifying missing features (Maalej et al., 2015). The review might be more informative and can help developer notice bugs, but ratings can be more noticeable at first glance when looking at long lists of apps. Mahmood (2019) also mentions that before downloading an app, people usually prefer to download apps with high ratings, because that indicates that apps have higher quality.

### **1.3. Influential factors for apps ratings**

There are numerous factors that could determine why an app got a certain rating from users. Mahmood (2019) did research on factors that identify the influence of various factors of apps on Google Play app ratings. According to his research the most influential variables that also have high impact on the ratings of the apps are number of reviews, genre, character amount in the name of the app, app size. According to Mahmood (2019) research, categories also had a high impact, but didn't make it to top 5 most influential factors for app ratings, but looking at the data he had, it seems like app genre is almost the same as category – all apps, besides games, have the same name for category and genre. There are only different genres for games category apps, for example, adventure, action, arcade. Keeping that in mind, it seems that the category of the app is important and makes quite an influence.

## **2. RESEARCH QUESTIONS AND METHODOLOGY**

This study addresses these research questions:

- What key features determine high rating for educational apps?
- Do app categories have an influence on app ratings?

In order to carry out the research, we perform literature analysis along with data analysis with Power BI. Data for analysis was taken from kaggle.com. Data set was last updated in March 2023. Kaggle is the world's largest data science community that has huge amounts of various data. This dataset, that was analysed for this article, contains all the stats of all top Education/Ed-Tech apps in Google Play Store. Data set contained the following data:

Title – mobile application titles.

Installs – how many installations the app had.

Score – is average ratings from app users on Google Play store.

Ratings – how many ratings were left for an app from users.

Reviews – the amount of textual feedback for the app from users.

Size – mobile application size.

Android Version – mobile application android version.

Developer – the developer's name of the mobile application.

Content Rating – indicators whether mobile application has any content restrictions regarding users' age.

Contains Ads – indicator of whether the mobile application contains ads.

Released – mobile application release date.

Updated – data of the last mobile application update.

Version – mobile application version.

### **3. RESULTS AND DISCUSSIONS**

As mentioned above, a Microsoft Power BI tool was chosen to analyse the dataset and run the report on various data streams. The following section will briefly discuss the results that were obtained during data analysis.

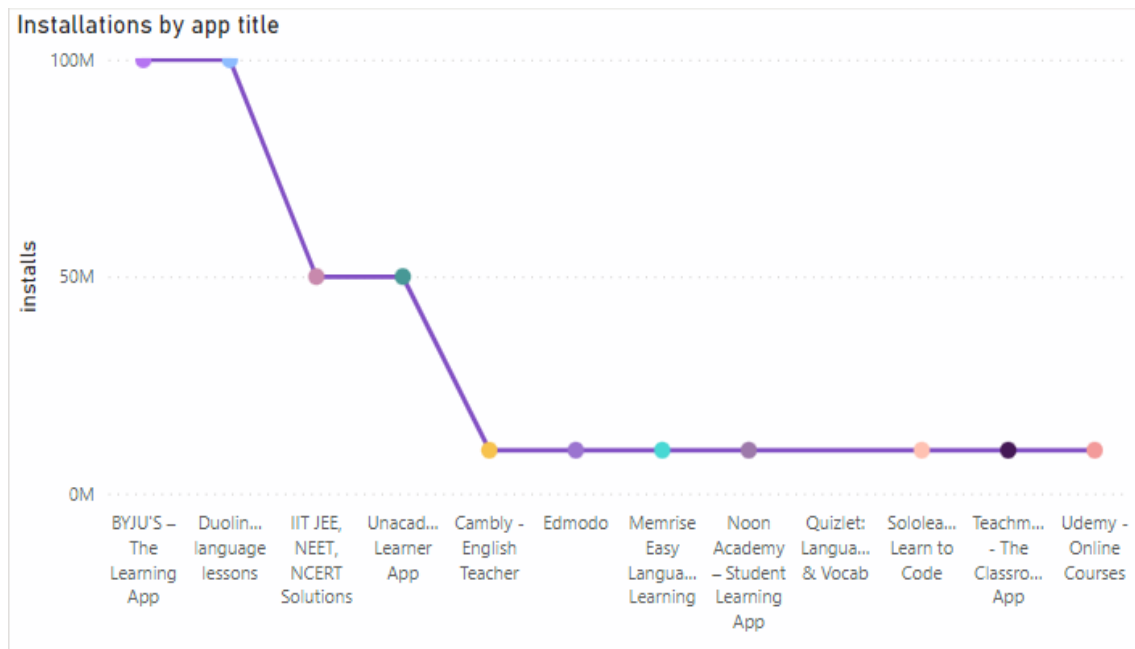
Further analysis was focused of apps with most installations, Top 5 mobile application apps with most installations were chosen in Power BI. A line chart was chosen to represent the 5 most popular mobile applications, x-axis represents installation amount, and y-axis represents the educational mobile application name. Figure 1 has more than 5 educational mobile applications, because dataset had installation numbers in thousands so the last 7 applications have the same amount of installations.

