CRPL For Typing and Reading Comprehension

Khat Thant

EDUC 846: *Personalized & Adaptive Learning*

Proposal (@ session 11) → Rationale (@14)

In 2024, the Nation's report card showed a decline in reading for 4th and 8th graders. These scores were similar to the reading scores in the early 1990s, with the decline being driven by lower-performing students rather than higher-performing students across all grades and subjects. This has led to an ever-widening academic gap between higher and lower performing students (NAGB, 2025). The problem that the nation is facing is more than just a simple reading exam score, these scores could be detrimental to the future of the country. By integrating a simple typing program into elementary education, students can get a head start in creative writing, increasing their reading comprehension capabilities, typing speeds, and eventually, test scores.

Currently, language arts are being taught inefficiently, with some students far behind on reading than others. Just one teacher is not enough to catch every student up, there simply is not enough time in the day. By introducing keyboarding, the future of literacy in education is bound to change. Students that learn how to type gain crucial technical skills for the future workforce, improve sight-reading skills, and those with learning difficulties or attention disorders, reinforce literacy skills (Cicerchia, n.d.). By incorporating Culturally Responsive Personalized Learning (CRPL) to this typing program, students will gain significant interest in reading and writing workshops, while also gaining necessary typing skills. CRPL considers the social, cultural, and linguistic contexts for learning, able to adapt in many ways. (Ober, 2023)

This program would include having 3rd-4th grade students participating in creative writing exercises, writing as much as possible in a specific time frame that includes all the target goals of the lesson (e.g., using all variations of "too" or "your"). Students would be able to write their story in connection to themselves, immersing themselves in a story they're creating. These students would then "trade" stories with each other by typing them out. These typing sessions would end with students being given a "universal" reading comprehension quiz, determining what "level" they should be at during these exercises, giving opportunities to grow. This program would have a leaderboard for typing speed to get students excited through friendly competition, possibly even leading to typing practice at home.

This typing program incorporates task loops and step loops to maximize learning efficiency. The task loops are a cyclical process, students write, type, read, and assess comprehensively before beginning again with increased complexity. This structure ensures mastery through frequent practice. Within each task loop, step loops provide reinforcement. Students individually practice keyboarding techniques, receive immediate feedback, adjust their approach, and repeat until task achievement. This repetition of loops builds in automatic typing mechanics and deeper engagement with literacy concepts, creating improvement over time. The short-term outcomes include increases in typing speed and accuracy, improved reading comprehension scores as students engage more deeply with written texts, improved writing fluency, and an increase in motivation. As for long-term, standardized test scores would demonstrate improvement, potentially reversing declining scores, reducing the achievement gap, and workforce readiness, among others.

Logic Model

Problem Statement

Reading comprehension, writing skills, and typing skills have gone decreased compared to past years.

Theoretical framework & evidence that suggests promise of a PL-based solution

Culturally Responsive Personalized Learning would grab the interest of students, making writing, reading, and typing enjoyable.

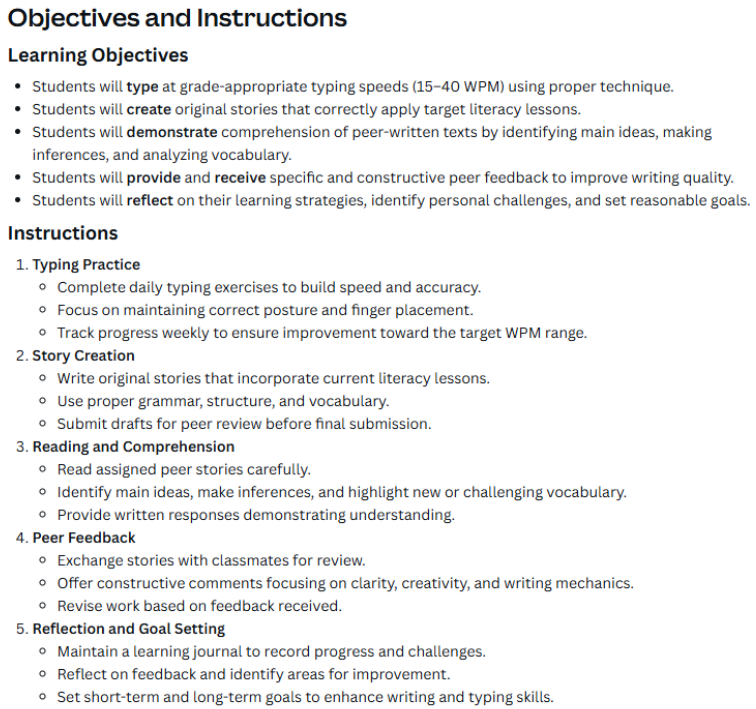
Input(s)	Task Design Details & Output of the PL Enactments	Immediate Outcome(s)	Long-term outcome(s)	Impacts
• Human Resources (teachers, instructional tech. specialists, program admin, IT support, consultants for exceptional children) • Technology (keyboards, laptops) • Time (teacher planning and prep, development time) • Data and Assessment tools	• Adaptive Scaffolding with adapting to real-time performance • Mastery-based progression • Immediate, real-time feedback (WPM tracking, drills, instant error highlight) • Interest-based and Culturally Responsive (content matches student interest, reflects backgrounds while exposure to unfamiliar perspectives) • Performance data: typing metrics, reading comprehension score, writing quality (accuracy rates, vocab) • Student portfolios with original curated documents, showing growth • Individual learning pathways (current level, skill gaps, customized next steps, adaptive content) • Leaderboard creating friendly competition increasing motivation	• Interest in typing and writing • Increased engagement • Student equity and easier lesson plans • Increased typing speed and accuracy • Deeper engagement	• Increased test scores • Better reading comprehension • Faster typing speeds • Less use of supplemental materials for education (AI) • Workforce readiness • Reduce achievement gap	• Educational equity as achievement gap narrows • Stronger self-efficacy and academic identity • School culture focused on PL • Stronger classroom communities • Reverse declining literacy trends • Increased civic participation

