

I. Definition + Rationale

As access to AI tools like ChatGPT becomes prevalent, teachers are struggling to evaluate student writing since it can be difficult to distinguish authentic student work from writing that is completely generated by AI.

According to a study conducted by Forbes Advisor, "Academic dishonesty tops the list of educators' concerns about AI in education," (Hamilton, 2024). While many teachers try to embrace AI tools and use them to enhance their students' learning, the majority of these teachers remain concerned about students using AI to cheat on assessments. In high school classrooms where students are still learning the basics of analytical writing, Gen AI tools like Chat GPT can hinder students' abilities to develop these skills and practice critical thinking.

We hope to design a tool that helps address teachers' biggest concern about artificial intelligence: academic integrity. Some may argue that AI use is inevitable and teachers should be learning to work with AI instead of learning how to decipher it from authentic student work. At the university level, this may be true, but we believe that primary and secondary school students should still be learning foundational writing and critical thinking skills that come from producing their own work. In order to preserve this authentic learning experience, we developed a tool to help high school teachers address artificial intelligence and academic dishonesty in students' writing assignments.

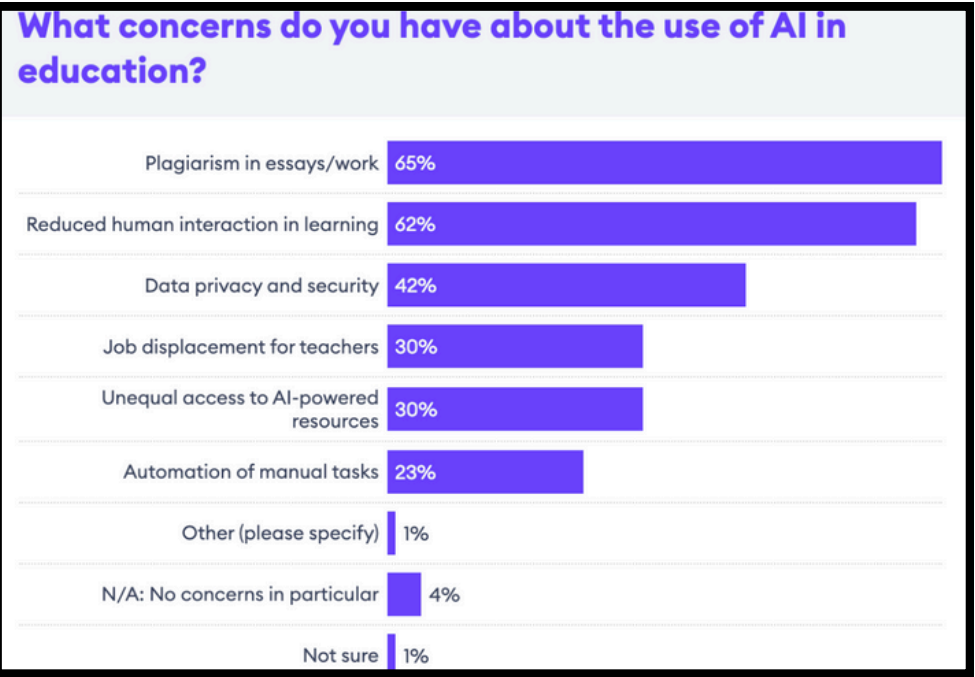
II. Target

High school teachers, specifically those responsible for assigning and assessing students' English writing, would most likely face challenges when it comes to understanding and detecting AI use in student writing. According to a study by Forbes, teachers' number one concern about AI use in education is plagiarism in essays/work (Hamilton, 2024). As such, AuthentiWrite is designed with the following in mind:

- Developmental Needs:** High school students are at a critical period of developing core skills as linguistic expression, critical thinking, ethical reasoning, self-expression and personal voice in writing.
- Abilities and Limitations:** Students in this age group may lack metacognitive awareness and long-term planning skills, which makes it harder for them to recognize the long-term harm of relying on AI for academic shortcuts. Thus, teachers need tools that support assessment for learning, rather than assessment for testing (Farhat, 2023).
- Teacher Needs:** Teachers have always been dealing with the pressure to maintain academic integrity, especially in an AI-accessible world. By analyzing each student's unique writing quality and style, the AI-powered **AuthentiWrite** tool provides a detailed report designed to detect AI use and supports teachers in grading students' written work. This will allow teachers to easily get a baseline evaluation of student writing. Our **AI Teaching Guide** further offers clear guidelines based on current research and practice, as a reference for teachers to develop their own teaching and assessment strategies for high school writing tasks on various subjects.