The line chart shows that there are two mobile apps that have the same amount of installations. One mobile application is for personalised study app for Math, Science and etc. the second one is for language learning.

Other popular apps are also for learning maths, science, and languages, and there are two mobile apps, one for learning to code and the other for different courses. In general, it seems like educational applications do get a lot of attention, they have a lot of installations.

To further look whether analysed literature and data that was analysed match, it was decided to look at the amount of reviews that the applications have.

Reviews can be not only good, but also bad, unfortunately that data was not available and would be too complicated to analyse. However, the amount of reviews can give us some insight too.



**Figure 1.** Line chart of mobile apps' installations

Figure 2 illustrates amount of reviews of most installed applications and it can be seen that some of the applications that had a lot of installations also had a lot of reviews (Figure 2) The app with the most reviews is the one for learning language. Not only does the Duolingo Language Lessons app have the highest number of reviews, but it also boasts the highest number of downloads. Conversely, an app for learning mathematics and other sciences has a significant number of downloads, yet relatively few reviews.

By analysing these data, an assumption of review nature can be made. In the analysed literature, it was mentioned that positive reviews make an app more visible and help users make a decision of whether it is worth installing them. In example of Duolingo app, that provides users possibility of learning languages, it can be guessed that most reviews are positive, cause not only that there are a lot of them, but the installations number supports a guess of positive feedback from the users.

Language learning apps also have pretty simple names and a short description next to the name, for example, language learning, language lessons, languages and vocab. Short, clear name and a few words about app purpose might have an influence on people installing them, choosing them from all the other and in some time maybe leaving a rating or a review. The length of the name is also mentioned in analysed literature as a factor on high ratings of apps.