Classic Instructional Design
(Schema of the Base Design)

Learning Objectives	Learning Activities	Learning Outcomes Assessed
• Students will **type** at grade-appropriate typing speeds (15-40 WPM) using proper technique • Students will **create** original stories correctly applying target literacy lessons • Students will **demonstrate** comprehension of peer-written texts by identifying main ideas, making inferences, and analyzing vocabulary	• **Personalized writing**: Teachers introduce target skills with examples, students select writing prompt from personalized options, timed writing exercise, self-assessment checklist • **Peer Feedback and Revision**: Students exchange drafts with partners, give structured feedback, and revise based on suggestions	• **Reading Comp. Assessment**: Students complete adaptive quiz on story they typed checking for understanding, provides immediate scoring and feedback • **Real-time performance tracking** (WPM, Accuracy, errors) • **End-of-Unit Task**: Students independently write, type, and complete comprehension assessment
• Students will **provide** and **receive** specific and constructive peer feedback to improve writing quality • Students will **reflect** on their learning strategies, identify personal challenges, and set reasonable goals	• **Typing Practice**: Keyboard drills for problem areas, students type partner's story while tracking WPM, provide real-time feedback • **Reflection**: Guided reflection strategies and challenges, personal data review, follow-up interventions (intensive to enrichment based on WPM)	• **Digital Portfolio**: Student work samples reflect writing and visualizes growth • **Peer Collaboration**: Teachers observe collaboration quality and feedback (formal evaluation at end of unit, observations throughout)

Classic Instructional Design (Base Design)

User-facing instructions/objectives page



Objectives and Instructions

Learning Objectives

- Students will **type** at grade-appropriate typing speeds (15–40 WPM) using proper technique.
- Students will **create** original stories that correctly apply target literacy lessons.
- Students will **demonstrate** comprehension of peer-written texts by identifying main ideas, making inferences, and analyzing vocabulary.
- Students will **provide** and **receive** specific and constructive peer feedback to improve writing quality.
- Students will **reflect** on their learning strategies, identify personal challenges, and set reasonable goals.

Instructions

1. **Typing Practice**
   - Complete daily typing exercises to build speed and accuracy.
   - Focus on maintaining correct posture and finger placement.
   - Track progress weekly to ensure improvement toward the target WPM range.
2. **Story Creation**
   - Write original stories that incorporate current literacy lessons.
   - Use proper grammar, structure, and vocabulary.
   - Submit drafts for peer review before final submission.
3. **Reading and Comprehension**
   - Read assigned peer stories carefully.
   - Identify main ideas, make inferences, and highlight new or challenging vocabulary.
   - Provide written responses demonstrating understanding.
4. **Peer Feedback**
   - Exchange stories with classmates for review.
   - Offer constructive comments focusing on clarity, creativity, and writing mechanics.
   - Revise work based on feedback received.
5. **Reflection and Goal Setting**
   - Maintain a learning journal to record progress and challenges.
   - Reflect on feedback and identify areas for improvement.
   - Set short-term and long-term goals to enhance writing and typing skills.

