Jippy

Your GP Teacher isn't the only one who croaks

CS3216 Final Project Report

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Overview

Jippy is an AI-powered tool designed for the latest SEAB A-Level General Paper (GP) syllabus to support Singapore GP students in mastering essay writing and current affairs.

Its key features are:

- **Article curation**: Jippy curates relevant news articles to help students stay informed and discover examples they might not have considered, streamlining the process of gathering evidence for essays.
- **Essay helper**: Jippy provides structured essay outlines with suggested news events and event analyses for a given GP essay question, guiding students in constructing coherent and persuasive arguments.
- **Essay feedback**: Jippy offers personalised feedback on essays, helping students identify strengths and areas for improvement in their essays to refine their writing skills over time.

Competitor analysis

Feedly

Feedly is a news application that allows users to create customised feeds for categories such as “Environment”. It then curates relevant articles from a wide variety of sources, from news agencies such as The Guardian to academic journals, for each feed for users to read the topics that they are interested in. Additionally, it also provides an AI-powered summary for each article to help users gain key insights efficiently.

Pros

Feedly’s pros include curating content from a wide variety of sources so that the user can conveniently learn from various sources using just 1 application. Additionally, Feedly provides AI feeds that can automatically and periodically curate content from various sources to update the user on events like “Product Launches” related to specific topics selected by the user, such as “Technology”. This helps the user to conveniently keep up to date on his specific topics of interest. Finally, Feedly generates a summary for each article so that the user can read articles faster and thus more efficiently keep up to date with the latest occurrences in his topics of interest.

Cons

However, Feedly has some cons that make it unsuitable for our target users. Firstly, Feedly does not distinguish whether multiple sources are reporting on the same event and thus might present the user with redundant information that the user has already read from another source. Furthermore, Feedly requires significant customisation and

configuration before it can provide curated feeds for the user and thus, the inertia for new users to Feedly is significant as a large amount of initial effort is required before the user can benefit from even the basic feature of reading articles that are organised by topic.

Comparison with Jippy

Jippy is better as it provides new users with a basic feed that presents curated news articles on various topics without much configuration, which lowers the barriers of entry for new users and allows them to benefit from Jippy without putting in effort into customisation. Moreover, Jippy uses generative AI to provide not only summaries for each article but also suggested essay points for a given General Paper essay prompt using examples extracted from that article. This increases the value of Jippy as compared to Feedly for our specific target users since they can learn how to craft compelling arguments with article content using Jippy instead of just gaining knowledge about current affairs.

Notion AI

Notion is a note-taking platform that offers its own AI writing assistant. Notion AI is able to generate ideas for a given topic and create content given a description or list of the user's requirements.

Pros

Notion's pros include the ability to generate ideas for any given topic so that it can be used for other purposes besides GP revision. Even in the context of GP revision, Notion AI can generate ideas and points for a given essay topic or essay prompt so as to help a student plan his essay content. Additionally, as a note-taking platform, Notion can be used to curate not only news articles but also videos and personal notes to help in a student's revision, making it a versatile tool for studying.

Cons

That being said, Notion also suffers from some cons that make it unsuitable for all use cases. Firstly, Notion's AI assistant does not have access to current affairs and thus is unable to generate substantiated arguments or points based on real-world events that a student can use in a GP essay. Students will have to source for real-world examples to substantiate the points generated by Notion and cannot directly learn how to craft substantiated arguments using Notion, undermining Notion's utility when studying for GP essays. Additionally, while Notion is a versatile tool for studying, it is not suited to GP revision as Notion is unable to curate content automatically for users but instead, requires users to organise content in Notion themselves. As such, using Notion to revise for GP is

cumbersome as students will have to manually identify relevant examples from news articles for each topic and organise the examples accordingly.

Comparison with Jippy

Jippy is better for our target users, who are students revising for GP, because Jippy's AI is augmented with current affairs and is instructed to generate substantiated arguments backed by real-world examples when given an essay prompt, as required in a GP essay. Our target group is thus able to learn how to craft substantiated arguments using Jippy, which is not possible with Notion and thus makes Jippy the better product. Moreover, Jippy automatically curates the latest events based on the user's selected topics and provides a summary of key details for each event. This allows the user to efficiently bolster their knowledge in specific topics instead of simply collating and organising information like with Notion. The user can also tailor the presented events to the topics frequently tested for GP essays, thus making Jippy much more meaningful for the use case of GP revision as compared to Notion.

HyperWrite

HyperWrite's AI Essay Writer tool is able to generate persuasive essays that are supported by real-world events based on any given topic. The tool can research and reference information related to the given topic to construct a structured essay with an introduction, body, and conclusion.

Pros

HyperWrite's pros include the ability to research and reference related information and craft essays that are substantiated by real-world examples. This allows students to generate sample essays for a given essay prompt that they are currently revising for so that they can learn how to use examples to support essay points and read about real-world events related to their topics of interest that they can use in their GP essay during exams. Additionally, students can learn how to structure their essays in the standard introduction, body, and conclusion format by reviewing the sample essays generated by HyperWrite, thus improving their essay writing skills in preparation for their GP exams.