- Research points to the age group of high school adolescents as "a major turning point in developing sophisticated command of linguistic expression in both speech and writing." (Berman, 2017)

- "Most of the teachers we surveyed have observed students using AI—particularly generative AI, which can compose essays and supply answers on demand—to cheat" (Hamilton, 2024).



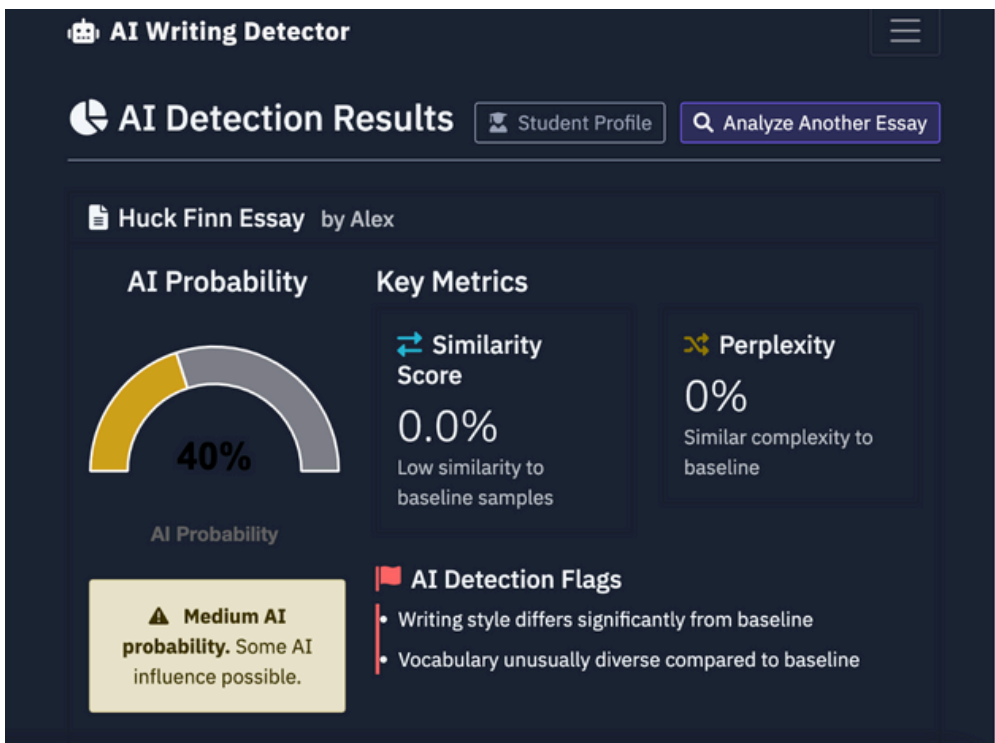
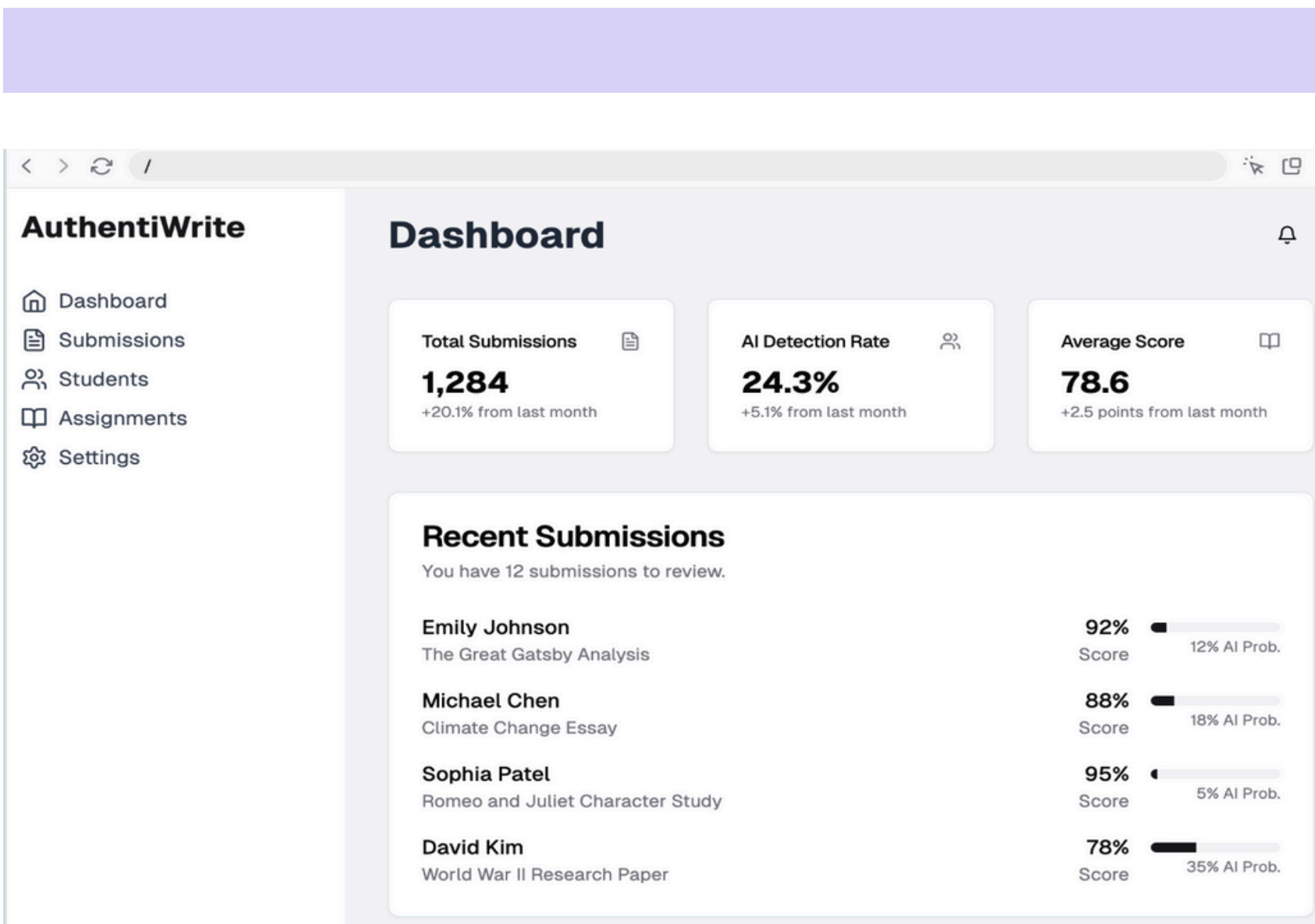
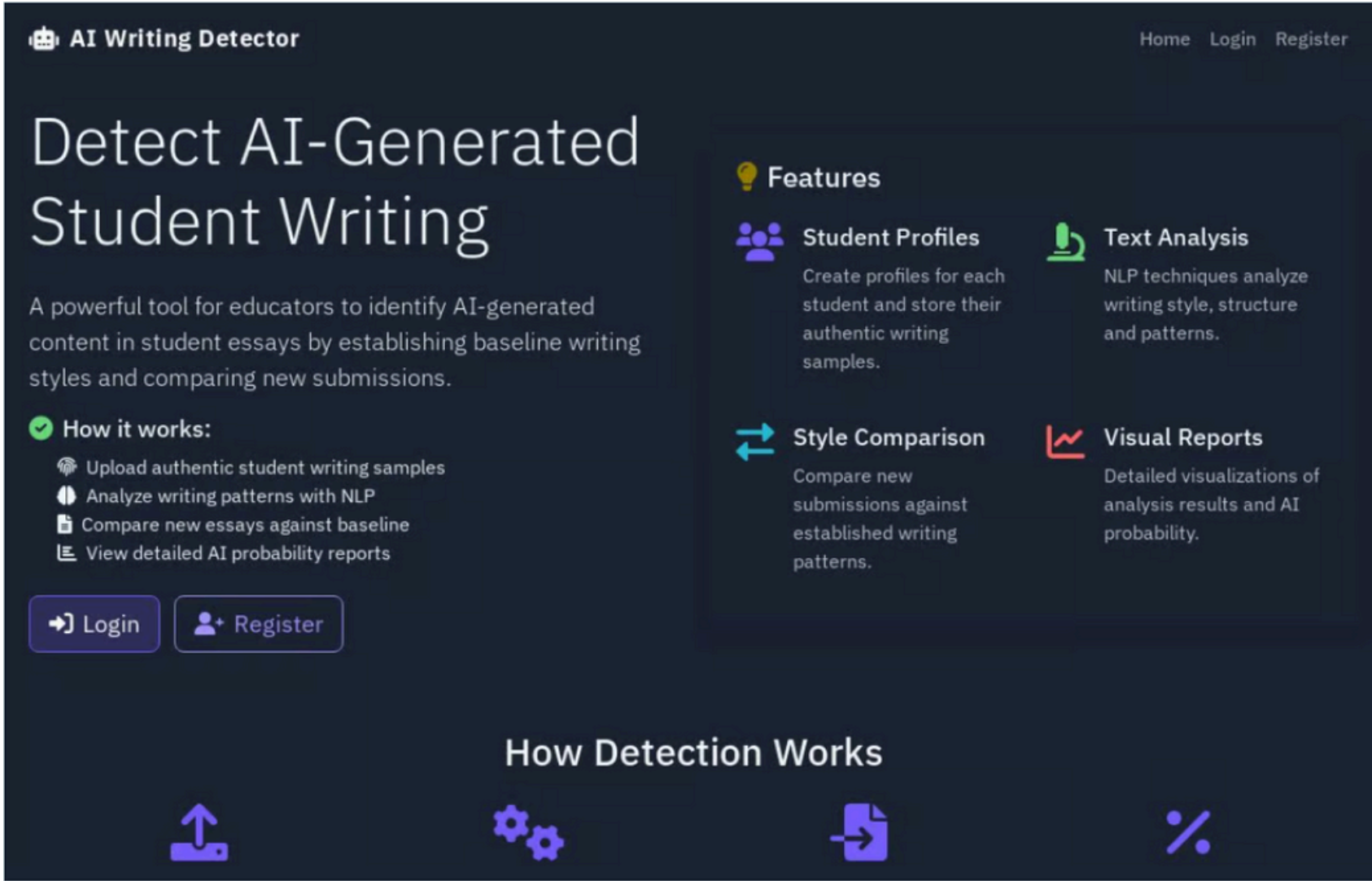
IV. Design Justification