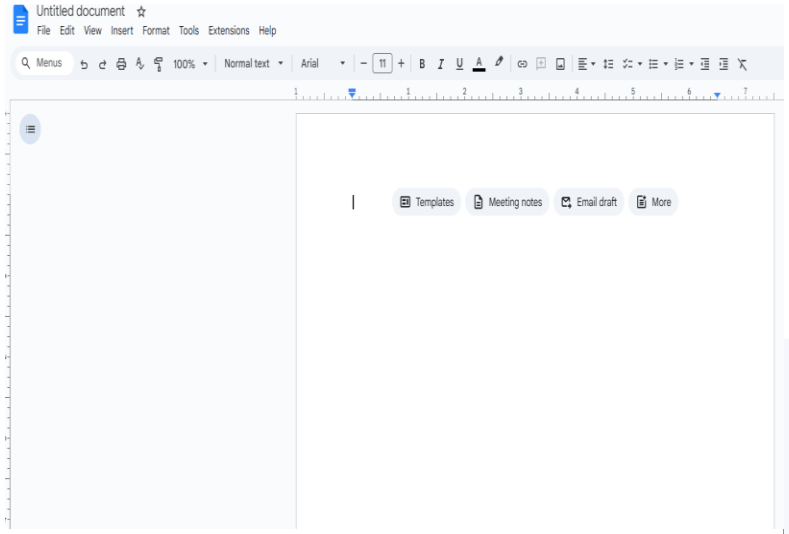
Details

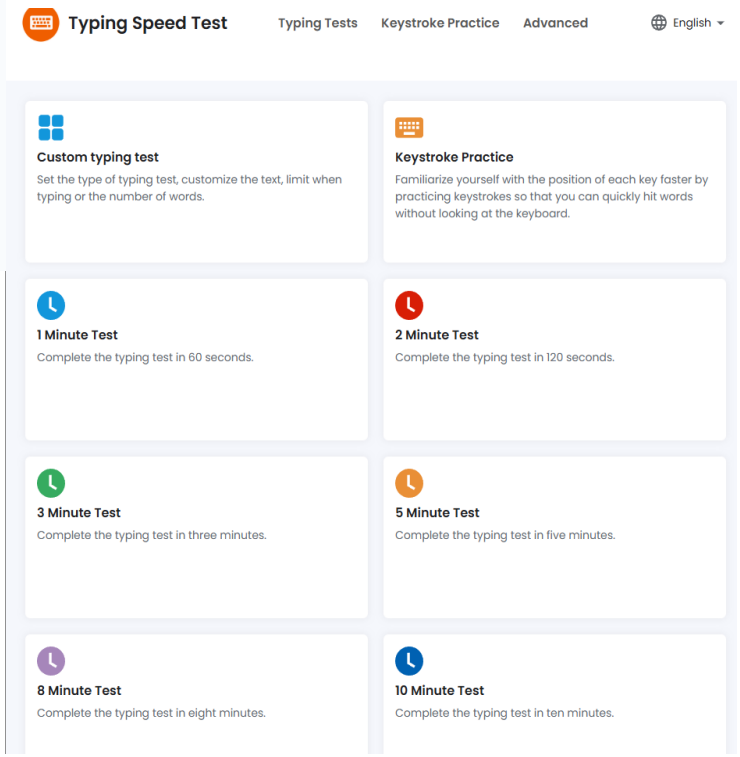
- The learning objectives and instructions page is straight forward, with users (students) being shown the objectives to be reached and the instructions for activities.

Full demo of the base learning activity, displayed (screen cap or similar), captioned/signaled/animated and annotated with details.

Classic Instructional Design (Base Design)

User-facing materials



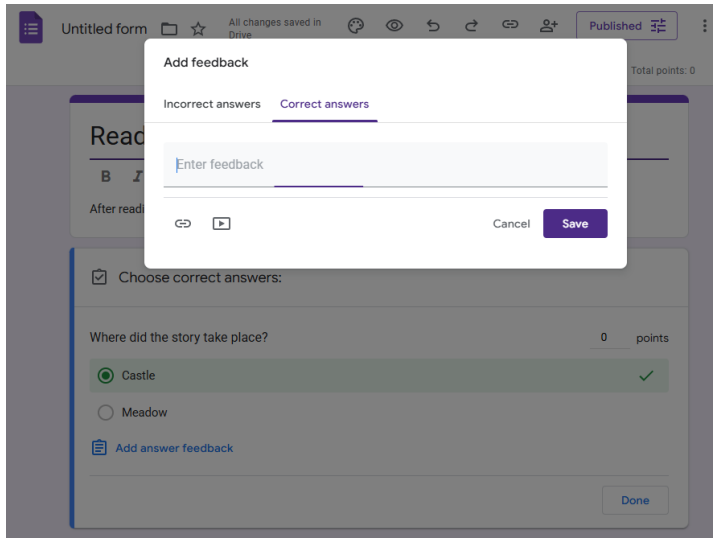


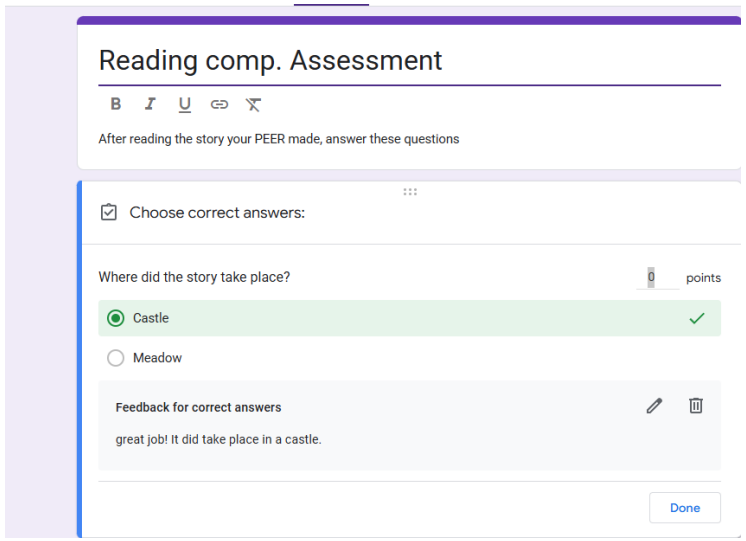
Details

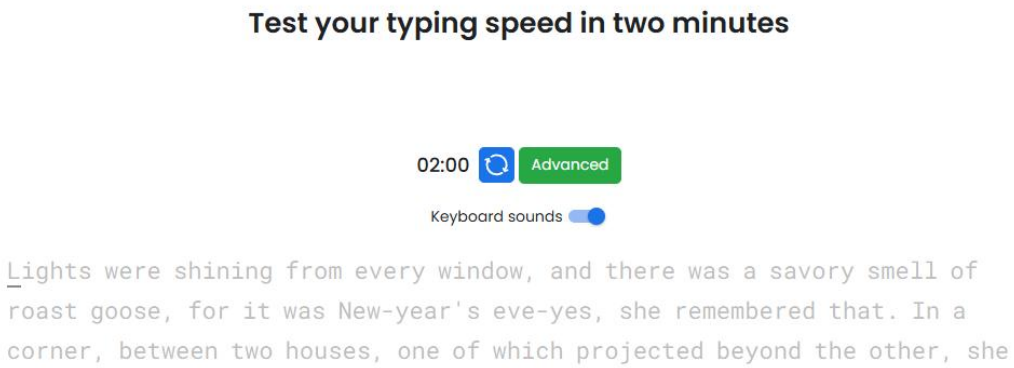
- Students will need a laptop to complete the exercises for both typing and writing. Using a simple platform like Google Docs, which can be easily integrated into Chromebooks. Once writing exercises are done and peer reviewed, the instructor will input the story into a “custom typing test,” allowing for students to practice typing using their peer’s story.