Cons

However, HyperWrite has some cons when used in the context of GP revision. Firstly, the AI Essay Writer cites examples from a wide variety of online sources, including LinkedIn and individual company websites, as substantiation for its arguments. Unfortunately, some of these sources are not credible and thus the examples provided are unsuitable for

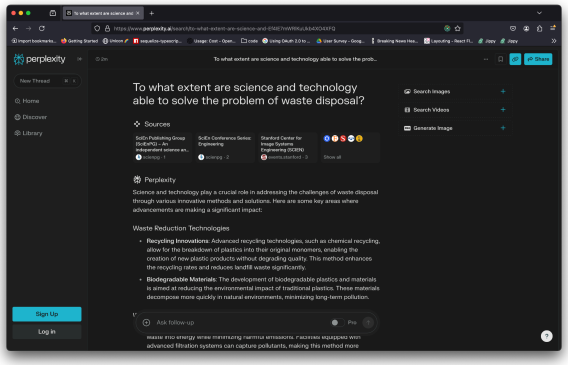
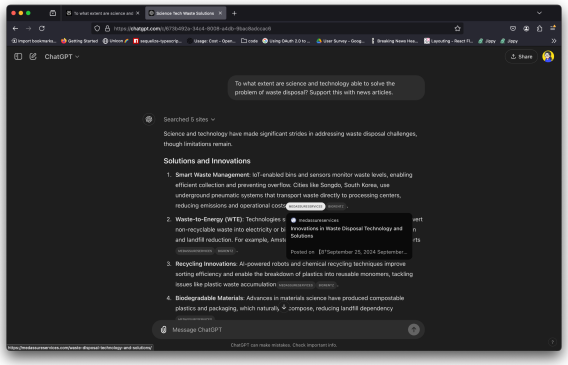
use in an argumentative essay that is written for GP. Using essays generated by HyperWrite can therefore cause misinformation for students, undermining the utility of the tool for GP revision. Students would then have to be mindful of fact checking the examples referenced by the tool, which makes their revision more difficult. Additionally, HyperWrite cannot curate news events based on the user's needs, which limits its usefulness for our target group of students who need to expand their understanding of various GP topics. Students will have to use another tool or means of keeping up to date with current affairs in order to garner sufficient relevant examples for use in their GP essays.

Comparison with Jippy

In comparison, Jippy is a better product than HyperWrite's AI Essay Writer because firstly, Jippy provides an updated, curated news feed that is tailored to a student's interests, which HyperWrite doesn't provide. This is an essential feature for students to be well-prepared for GP essay writing given the wide range of topics and essay prompts that can be tested during exams. Thus, with Jippy, students can not only access well-substantiated essays for a given essay prompt to improve their essay writing, but also progressively build up a wealth of real-world examples in various GP topics that they can use to strengthen the arguments presented in their GP essays. Furthermore, Jippy generates argumentative essays that are substantiated with examples taken from credible news sources and not just any online sources like with HyperWrite. As such, students can rely on Jippy to provide credible real-world events that they can learn and use in their actual GP exams, increasing the utility of Jippy for GP revision.

LLM applications with web search

Besides the competitors listed above, there are at least two more from the broad category of LLM applications with web search capabilities:

Perplexity (example)	ChatGPT (example)
	

LLMs with web search capabilities are key competitors that come closest to matching the strengths of Jippy's essay helper feature that generates essay outlines and relevant examples. These LLMs share similar pros and cons, which are explained below.

Pros

Such LLMs are able to generate convincing topic sentences and accompanying analyses that are supported by examples found from the Internet. Depending on the online sources used, the result can match Jippy's essay helper output, especially since Jippy generates its essay outline using an LLM as well.

Moreover, like Jippy, these LLMs can generate the essay outline within seconds and thus, conveniently provide the topic sentences and relevant examples that students are looking for when writing an essay. In this sense, these LLMs can somewhat fulfil this particular pain point that Jippy is targeting.

Cons

Without additional prompt engineering by the user, the quality of the online sources used as supporting examples can vary widely from question to question since these LLMs are not trained to evaluate the credibility of online sources fetched from web search. This undermines the utility of these LLMs for our target group of GP students since SEAB mandates the use of credible examples in GP essays in order to be awarded a high score. For instance, these LLMs sometimes cite blogs instead of news agencies that validate their source of information, which can cause the suggested examples to be exaggerated or worse, untrue. Such examples will harm a students' essay content score if used in a graded essay and thus, these LLMs are unideal for GP revision.

These LLMs organise information in the form of 'chats' or the like. Consequently, the knowledge provided is scattered across multiple chats and cannot be consolidated through the LLMs' interface. This can lower the efficiency of students' revision due to the overhead of browsing through multiple chats to read all of the knowledge saved within the LLM thus far.

Comparison with Jippy

Jippy distinguishes itself from LLMs that are augmented with web search capabilities as it does not have the major issues described above.

Firstly, Jippy always provides up-to-date, credible information since it uses Retrieval Augmented Generation to identify relevant, recent examples from news agencies only. Given that CNA, which is our current news provider for Jippy, employs editors to fact

check details published within all their articles, Jippy is guaranteed to provide credible examples that students can use in their GP essays even in the exam to boost their essay content score.