- High school is the critical period for linguistic development:** Studies for different languages identify adolescence (wherein defined as 15–19 years old) as a critical period for developing "sophisticated command of linguistic expression", which entails higher order reading and writing skills. (Berman, 2017)
- Generative AI tools for content creation are not perfect:** GenAI tools like ChatGPT relied on internet-based training data and thus "may not fully encompass all aspects of human experience or knowledge". AI-generated content also faces questions about their authenticity, inherent biases, and legal issues as intellectual property rights. (Bellini *et al.*, 2024)
- The risks of overreliance on GenAI for students' writing:** Studies abound in suggesting the harmful effects of overly relying on GenAI in writing, which include risks to students' independent thinking (Avsheniuk *et al.*, 2024), originality and personal expression (Dupps, 2023), and development of foundational writing skills (Bolton & Moseley, 2019).
- The varying level of reliability of current tools detecting AI-generated content:** A 2024 study of online detection tools like GPTZero, ZeroGPT, Writer ACD, Originality (Bellini *et al.*, 2024) suggests that current AI detection tools show inconsistent levels of accuracy. This implies that AI detection tools alone may not suffice.
- The necessity for human teachers' classroom strategies:** In light of the lack of consistent reliability for AI detection tools and flawed human heuristics metrics for AI-generated text (Jakesch, Hancock & Naaman, 2023), researchers recommend the use of additional, traditional anti-plagiarism tools as well as human discretion in order to differentiate between AI-generated and human written work (Chaka, 2024). AuthentiWrite could serve high school teachers by analyzing aggregated student data, but we should also support teachers to develop and exercise their judgement while teaching and assessing writing in classrooms, such as adopting process-based assessments (Koc, Liu & Wachira, 2024). Educators and institutions help develop practical classroom tools and strategies for teachers to cultivate AI literacy and a healthy level of skepticism among students (Liu & Bridgeman, 2023; McVey, 2025).
- High school students' skepticism towards AI tools:** Despite general pessimism towards young people's misuse of GenAI in school work, studies show high school students critically evaluate the role of GenAI in education and writing (Baska, 2024; Girouard-Hallam & Danovitch, 2022; Higgs, 2024). These studies suggest that teachers should work with students' critical young minds, cultivate AI literacy (Long & Magerko, 2020), and foster their self-efficacy and self-determination for better writing processes and outcomes.