Classic Instructional Design (Base Design)

User-facing assessment activity







Details

- Assessment activities will include a quiz to test for reading comprehension of peer stories and a custom typing assessment with those stories. Assessments will gradually become longer typing tests at the end of the unit

LEARNING THEORY = Culturally Responsive Personalized Learning

PROVIDES insight to inform design(☆): for and given [⧖Theory]+ , =

Theory of Change
Task Loop Adaptivity

A THEORY selected to accommodate a focal learner, objective, activity (with design opportunities) & outcome

the personalized learning experience

Learner Characteristics

to be diagnosed/assessed

Motivational Variables

Student Agency Dynamic Adaptation

Engage students using writing exercises with peer-to-peer interaction to provide them agency to write what is culturally relevant to them and their lives, while sharing that part of them.

Learning Objective

Students will **reflect** on their learning strategies, identify personal challenges, and set reasonable goals

Learning Environments

Learning Support

Preparation for Learning

Creative Writing Exercises

Learning Progression

Learning Assessment

Dimen... Design — *Plass & Pawar (2020)*

Opportunities for Adaptive Design (Aleven et al. 2017)

Learning Outcomes

- Critical Thinking Skills
- Reading Comprehension
- Greater feelings of agency and independence

Peer-to-peer revision

Data store about learner and learner experience

DICTATES infrastructure, real-time engineering + interpretation needed to inform & enact theory-driven personalization

LEARNING THEORY = …

PROVIDES insight to inform design(☆): *for* and given [⧖Theory]+ , =

Theory of Change
Task Loop Adaptivity

A THEORY selected to accommodate a focal learner, objective, activity (with design opportunities) & outcome

the personalized learning experience

Learner Characteristics

to be diagnosed/assessed

Motivational Variables

Peer Competition
Student Agency
Student Skill Potential

Engage students using typing practice sites and demonstrations to incite friendly peer-to-peer competition and influence their own creative writing and typing styles.

Learning Objective

Students will **type** at grade-appropriate typing speeds (15-40 WPM) using proper technique

Learning Environments

- Learning Support
- Preparation for Learning
- Typing Learning Exercises
- Learning Progression
- Learning Assessment

Dimen… Design — *Plass & Pawar (2020)*

Opportunities for Adaptive Design (Aleven et al. 2017)

Learning Outcomes

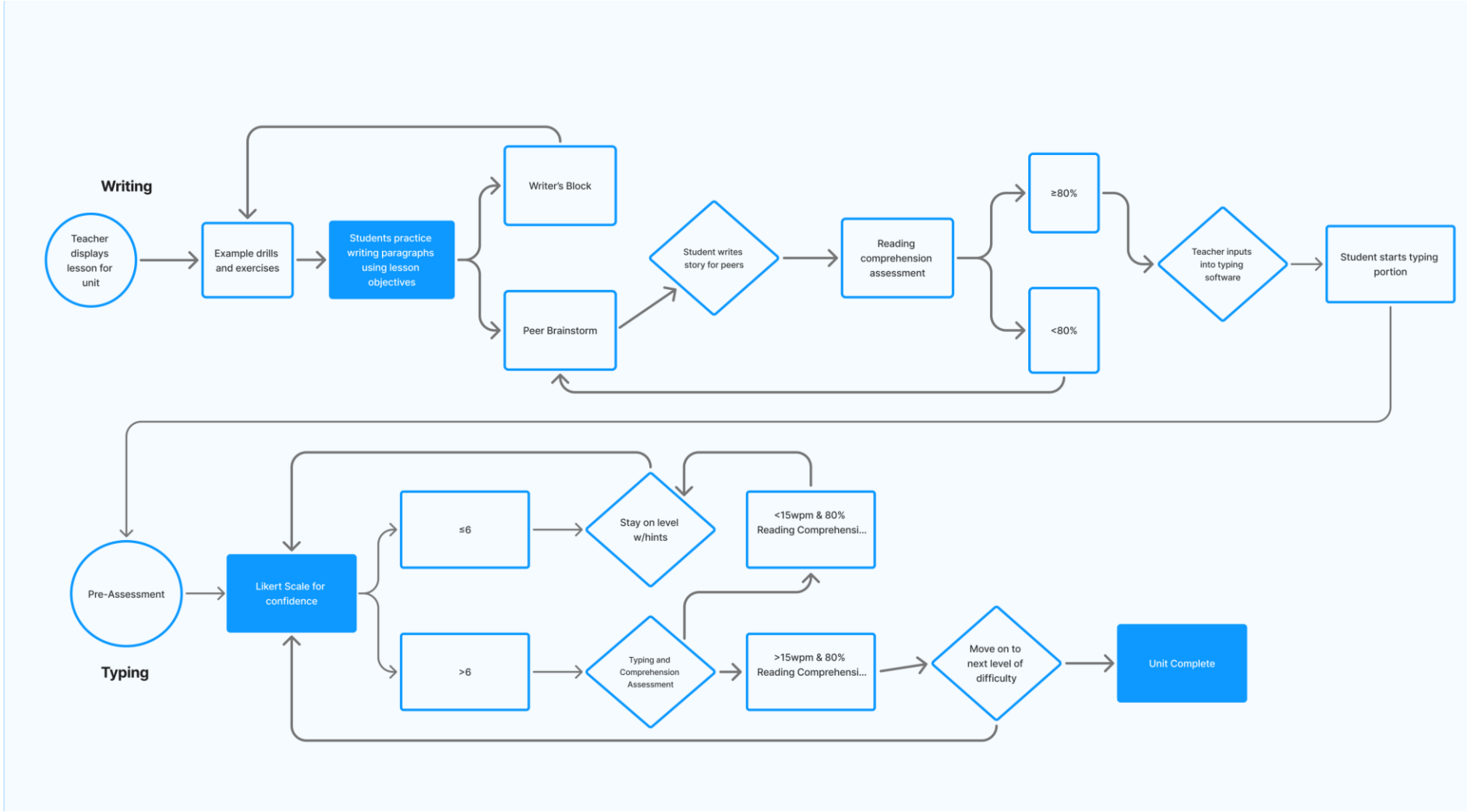
- Faster typing speeds
- Improved site-reading skills
- Workplace Readiness