Additionally, Jippy's essay helper organises essay outlines according to the essay question given by the student. This is more intuitive in the context of GP essay writing since the topic sentences and relevant examples provided by Jippy are associated with the corresponding essay prompt. As such, this organisation can streamline GP revision for students who are reviewing suggested essay outlines.

What makes Jippy special

There are many AI-powered applications that can provide generic versions of Jippy's capabilities using AI, such as Grammarly/Notion AI as the counterparts for essay writing and LLMs with web search as the counterparts for our essay helper feature.

In comparison, Jippy is outstanding and **unique** when used for GP revision since its features are optimised for the specific needs and experiences of our target users: GP students.

This is achieved by firstly, building our suggested event analyses and essay feedback features to match the requirements in the latest SEAB GP syllabus. Most notably, since the latest syllabus now requires explicitly linking the examples provided in a GP essay to relevant concepts, the event analyses have thus been adapted to provide relevant analyses for how a given news event relates to specific concepts that can be applied in some GP essay questions or topics. The essay feedback feature also utilises the actual grading bands used by SEAB for evaluating GP essays to identify the strengths and suggested improvements for a given student's essay with consideration for the new conceptual analysis requirement. Hence, Jippy's features are designed to prepare GP students for the specific requirements of the GP essay paper. This differentiates Jippy from other AI applications, which require adjustments like prompt engineering to match Jippy's utility or only sometimes provide output that is relevant to the specific context of the GP essay paper.

Besides providing suggested conceptual analyses, the news events feature is further tailored to the requirements of the GP essay paper by providing news curation. News events can be filtered by GP topics, the same ones given in the GP exam, as well as whether the event is Singapore-based or international. This enables GP students to build current affairs knowledge in specific GP topics that they prefer to write on in the exam and prepare for 'in your society' GP essay questions that require Singapore-based examples for Singaporean students. Therefore, the design of the news events feature

uniquely caters the news curation to the format of the GP essay paper, unlike other news applications that filter the news feed in ways that do not aid GP revision.

On the other hand, the essay helper feature is similarly designed to fulfil the requirements of the GP essay paper. Given that the GP essay paper requires students to provide accurate examples to support essay arguments, the essay helper is therefore designed to find only relevant examples from credible sources. More specifically, hallucination of the LLM when providing examples is minimised and examples are exclusively fetched from a news agency. This ensures that only credible information that can substantiate essay arguments and are acceptable in the top GP essay grading bands are given to the user. Jippy thus best supports GP students in their essay writing as compared to other AI-powered applications, which do not guarantee the credibility of information that is generated by the LLM.

Review of milestones and timeline for the project

Since Jippy is a continuation of our A3 project, by the time we began, we had a working prototype with some basic features. Our goal, coming into the final project, was to implement a more comprehensive set of features that fit well together in aiding students in studying for General Paper.

Sprint 1

Sprint 1 consisted of implementing more key features that we felt would be useful and fits well with the other existing features. Along with implementation, we also did a "soft-launch" of our app as part of user requirement gathering, and reaching out to students across different channels.

Tasks completed	**Description**	**Remarks**
Bug fixes	Fixed ~10 bugs identified from A3 and minor UI enhancements (mainly for mobile responsiveness)	
User requirement gathering	"Soft-launched" the app by through SGExam's Discord channel and reaching out to Marcus' JC GP tutor to - Identify pain points and validating assumptions related to problem statement - Get user feedback on existing and planned features	Gained ~45 new users. Identified a few issues such as friction in reading news (frequency, consistency) and study habits. Also identified students' sentiment about upcoming

		features which was mostly positive (students think that the existing and planned features could aid them in their GP revision)
Notes and Annotations	Implemented highlighting on event analysis and adding annotations of highlighted text. These notes can be categorised and reviewed on a separate page.	Notes highlighting extension was shifted to Sprint 1 (was initially planned for Sprint 2)
Free Tier + Rate Limiting	Implemented free user access tier, along with limits on usage of Essay Helper feature to 3 questions/week	Implemented in view of upcoming user testing/launches in future sprints
In-your-society questions	Implemented LLM-based detection for questions that require local society context and filtering of Singapore-based examples for Essay Helper from our vector database.	
Prototype for AI Essay Grader	Implemented a basic prototype for grading essays, giving up to 4 comments.	Shifted from Sprint 2 to Sprint 1

Sprint 2

Sprint 2 was noticeably more revamp heavy. This is a sprint where we felt that we already had sufficient features, and we needed validation on their efficacy. Through consultations with domain experts (GP tutors), we identified a few foundational issues which led to a major revamp.