III. Prototype Design: AuthentiWrite

The tool **AuthentiWrite** encourages:

- Independent Writing Style:** Through writing style analysis and originality checks, students will be encouraged to develop and own their writing voice and style, which is a critical skill in high school writing.
- Academic Confidence:** Teachers can feel confident when grading their students writing assignments without worrying about the use of AI by running their assignments through AuthentiWrite initially
- Inclusivity:** The tool accounts for variability in student language abilities, learning needs, and digital access by:
 - Tracking writing over time to understand individual baselines, rather than comparing all students to a generalized norm.
 - Allowing teachers to see variations and potentially improvements in student writing through individualized student reports.

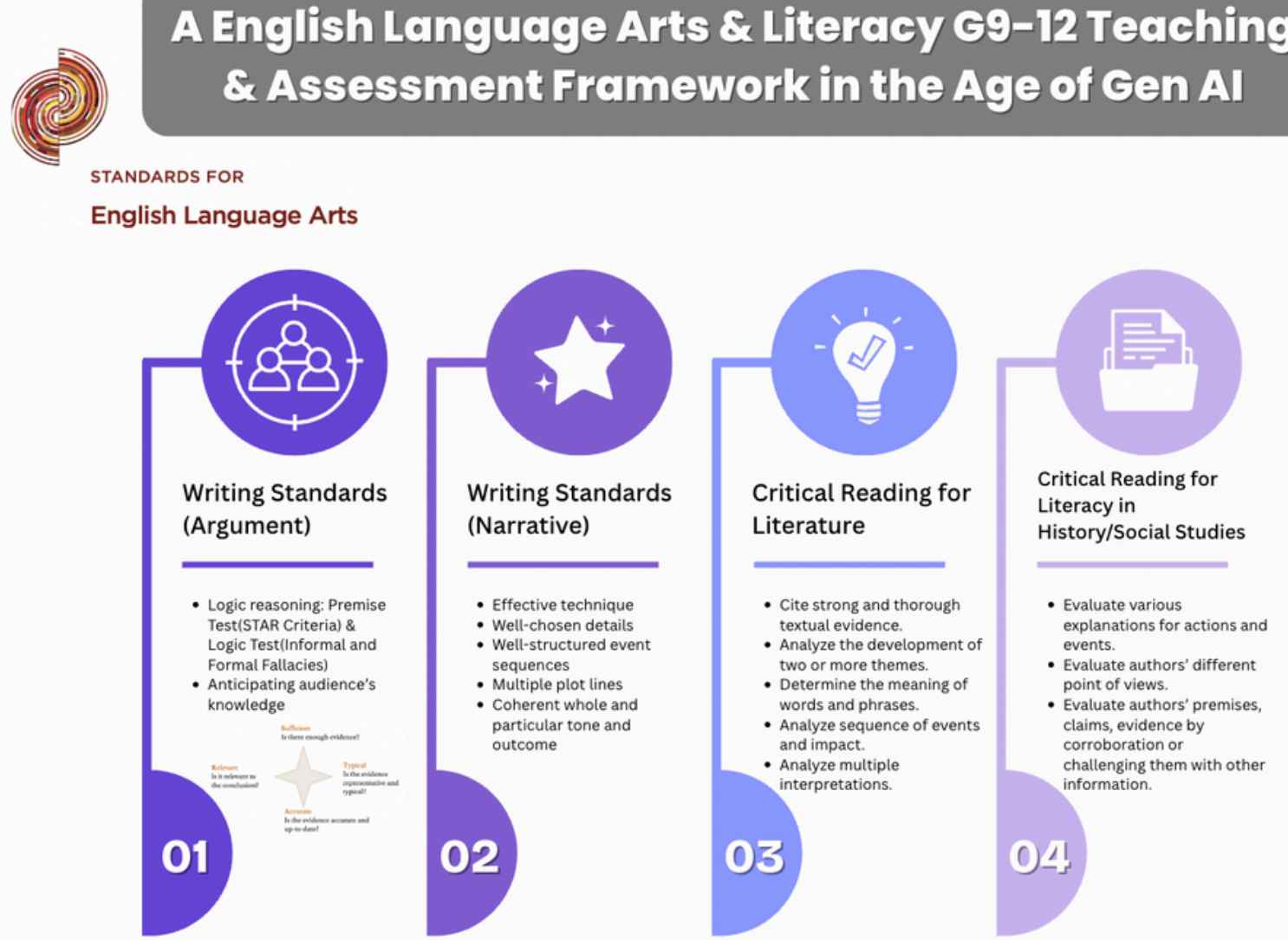


Limitations

- False positives in AI detection:** There is always a risk that authentic writing may be mistakenly flagged, especially if a student's tone or structure changes for legitimate reasons such as development of improved skills or help from teachers. We mitigate this by including individualized style tracking and offering teachers the final judgment.
- Equity Concerns:** Some students, especially multilingual learners or those with limited access to writing support, may be disproportionately flagged since they might experience the most change in writing style as their writing improves authentically. Future iterations can incorporate training data from diverse student populations to offer a more culturally representative and responsive analytics.
- Teacher Overreliance on Metrics:** There is a risk of teachers becoming overly dependent on flags and scores, instead of forming holistic judgments. We address this by encourage and reminding teachers to make the final call using their own judgement.

III. Prototype Design: AI Teaching Guide

Our **AI Teaching guide** is a practical guideline that builds upon current research and practice relevant to GenAI's potential roles in writing assignments. It comprises 1) a teaching and assessment framework building upon the Common Core State Standards for English Language Arts (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), with detailed annotations and recommendations for key areas of linguistic literacy that teachers should develop and assess. Such areas are mapped out based on the critical reading and writing skills essential to students in the age of GenAI; and 2) a toolkit compiling current, good practice from teachers, researchers, institutions that encourage appropriate AI use in writing assignments among students. This would inform teachers who would like to cultivate an adequate level of AI literacy as well as skepticism towards AI-generated content among students, and build students' self-determination and ownership in creating their own authentic writing process and product.