Student-Teacher lesson

Data store about learner and learner experience

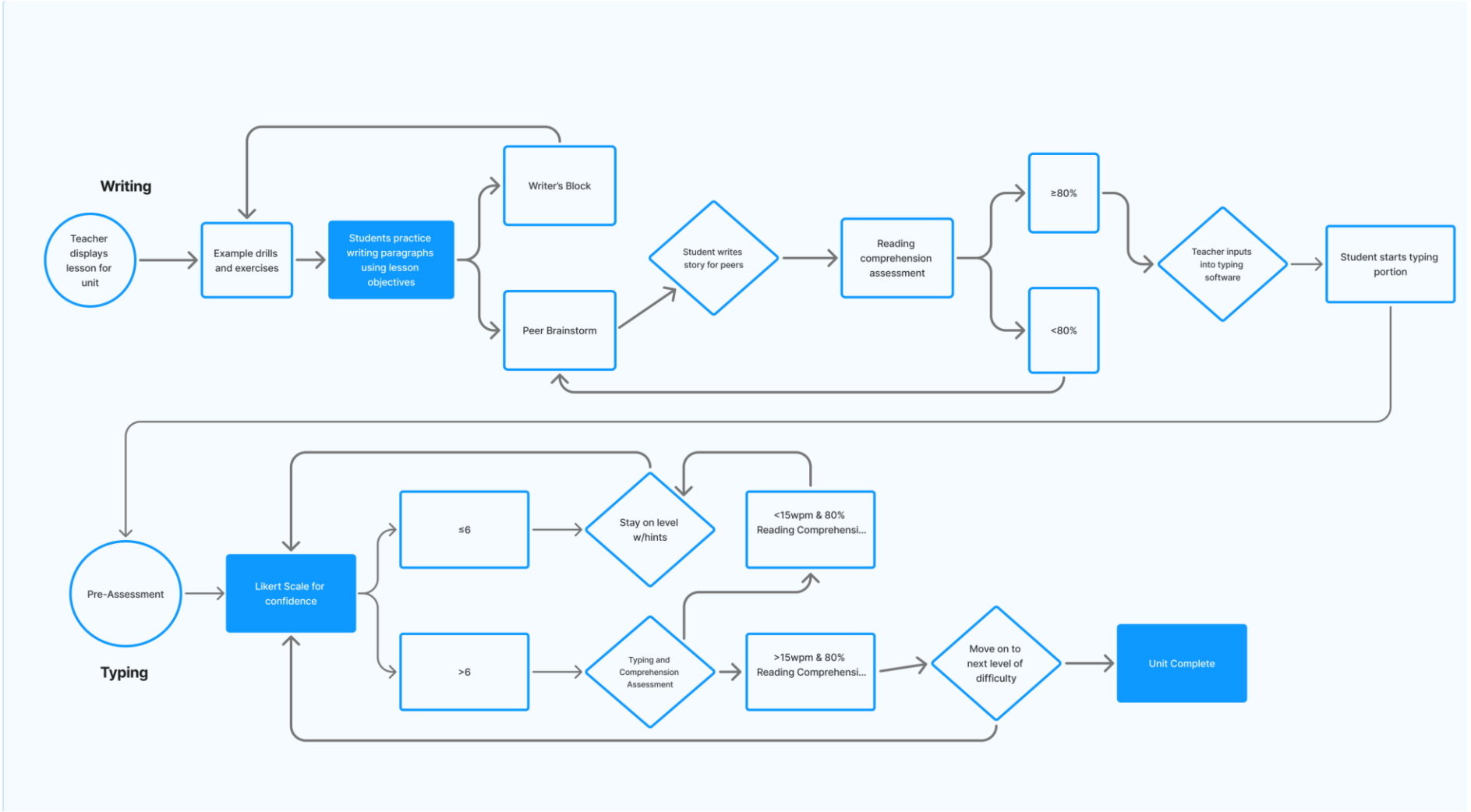
DICTATES infrastructure, real-time engineering + interpretation needed to inform & enact theory-driven personalization

Full PL Design Logic, Annotated & Animated to direct attention – TASK LOOP



- Writing:
  - IF comprehension score is <80%, THEN student returns to peer brainstorm
  - IF comprehension score is ≥80%, THEN route to standard pathway
- Typing:
  - IF likert scale ≤6, THEN student stays on level with guided hints
  - IF likert scale >6, THEN route to next assessment
  - IF student achieves <15WPM and 80% reading comprehension, THEN student loops back to likert scale
  - IF student achieves >15WPM and 80% reading comprehension, THEN proceed to next level of difficulty
  - IF student meets criteria but has not completed all unit objectives, THEN return to likert scale loop
  - IF student meets criteria and has completed all objectives, THEN the unit is complete