Tasks completed	**Description**	**Remarks**
Discussion with domain experts	Had a meeting over zoom with ex-Hwa Chong GP tutor, Martin, to discuss Jippy's current stage and its efficacy in aiding students for studying GP	
Concepts (replacing Analysis)	One of the major revamps of the sprint. After discussing with Martin, and in light of the new General Paper	This revamp took the bulk of Sprint 2. The prompt engineering and

	syllabus, our existing analysis did not provide a meaningful way to learn or improve at GP. As the new syllabus places much more emphasis on making connections between different overarching ideas and concepts, we shifted our focus to assisting students in making such connections from reading a news article.	restructuring our app almost entirely (as all features were linked to Analyses one way or another) took a lot of effort.
Home Page Revamp	Implemented a new homepage where Jippy's 3 core features are communicated more clearly on user's entry to the website.	Revamped in view of A3 feedback
Seeking UI/UX advice	Discussed with an ex-3216 student and UI/UX expert to further refine our layouts and clarify doubts about existing UI/UX choices	
AI Essay Grader	Continued to develop our prototype from Sprint 1, adding on a capability to generate examples for paragraphs that were lacking in examples. We also integrated the SEAB marking scheme to further ground our language model and to give more consistent output, closer to what a GP tutor might give.	
Stripe Integration + Premium Tier	Implemented stripe payment for premium tier. Added a paid subscription to allow users to increase their question and essay grader limits per week	
Parallelisation	Implemented parallelising in the backend to speed up the process of generating examples in essay helper and essay grader, reducing waiting time significantly (from ~60 seconds to ~15 seconds)	

Sprint 3

The tasks completed in this launch are done in preparation for our official beta launch, a few days before the General Paper essay A Levels.

Tasks completed	Description	Remarks
UI/UX refinements	Further refinements to UI/UX, primarily on feature discoverability and curated/daily articles on the homepage. Tweaked some mobile view UI/UX such as the sidebar	
Email Verification	Implemented email verification to ensure users sign up with valid emails	In preparation for beta launch
Article filtering	Implemented a LLM classifier to filter out articles that are unlikely to be insightful or useful as examples for GP (e.g - score reports on sports, celebrity news)	
Article curation	Implemented a LLM curation system to generate a curated list of top articles as “weekly picks”.	
Marketing	Reach out to potential publicity channels ● Subreddits (r/SGExams, r/SingaporeRaw, r/Singapore) ● Sneaking in reddit comments and shilling ● Through Marcus’s GP tutor ● Posted on KiasuParents	
Beta Launch	Officially launch the beta of Jippy on LinkedIn	

Final sprint

In our last sprint, we aimed to minimise adding new features and instead prepare for STePs by refining the existing features and fixing as many issues as possible. We implemented our last proposed feature - content regeneration, and proceeded to refine existing features.

Tasks completed	Description	Remarks
Content Regeneration	Implemented regeneration of examples or topic sentences in the Essay Helper through banning existing generated points on the page.	Moved from Sprint 3 to 4
User-provided topic sentences	Implemented ability to take in user provided topic sentences and generate examples and elaborations (primarily for students who are already capable of forming their own ideas but want more examples)	
Landing page revamp	Revamp landing page to showcase features better and make problem statement clearer	
STePs Preparation	Create the poster and video for STePs. Planned our pitch for the day of, and made stickers as part of our “advertisement” Also built a GP question list and random picker (/steps/toolbox) to support our demo.	
STePs	Showcased and pitched Jippy to judges and visitors	

Individual contribution and roles + Acknowledgement of help

Name	Contribution
Chloe	Frontend development, UI/UX, branding, “full” stack
Haoyang	Frontend development and some backend implementation to support the frontend
Marcus	LLM integrations, Prompt Engineering, “Full” stack
See Leng	Full stack development, deployment

Acknowledgement of help

We would like to thank...

- **Uncle Soo**: For meeting us every two weeks to give us advice and feedback, giving us a LinkedIn shoutout, and money for OpenAI credits, and for taking us, a bunch of diversity hires, in.
- **Martin**: For meeting us and helping give feedback on Jippy's initial offerings of LLM analysis. It was useful - helped us start thinking about Jippy's philosophy (a cheatsheet or a learning tool?) and improved our analysis with the idea of "concepts".
- **Justin:** For taking the time to analyse our app and providing us with feedback on how to improve our UI/UX for many of our features and our homepage

Application design

Jippy is a web application composed of FastAPI backend and Next.js for our frontend. It is deployed on a digital ocean droplet, with an Nginx reverse proxy (along with Let's Encrypt for free SSL certificates).
A high level design can be found in figure 0, but do note our staging environment (a duplicate of both frontend/backend deployments) is not drawn for simplicity.

