

# Examining clickstream data to understand implementation of a tablet-based curricular reading adaptation

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## Conceptual Model



## This Study

In this study, we focus on how questions of **EXPOSURE** (amount of the intervention received), **ADHERENCE** (delivery of the intervention's essential ingredients), and **QUALITY OF PROGRAM DELIVERY** (how well the implementer delivers the program). These can be addressed through data that is automatically collected by any website or app.

**Study:** The Read-It-Again Mobile App, a tablet based early reading intervention.

**Teacher Facing:** Preschool teachers use it to guide their instruction.

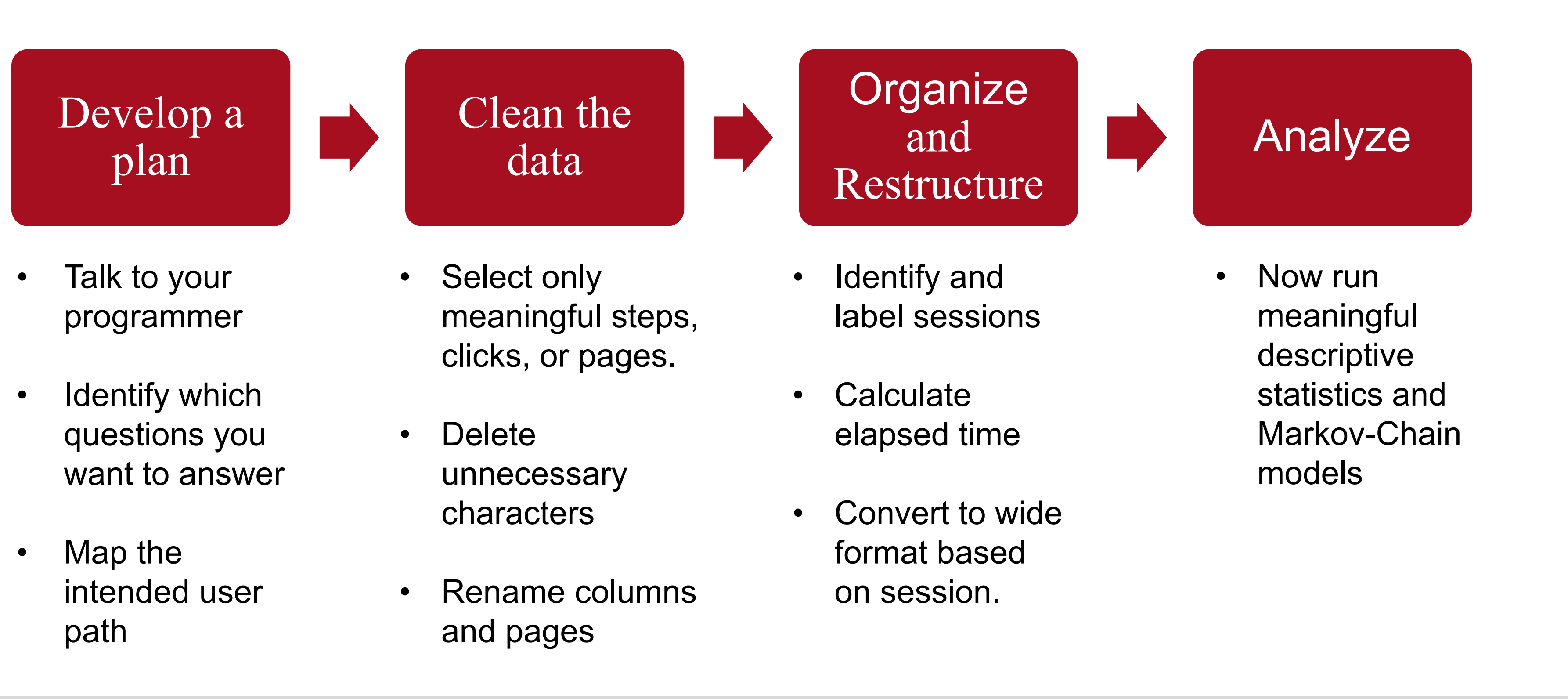
**Key Components:** 60 Lessons, two lessons per week, teachers provide individualized instruction.

**Data:** 15 Teachers Participated; 60,000 records generated.

## Study Example: Read It Again Mobile

	Fidelity Questions	Clickstream Data	Study Example	Traditional method	Clickstream data	Findings
Exposure	<p>How often are users accessing the app?</p> <p>How long are users spending in the app?</p> <p>Are users accessing all pages?</p>	<p>Frequency of logins and targeted page views</p> <p>Duration of a session</p> <p>Page view frequencies and probabilities</p>	<p>Are children exposed to all 60 lessons included in the curriculum?</p>	<p>Teacher self-reported logs.</p>	<p>60 lessons accessed online by the end of the study</p>	<p>Total lessons</p>
Adherence	<p>Do users access the content as intended?</p> <p>Do users access the app on the correct schedule?</p> <p>Are users fulfilling all aspects of the intervention content?</p>	<p>Time spent on targeted pages</p> <p>Regularity of logins</p> <p>Counts of completed events</p>	<p>Are lessons delivered one per day?</p>	<p>In class observations</p>	<p>When were lessons clicked on by teachers?</p>	<p>Lesson per day avg</p>
Quality of delivery	<p>Are users completing assessment and reports?</p> <p>Do users follow the intended process?</p> <p>Are users able to use the app without error?</p>	<p>Probability and duration of access</p> <p>Probability of following intended path</p> <p>Error logs / Help messages</p>	<p>Are users visiting key pages that will help them deliver the curriculum with quality</p>	<p>In class observations</p>	<p>Markov Chain probabilities of moving through the app</p>	

## Do it yourself



## Conclusions

**Fidelity:** Implementation of this app was much more variable than we anticipated. We would not have known just how variable implementation was without accessing this clickstream data.

## Next Steps

- Develop user profile models
- Link usage patterns to student growth
- Replicate analysis plan with different tablet-based intervention.

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