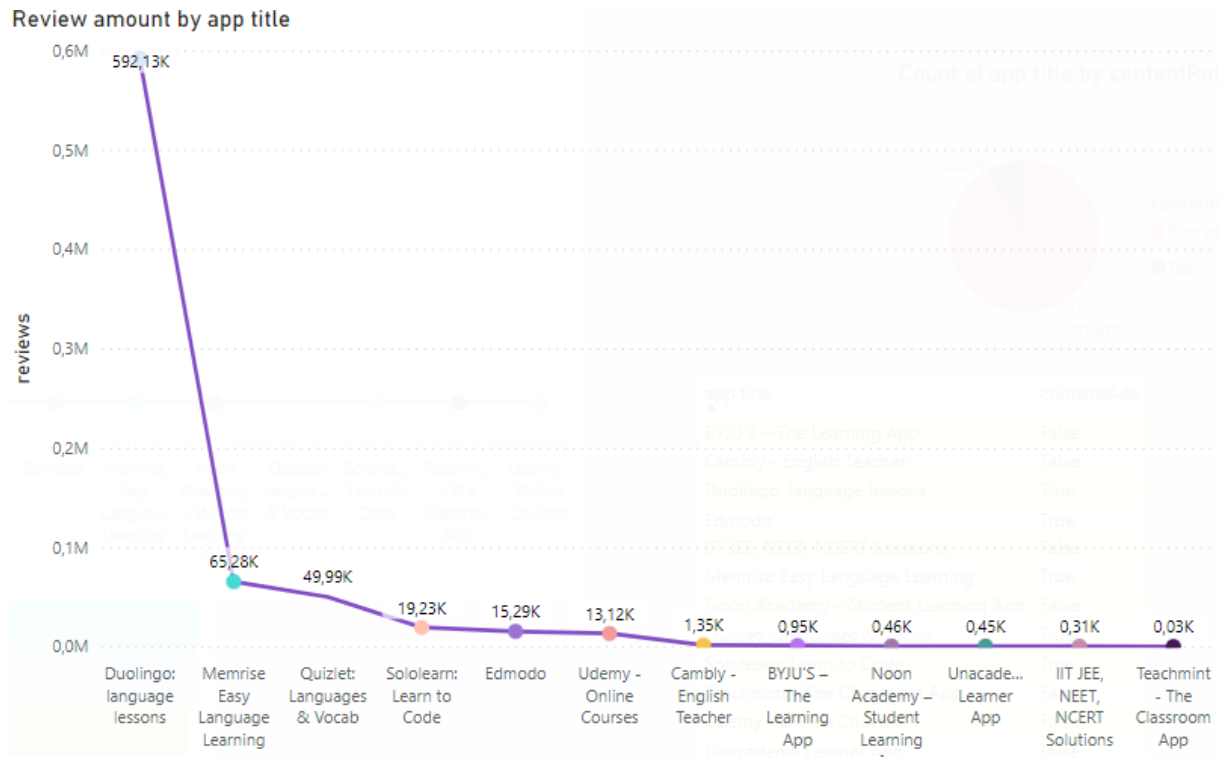


Figure 2. Line chart of mobile apps' reviews

Figure 3 illustrates ratings of most installed educational applications. The chart shows that the top three mobile apps with the highest ratings are for languages learning. Ratings are also very important, they are displayed close to the name of an app in Google Play, so people can easily assess whether an app gave good experience to other users and might help with distinction among other app.

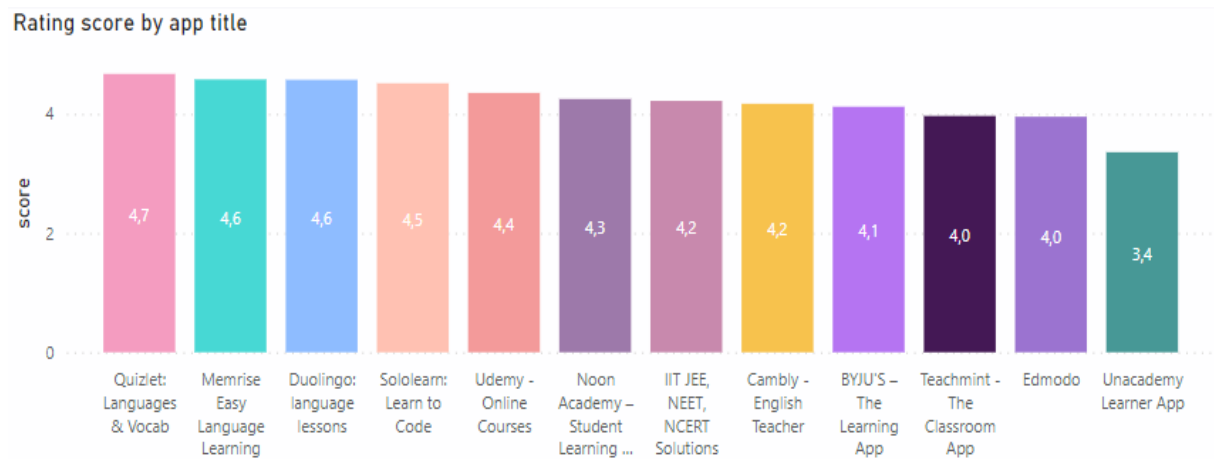
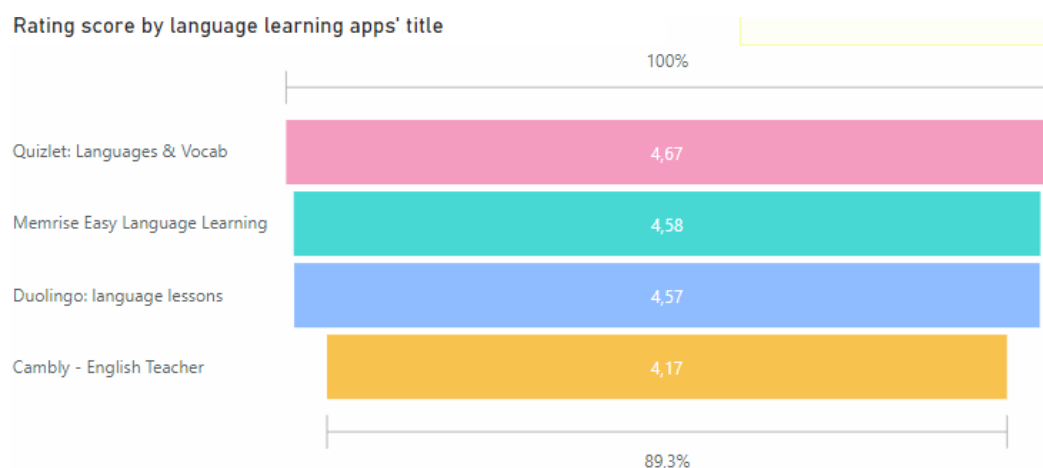