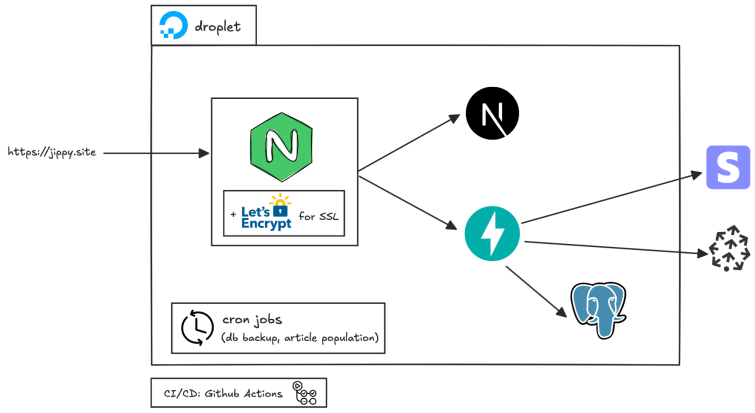


Figure 0: Jippy's architecture diagram

Frontend architecture

- **Next.js**: Our team was mainly familiar with React, so we were choosing between frameworks like Next.js over barebones alternatives (Vite). We chose Next.js for its feature set (App Router, image optimisation, SSR...) and it is older and more mature than its competition (Remix). TypeScript was used to enforce type safety.
- **TailwindCSS**: Utility first CSS framework. We could customise Jippy more easily than UI frameworks (Material UI/Chakra) and it is a lot more maintainable than writing inline styles.
- **Shadcn**: With pre-made customisable components, we can save even more time when developing the frontend.
- **Other notable libraries:** We used *zustand* for state management, *zod* for validation, *hey-api* for autogenerating clients from our backend's OpenAPI spec.

Backend architecture

- **FastAPI/Python** was an **intentional** choice for Jippy's REST API.
  While it may be valuable to keep our backend in the same language (TypeScript), *Python* is more suited to Jippy's data related work, like web scraping/parsing of data and possibly future machine learning related work.
- **Other notable libraries**: *langchain* for interacting with LLMs, *sqlalchemy* for our database ORM and *stripe* for billing, *httpx* for requests

Database schema (source)

We know there are a lot of tables. The gist is: *(where **bolded** are tables)*

- an **article** has many **events** (old example analysis) / **concepts** (after revamp). A user can **like** a generated concept, **bookmark** them, take **notes** and **read** articles. An event has **categories**. There are **top articles** for the week.
- **users** can submit a **user question**, which will return an **answer** that has **points** which either have a **fallback** or linked to an **article concept** (an example after revamp)
- **users** can submit an **essay,** which has **paragraphs**, which have **comments**, which a user can **like** to give feedback.
- **users** can **reset their password** and **subscribe** to upgrade their account.

