

ラーニングアナリティクスとゲーミフィケーション

カーネギーメロン大学コンピュータサイエンス学部 博士後期課程

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Intelligent Tutoring Systems (ITSs) 知的学習支援システム

細かいステップ毎に学習者をガイドし、学習を支援(ヒントやフィードバック)

Please solve for x

$$2x + 3 = 7$$

Choose an appropriate diagram representing your current step

Hint Hint Finish Problem

Cancel Const Terms Cancel Variable Terms Combine Like Constant Terms Combine Like Variable Terms Simplify Division
Distribute Division Subtract Constant Subtract Variable Simple Division Complex Division

Open Learner Models

学習者の知識レベルを推測し、学習者に提示

Please solve for x

$$2x + 3 = 7$$

Choose an appropriate diagram representing your current step

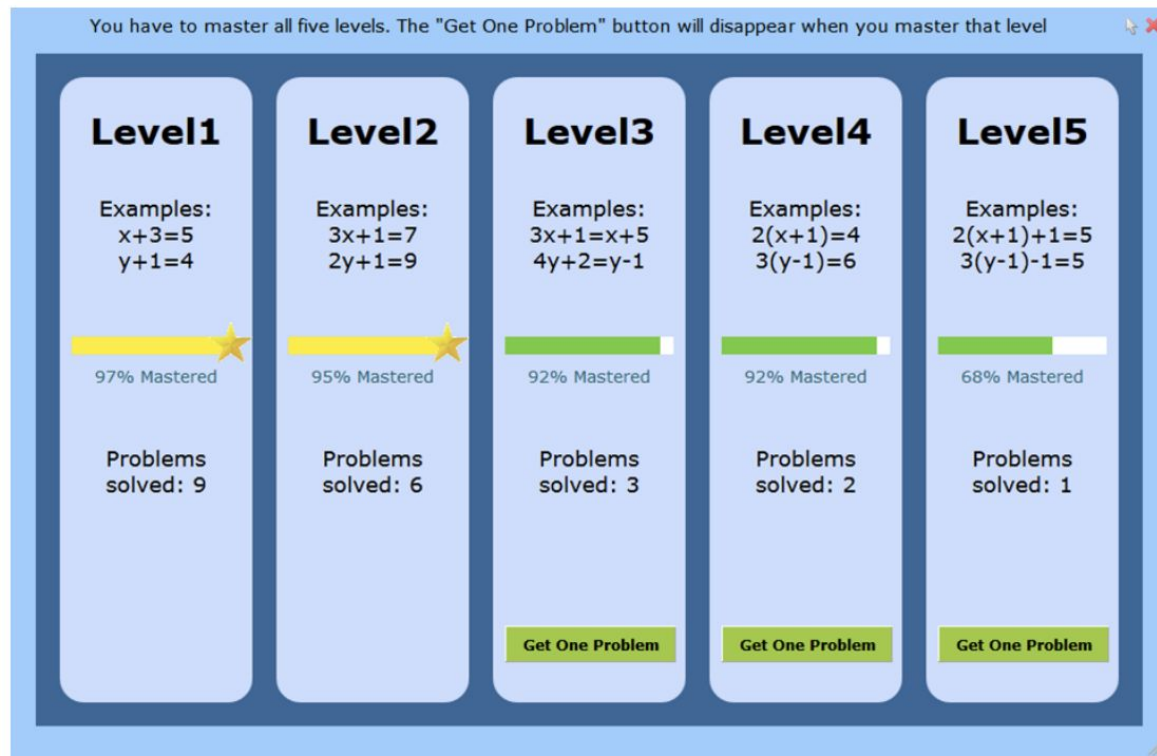
Hint Hint Finish Problem

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cancel Const Terms	Cancel Variable Terms	Combine Like Constant Terms	Combine Like Variable Terms	Simplify Division
Distribute Division	Subtract Constant	Subtract Variable	Simple Division	Complex Division

Nagashima, T., Bartel, A. N., Silla, E. M., Vest, N. A., Alibali, M. W., & Alevan, V. (2020). Enhancing conceptual knowledge in early algebra through scaffolding diagrammatic self-explanation. In Proceedings of the International Conferences of the Learning Sciences (ICLS2020), Nashville, TN.