Full PL Design Logic, Annotated & Animated to direct attention – STEP LOOP



Typing:

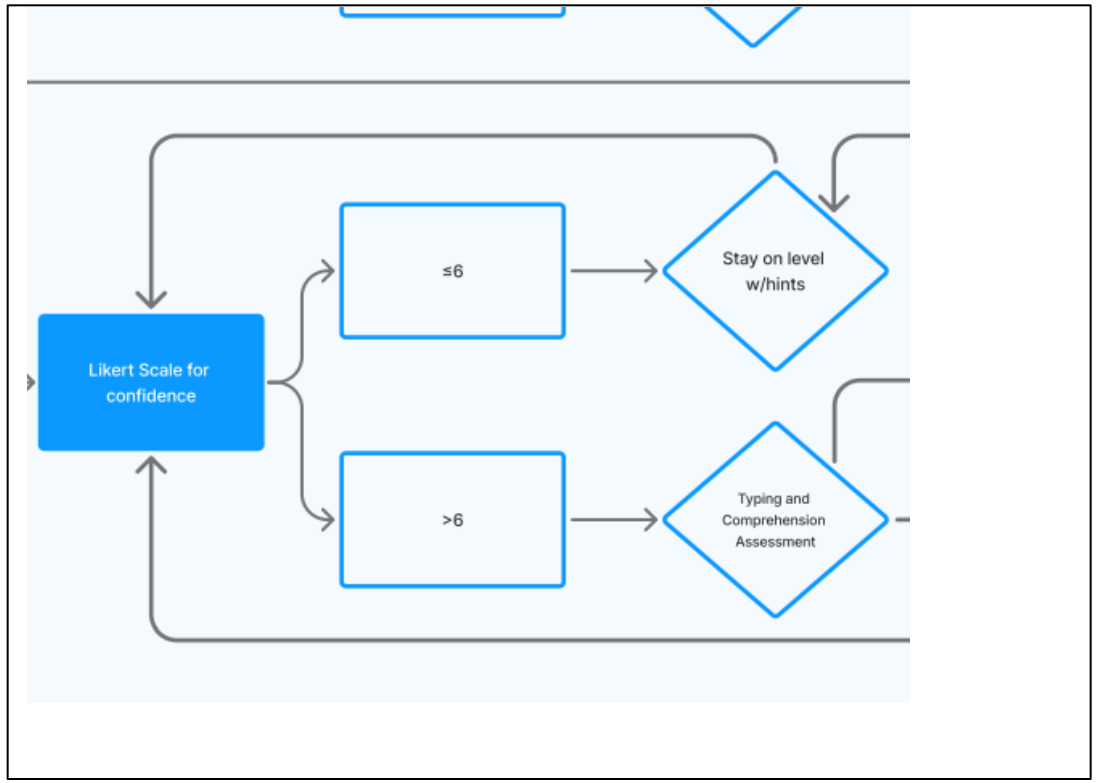
- IF likert scale rating ≤6, THEN stay on same level with immediate feedback
- IF likert scale rating >6, THEN remove hints and start assessment
- IF assessment score <15WPM and 80% reading comprehension, THEN student stays on same level
- IF assessment score >15WPM and 80% reading comprehension, THEN student moves to next level of difficulty

Writing

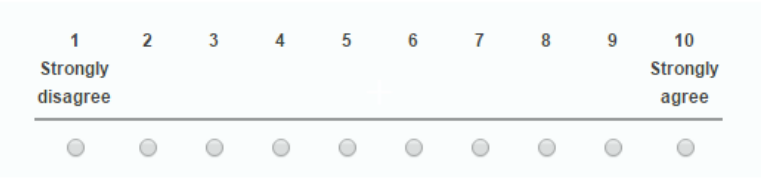
- IF student experiences writer's block, THEN student does example drills and exercises
- IF student does not experience writer's block, THEN student peer brainstorms
- IF reading comprehension assessment <80%, THEN student returns to peer brainstorm
- IF reading comprehension assessment ≥80%, THEN teacher inputs into typing software

Task Loop PL Design Flow & User Experience (Typing)

PL Design Logic view (back end)



User Experience (screen view)