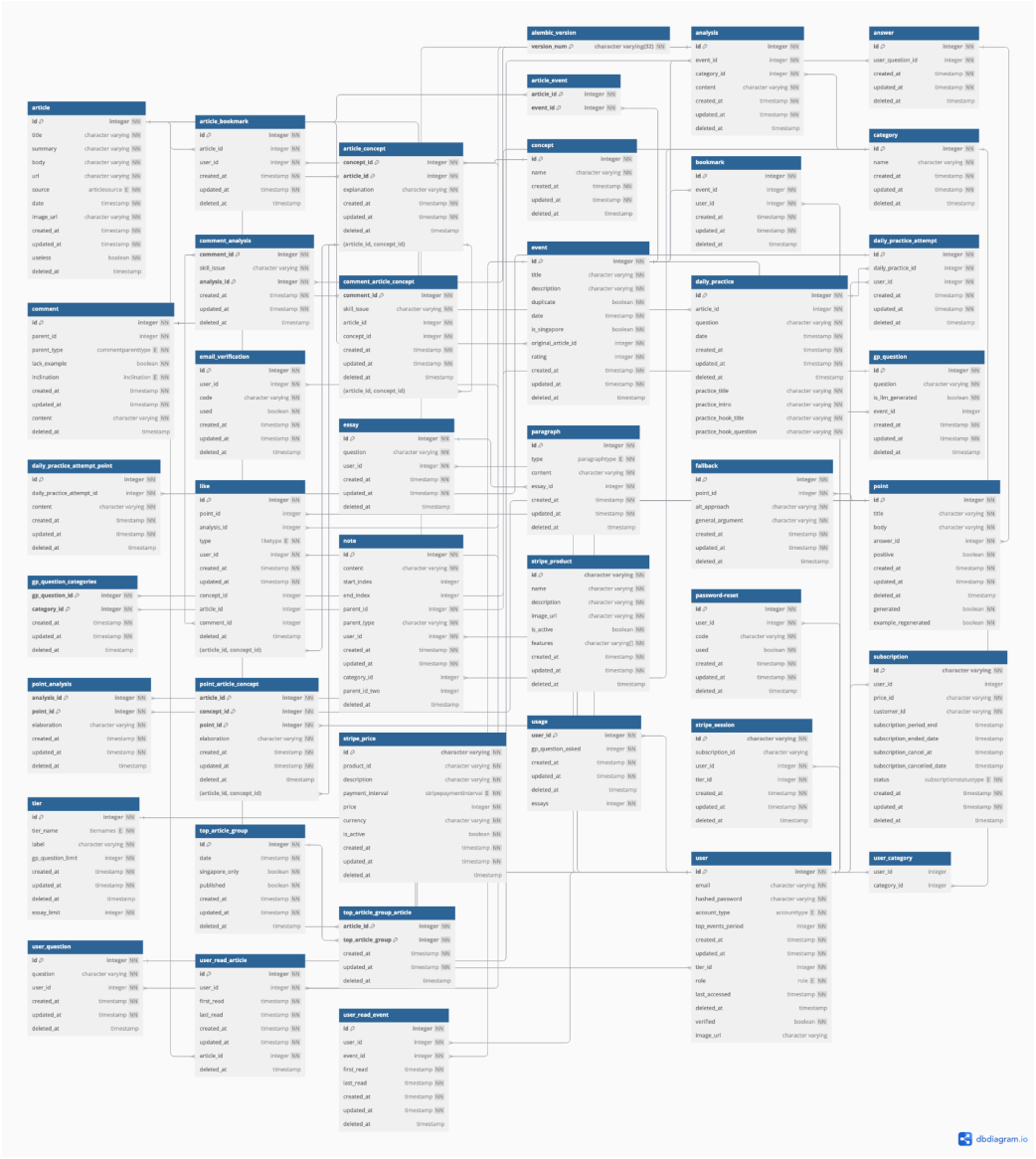


Figure 1: Jippy's database schema

Current user base

As “luck” would have it, Jippy’s timeline aligned *perfectly* to our target audience’s most desperate time. We did two separate launches for Jippy, a mini-launch right after the conclusion of our Assignment 3 project, and another one just a few days before the actual A-Level General Paper. While the launch did not go exactly as planned, we tried to improvise around the restrictions (via “coordinated brand affiliate marketing” attempts) and surprisingly, got a decent number of users (>300 users in just 1-2 days).

A cursory scan of our user database revealed that most of these new users are JC2 students (unsurprisingly), though there are also a number of new JC1 users. This highlights that there is a market for EdTech products like Jippy in Singapore (even outside last minute revision).

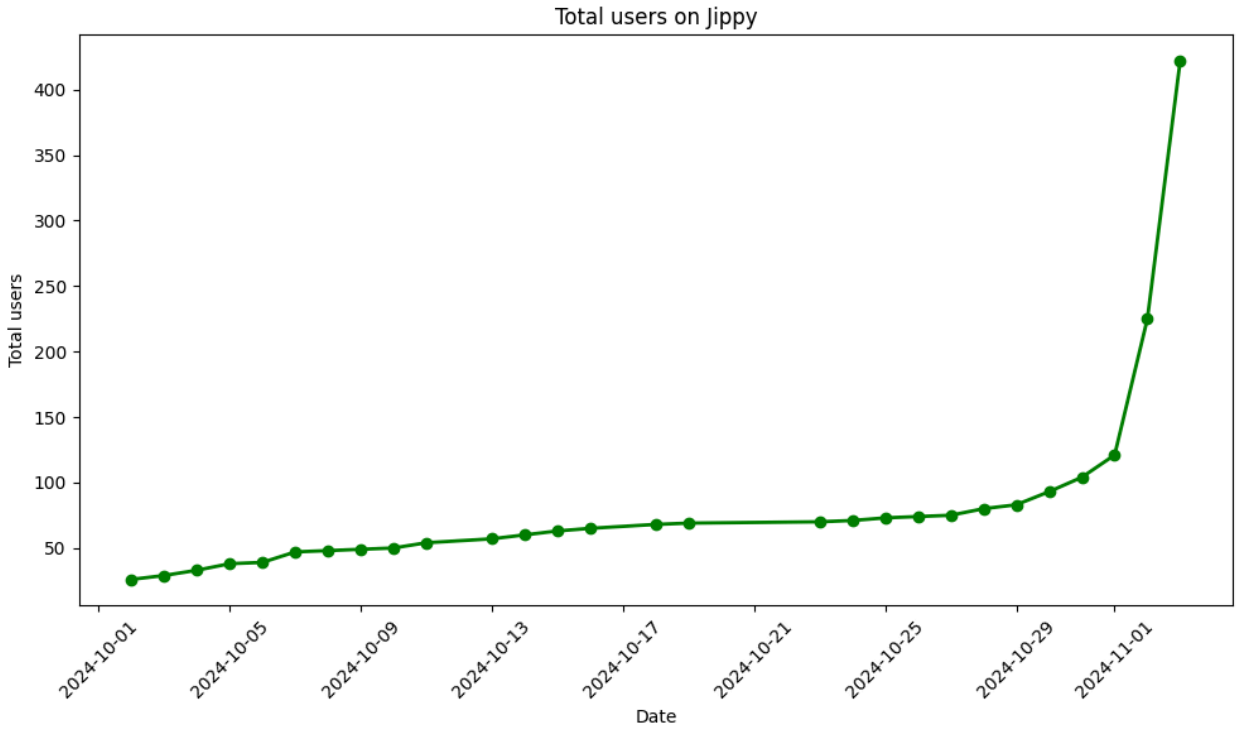
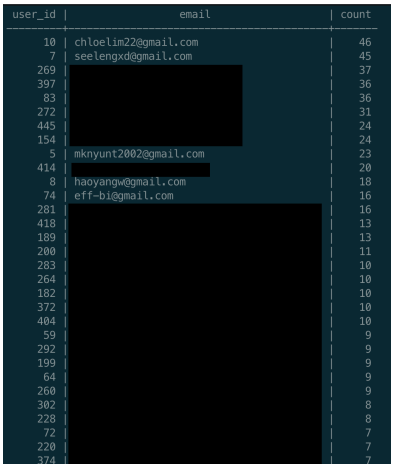