Open Learner Models

よりエンゲージング(かつ効果的)な学習体験を



Open Learner Models

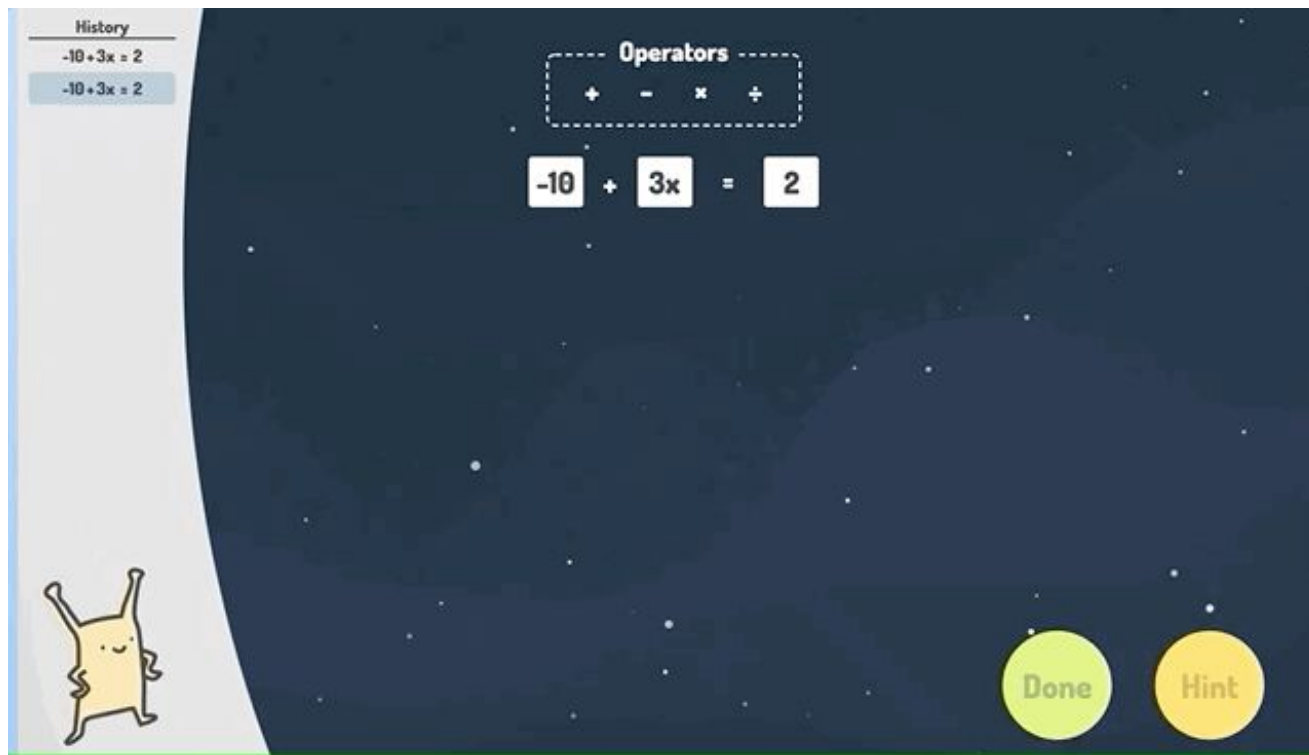
よりエンゲージング(かつ効果的)な学習体験を



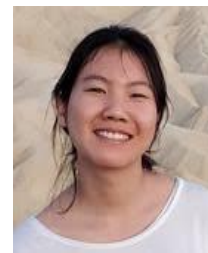
Xinying Hou

ITS + Gamification

よりエンゲージング(かつ効果的)な学習体験を



The screenshot shows a math learning interface with a dark blue space-themed background. In the top-left corner, a 'History' panel lists the equation $-10 + 3x = 2$. In the center, a dashed box labeled 'Operators' contains the symbols $+$, $-$, \times , and \div . Below this, the equation $-10 + 3x = 2$ is displayed with each element in a separate box. In the bottom-left corner, there is a small yellow cartoon character with arms raised. In the bottom-right corner, there are two circular buttons labeled 'Done' and 'Hint'.