Figure 3. Stacked column house chart of the mobile apps' ratings by score

Figure 4 ratings of most installed language learning applications. Language learning applications also were among most installed and best rated among educational applications.



**Figure 4.** Funnel chart of the language learning apps

It's hard to make an assessment whether specific field learning had an impact on high installations number and also high ratings for language learning apps. Different genres for learning apps, as for games, would help to gain some insight whether some subjects of learning are more popular and favoured by users.

#### **4. CONCLUSION**

In conclusion, the use of educational mobile application is becoming popular due to their portability, affordability, and ease of use. While there are many different categories of educational apps, some are more popular than others. Based on literature analysis, app ratings, and reviews are important for users to make informed choices about which app to use, with positive reviews and ratings indicating higher quality. Our analysed data confirms that with educational apps.

According to the literature analysis, genre has a higher impact on app rating than category, but category and genre is the same as category with exception to games. Genre for educational apps would help to determine whether certain genres of educational apps are more popular and in demand, cause based on analysed data, it seems like language learning apps have higher score from users and more downloads than other educational apps. Also, an analysis of the data shows that several major language learning apps are leading everywhere, both in terms of downloads rating and views. Further research could analyse what other factors influences the choice of apps: appearance, functionality or maybe the realise date.

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## UTICAJNI FAKTORI ZA VISOKE OCENE OBRAZOVNIH APLIKACIJA

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### Izvod

Mobilne aplikacije su sastavni deo naših života. Kako se mobilne aplikacije šire, tako se povećava i broj kategorija i njihovih funkcionalnosti koje zadovoljavaju različite vrste potreba. Ljudi se sve više okreću mobilnim aplikacijama kao vid pomoći u učenju. Izabrani skup podataka za studiju sadrži podatke o preuzimanjima, recenzijama i ocenama obrazovnih aplikacija. Podaci su analizirani korišćenjem Microsoft Power BI alata, grafikoni su napravljeni kako bi se bolje razumela popularnost obrazovnih mobilnih aplikacija. Analizirajući podatke i gledajući ocene, rezultate i preuzimanja mobilnih aplikacija, otkriveno je da su aplikacije za učenje jezika popularnije i da imaju više recenzija ili bolje ocene od drugih vrsta obrazovnih aplikacija. Prema teoriji, korisnici biraju svoje mobilne aplikacije na osnovu njihovog izgleda i ocena. Visoka ocena ukazuje na visokokvalitetnu mobilnu aplikaciju.

**Ključne reči:** alati za učenje, obrazovne aplikacije, e-učenje, ocene aplikacija

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