Figure 2. Jippy’s user count graph

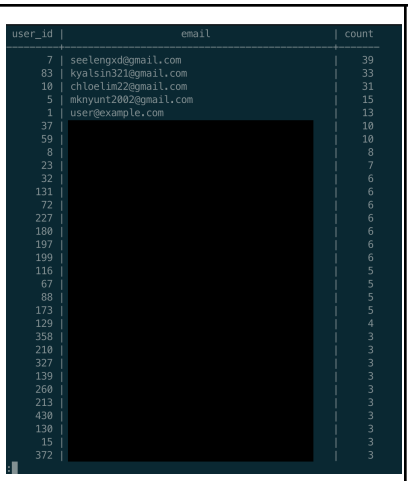
What’s perhaps more encouraging is that we have observed a handful of regular, repeat users who have been using our application rather consistently (since the first launch in end-September). This was tracked manually using our user “last_accessed” DB field (we didn’t have time to implement more robust tracking)- but we observed 2-3 pretty regular users logging on on an almost daily basis for a few weeks (on top of our other more “ad-hoc” users).



user_id	email	count
10	chloelim22@gmail.com	46
7	seelengxd@gmail.com	45
269	[redacted]	37
397	[redacted]	36
83	[redacted]	36
272	[redacted]	31
445	[redacted]	24
154	[redacted]	24
5	mknyunt2002@gmail.com	23
414	[redacted]	20
8	haoyangw@gmail.com	18
74	eff-bi@gmail.com	16
281	[redacted]	16
418	[redacted]	13
189	[redacted]	13
200	[redacted]	11
283	[redacted]	10
264	[redacted]	10
182	[redacted]	10
372	[redacted]	10
404	[redacted]	10
59	[redacted]	9
292	[redacted]	9
199	[redacted]	9
64	[redacted]	9
260	[redacted]	9
302	[redacted]	8
228	[redacted]	8
72	[redacted]	7
220	[redacted]	7
374	[redacted]	7

Figure 3. Snippet of article read counts (real user emails are redacted)

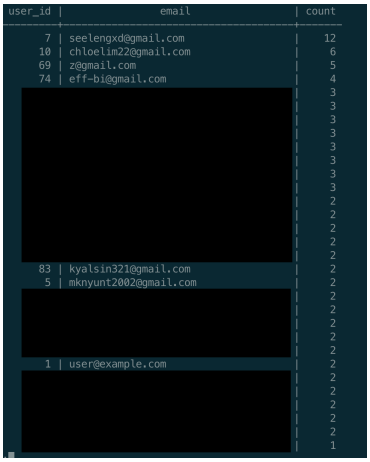
Note: Article read was only implemented in late Sprint 2-3, hence article counts might look a bit low



user_id	email	count
7	seelengxd@gmail.com	39
83	kyalsin321@gmail.com	33
10	chloelim22@gmail.com	31
5	mknyunt2002@gmail.com	15
1	user@example.com	13
37	[redacted]	10
59	[redacted]	10
8	[redacted]	8
23	[redacted]	7
32	[redacted]	6
131	[redacted]	6
72	[redacted]	6
227	[redacted]	6
180	[redacted]	6
197	[redacted]	6
199	[redacted]	6
116	[redacted]	5
67	[redacted]	5
88	[redacted]	5
173	[redacted]	5
129	[redacted]	4
358	[redacted]	3
210	[redacted]	3
327	[redacted]	3
139	[redacted]	3
260	[redacted]	3
213	[redacted]	3
430	[redacted]	3
130	[redacted]	3
15	[redacted]	3
372	[redacted]	3

Figure 4. Snippet of question ask counts (real user emails are redacted)

Note: We have a weekly question cap of 3 per week for the free tier. In total, we have 547 user questions asked.



user_id	email	count
7	seelengxd@gmail.com	12
10	chloelim22@gmail.com	6
69	z@gmail.com	5
74	eff-bi@gmail.com	4
[redacted]		3
[redacted]		3
[redacted]		3
[redacted]		3
[redacted]		3
[redacted]		3
[redacted]		3
[redacted]		2
[redacted]		2
[redacted]		2
[redacted]		2
83	kyalsin321@gmail.com	2
5	mknyunt2002@gmail.com	2
[redacted]		2
[redacted]		2
[redacted]		2
[redacted]		2
1	user@example.com	2
[redacted]		2
[redacted]		2
[redacted]		2
[redacted]		2
[redacted]		2
[redacted]		1

Figure 5. Snippet of essay feedback counts (real user emails are redacted)

Note: We have an essay quota cap of 3 per month for the free tier. In total, we have 138 essays submitted.

We also have Google Analytics (GA) integrated into our application, however, we did not find the analytics provided by GA particularly insightful nor accurate- which is why we decided to implement simple tracking and analysis on a database level ourselves.