Xiran Wang



John Britti

ITS + Gamification

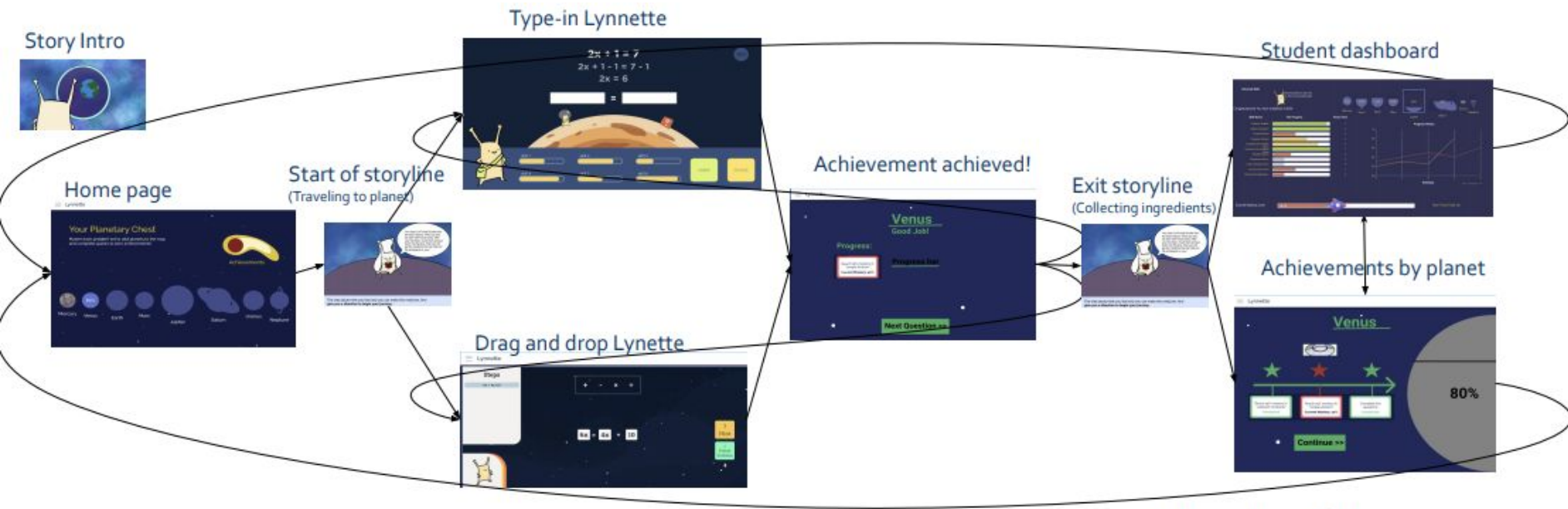
よりエンゲージング(かつ効果的)な学習体験を

The screenshot shows a math problem-solving interface. At the top, it says "Please solve for x" followed by the equation $11 = 2x + 5$. Below the equation is a text input field. On the right side, there is a progress bar for various algebraic skills, each with a yellow indicator showing progress: Subtract Variable, Subtract Constant, Simple Division, Complex Division, Combine Like Variable Terms, Combine Like Constant Terms, Simplify Division, Distribute Division, Cancel Variable Terms, Cancel Const Terms, and Distribute Multiplication. In the bottom left, a yellow cartoon character with a question mark above its head is next to a white text box that reads: "You have constants on both sides. How can you have all constants on the left and none on the right?". Below this text box are navigation buttons: "Previous", "Next", and a "Finish Problem" button.