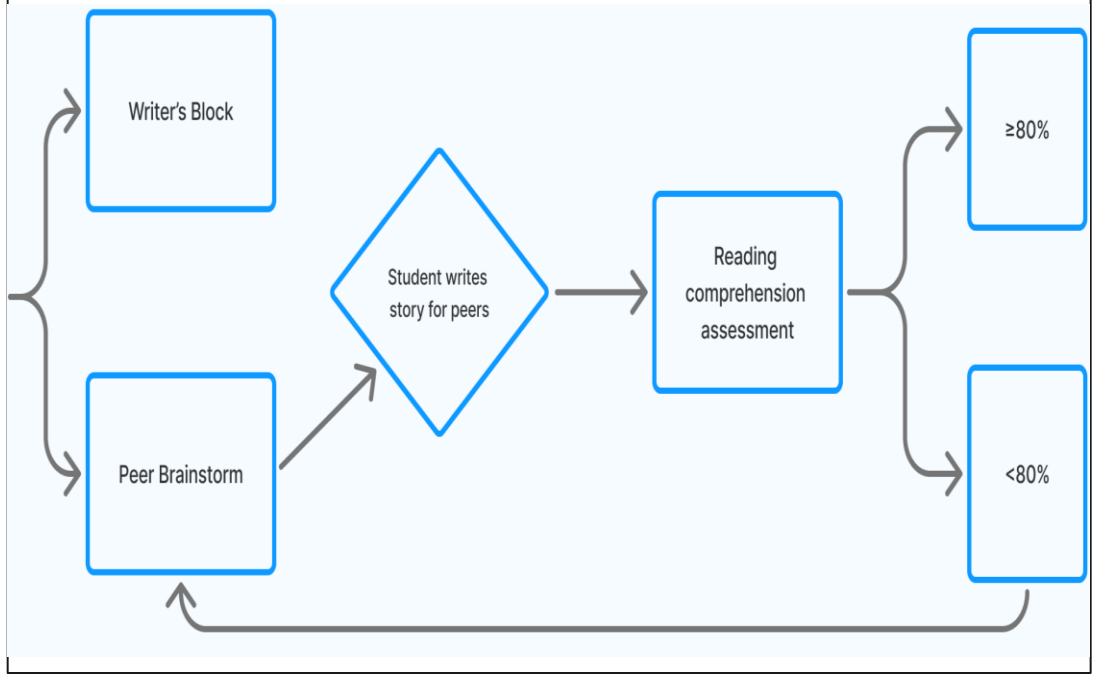
- <15WPM and 80% Comprehension=back to Likert scale

Caption, add arrows, etc. as needed

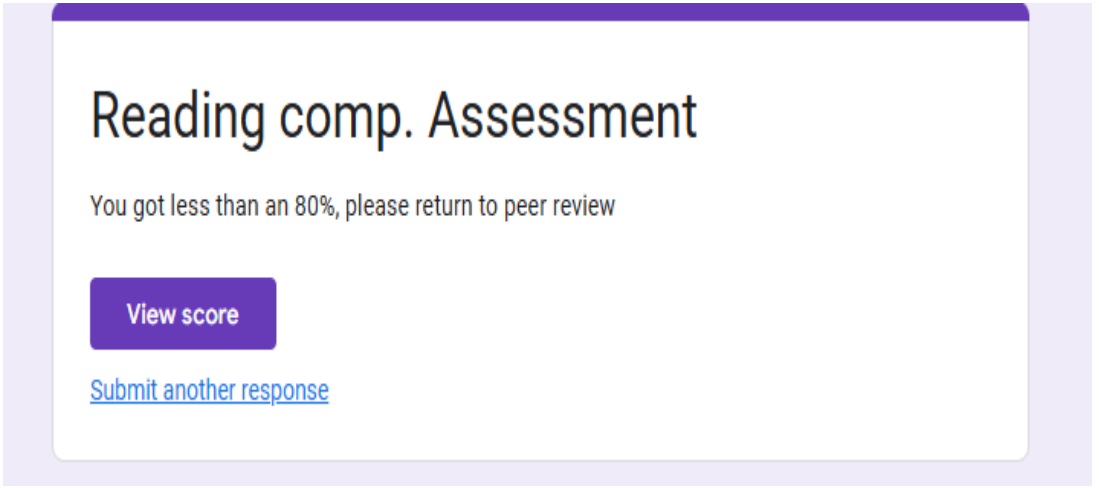
Task Loop PL Design Flow & User Experience (Writing)

PL Design Logic view (back end)

- Flow chart



User Experience (screen view)



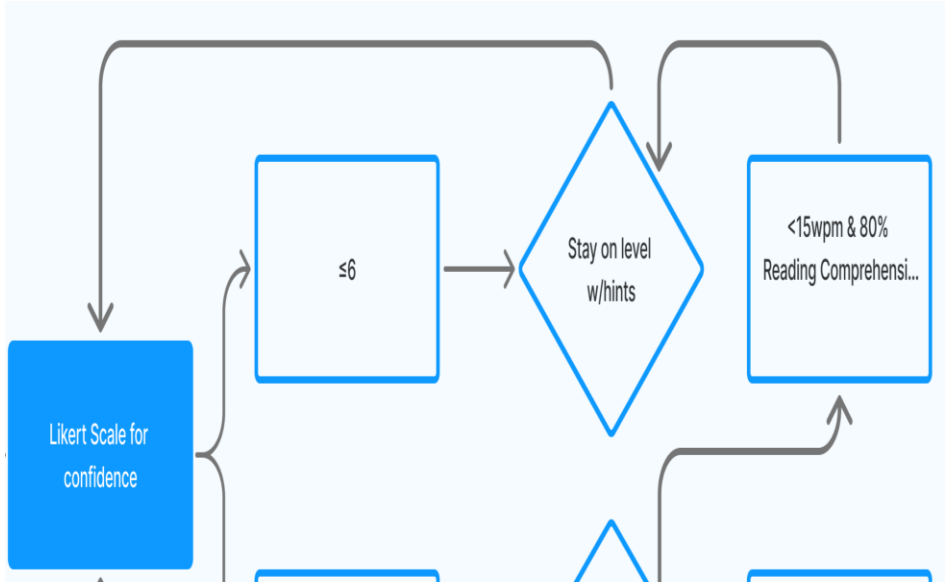
- Less than 80% on reading comprehension assessment=back to peer brainstorm