Future plans and strategies

To capitalise on the short runway to the A-Level General Paper in the Final Project, Jippy's developmental efforts focused on more "revision-ready" features, such as our news summaries, analysis, essay point and example generation, and essay grader. One common critique of such a "spoon-fed" approach might be the diminished opportunity of students to truly develop their critical thinking and argumentative skills in GP.

This forms the basis of Jippy's future directive: to evolve beyond a more "passive crash-course" platform into one that actively nurtures students' GP skills and cultivates consistent revision habits to achieve sustained improvement. For instance, developing bite-sized daily exercises combining our news curation and essay feedback features to encourage regular feedback and practice; bringing progress analysis feedback and tracking (over the course of submitted practices and essays), or even question bank and pooling- allowing us to design specific targeted grading prompt based on common responses and pitfalls.

Efforts to pivot towards this direction would be greatly boosted by partnerships with educational institutes and GP tutors. Beyond providing feedback on the pedagogical grounding of Jippy's features, and more detailed resources and information on how to

finetune our prompts (for instance, access to more detailed marking rubrics and procedures), we believe that Jippy also needs a “human-in-the-loop” (or, rather “teacher-in-the-loop”).

After all, teaching is a human endeavour, deeply rooted in human connection and nuanced understanding of the subject and student that AI alone cannot replicate. Partnering with teachers could us to develop features such as enhanced example banks (bolstering our RAG capabilities using school-provided examples on top of examples scrapped from current affairs to patch the gap of non-recent/ non-news type essay examples); as well as insights into student progression, teacher-designed essay practices (with provided essay grading rubrics/ prompts), and teacher-LLM-augmented essay feedback (to accelerate essay feedback while ensuring it is still of *good* quality). In all, we hope to strengthen Jippy’s ability to truly help students build their critical thinking, argumentative and general knowledge to better prepare for the A Level General Paper.

Insights gained from final project

Prioritisation and tradeoffs

Team Jippy was very ambitious and had many ideas. For example, some of our considered but not implemented in the end features are: consolidated feedback, a node graph for concepts, a chatbot like interface for interacting with essays and many more.

However, time was naturally not on our side, so we had to make tradeoffs. For example, after our in class presentation, we discussed - Will a concepts mindmap, compared to content regeneration be of more use to our users? We also had to make choices - to improve/refine our feature set or proceed with the launch schedule. (We normally kept delaying the launch just to improve our features.)

In addition, one of the big decisions we had to make while developing Jippy was our direction (to cheatsheet, or not?). While we desired to create something truly helpful for students- not just in short-circuiting “better grades,” but in fostering actual learning- we quickly realised that such an approach might not be the most appropriate for the final project, given the timeline and the priorities of our target users, who were focused more on cramming at the last minute rather than learning progressively and sustainably.

The execution of this decision, however, was something we felt, upon reflection, we could have handled better. In terms of feature prioritisation, we were still constantly torn between these two different directions, resulting in a product that felt somewhat “neither here nor there.” A key lesson to take away from the final project is that “good ideas” are not inherently binary; they are highly dependent on context. The success of these ideas relies not just on their inherent value but on the quality of their execution to truly bring

them to fruition. In all, the limited resources and time helped us understand the importance of tradeoffs, making the best use of what we have to improve Jippy. :-)

User experience

Given the team's composition (3 CS, 1 CEG), Team Jippy had the tendency to prioritise building individual features over a cohesive user experience.

The team learnt over our consultations with Professor Soo the importance of not only the quality of individual features, but also the value proposition of Jippy as a whole. Jippy was initially designed to cater to many identified user pain points but after implementing the corresponding features, insufficient thought was given to providing an intuitive user interface that facilitates revision. As such, the workflows actually enabled by the early user interface are inconvenient and can be especially confusing for new users, which can undermine the appeal of Jippy despite the quality of each feature.

After considering the feedback from Professor Soo, the home page, in particular, has been revamped to guide new users in learning to use all of Jippy's features and ensure that every feature is visible to users. Additionally, the sidebar has been greatly simplified to hide excessive options and provide a more minimalist interface that lowers the learning curve for new users. While the user experience has greatly improved as a result of these enhancements, the team plans to further optimise the user interface and prioritise user experience as we implement the future extensions described above, such as is envisioned for the daily exercises feature that integrates all of Jippy's feature into 1 value proposition for our users.

Difficulty of catering to GP requirements

Jippy is initially envisioned as the solution to pain points experienced by GP students like we once were. Based on the GP student survey results, we therefore devised features that addressed the needs specified by GP students in the hopes of boosting their revision and improving their GP essay scores.

However, consulting with a GP tutor has later challenged this focus as we then realise that improving in GP essay writing goes deeper than having current affairs knowledge and convincing topic sentences, which Jippy catered to. We have learnt that there are multiple approaches to improving in GP and that addressing students' needs is but one result-oriented way of 'improving' that might not be ideal for students, even if most students are mainly invested in raising their exam scores (users don't always know what they need). Therefore, we plan future extensions for Jippy, as detailed in the earlier 'Future plans and strategies' section, to transform Jippy into not only an efficient revision aid for last-minute improvement based on luck and chance, but also a long-term guide for achieving consistent improvement in essay writing skills.