V. Evaluation Plan + Critique

Evaluation Plan: We plan to evaluate our products' success in two main areas: teacher adoption and effectiveness in supporting student learning/writing.

Quantitative Metrics

- Reduction in flagged AI-generated content over time, which would suggest improved student engagement with assignment and decrease in over-reliance on AI. On the teacher's end, this would imply improvement in assessment design.
- Usage statistics such as number of reports generated, assignments created using custom parameters, and feedback sessions initiated through the platform.
- Improvement in student writing metrics over time, especially for flagged users (e.g. complexity, coherence, unity, originality, personal voice, logic reasoning).

Qualitative Metrics

- Teacher feedback via surveys and interviews regarding:
 - Ease of use
 - Perceived impact on student growth
 - Usefulness of insights provided
- Survey both students and teachers to monitor changes in AI usage. Students will
 - reflect on how teacher feedback has helped them grow as writers and whether they feel more confident in their work.
 - Examples of survey questions for teachers include:
 - on a scale of 1–5, how helpful is the AuthentiWrite software?
 - On a scale of 1–5, how helpful is the AI Teaching Guide? What is one feature you wish was offered in this toolkit?

Future Plans

- Student-Facing Dashboards** so that students can monitor their own growth as well as check if their writing is flagged which can help with detecting false positives in AI detection.
- Professional Development Modules** that train teachers to redesign writing assignments in AI-accessible environments.
- A dashboard that analyzes writing prompts for teachers to help them create prompts that will discourage students from over reliance on AI for their writing.
- Peer Review Integration** to support collaborative learning.
- Could further help with discouraging AI use in writing as students will have to evaluate each other's work
- Model Tuning** with more student data to reduce bias and improve accuracy. Will be looking a diverse group of students of various writing styles, abilities, and grade levels.
- Real-time Writing Mode** where AuthentiWrite can track student writing (with consent) which can help with providing insight into writing habits and time spent on writing for each student rather than focusing on only the end products.