Caption, add arrows, etc. as needed

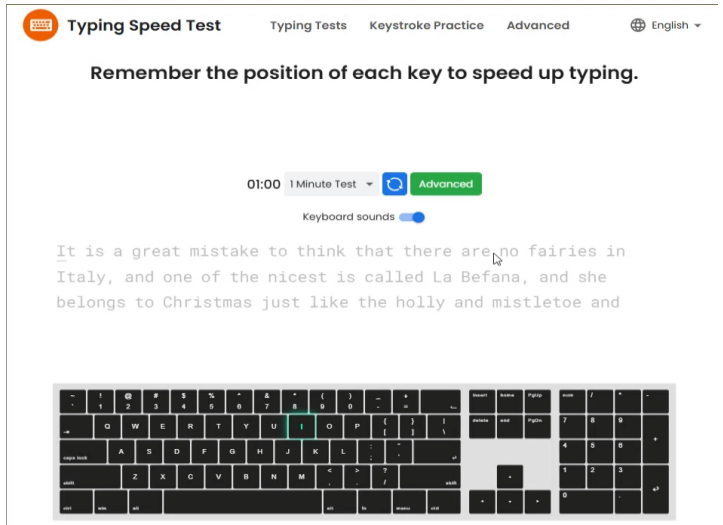
Step Loop PL Design Flow & User Experience (Typing)

PL Design Logic view (back end)

- Flow chart



User Experience (screen view)

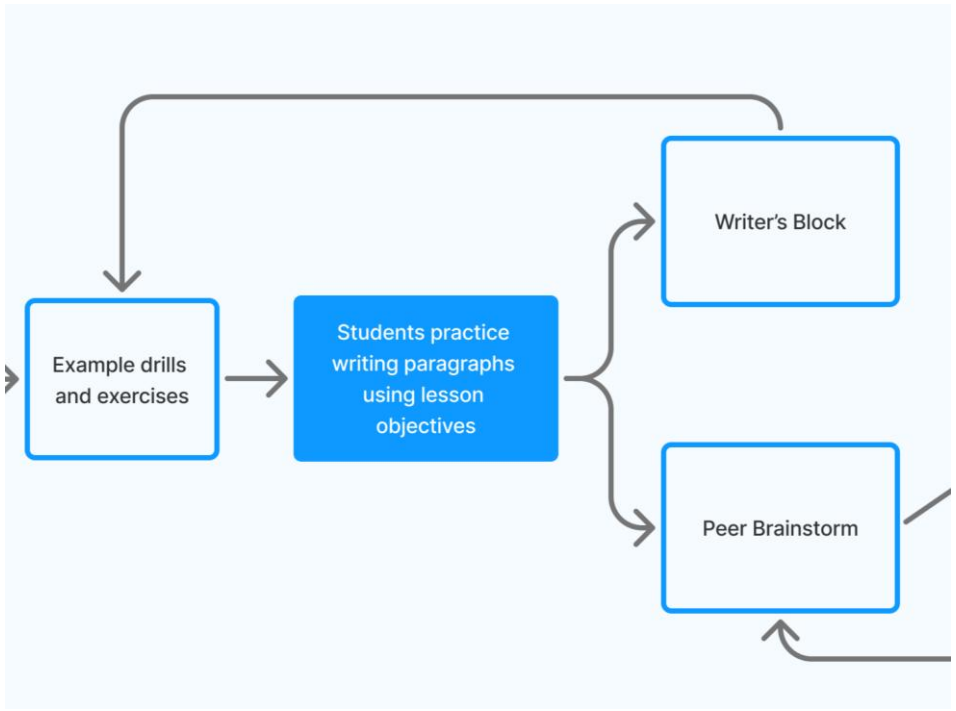


- <15WPM and 80% reading comprehension score=immediate feedback and hints

Caption, add arrows, etc. as needed

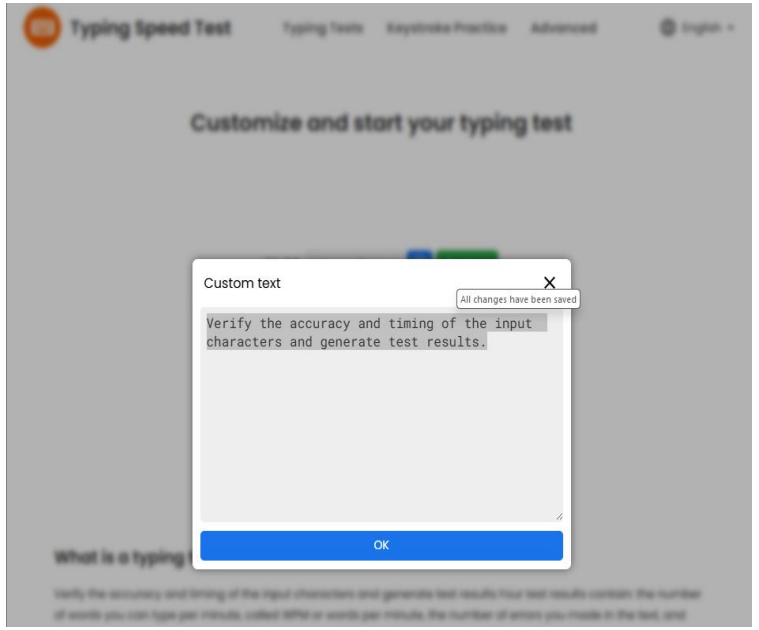
Step Loop PL Design Flow & User Experience (Writing)

PL Design Logic view (back end)



User Experience (screen view)

- Students stumbling upon writer's block will go back to doing drills and exercises for writing.



Caption, add arrows, etc. as needed

Conclusion (Output to Outcome to Impact)

References

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