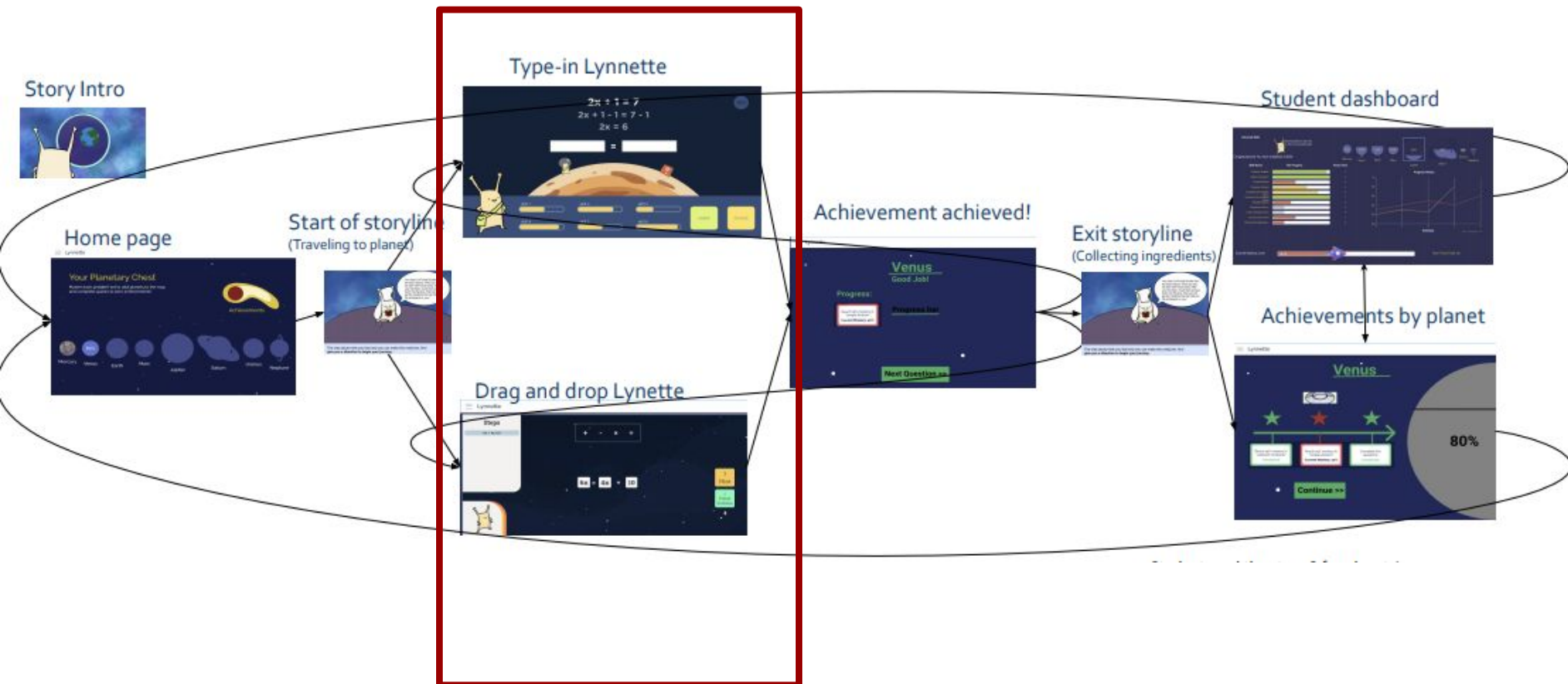


Sihan Wu

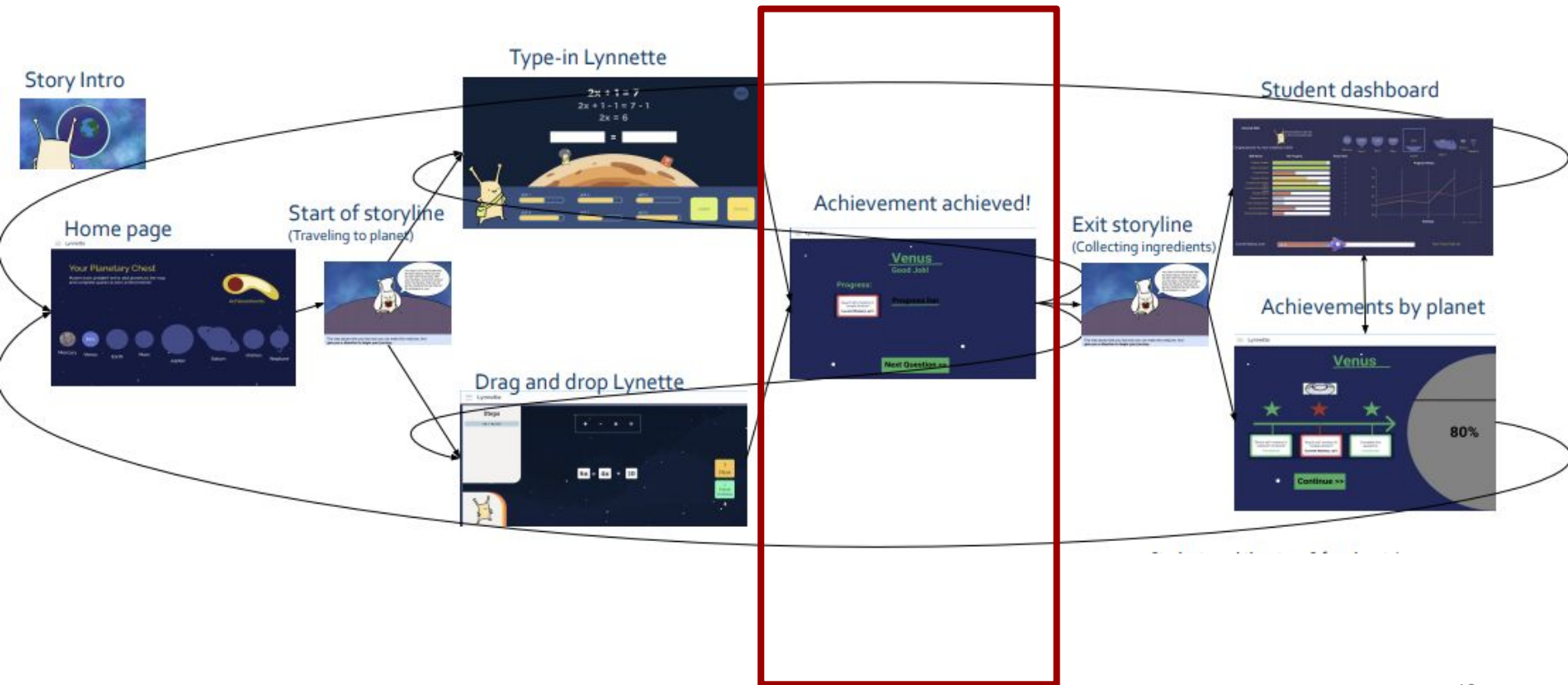
LAとGamificationで学習体験をデザイン



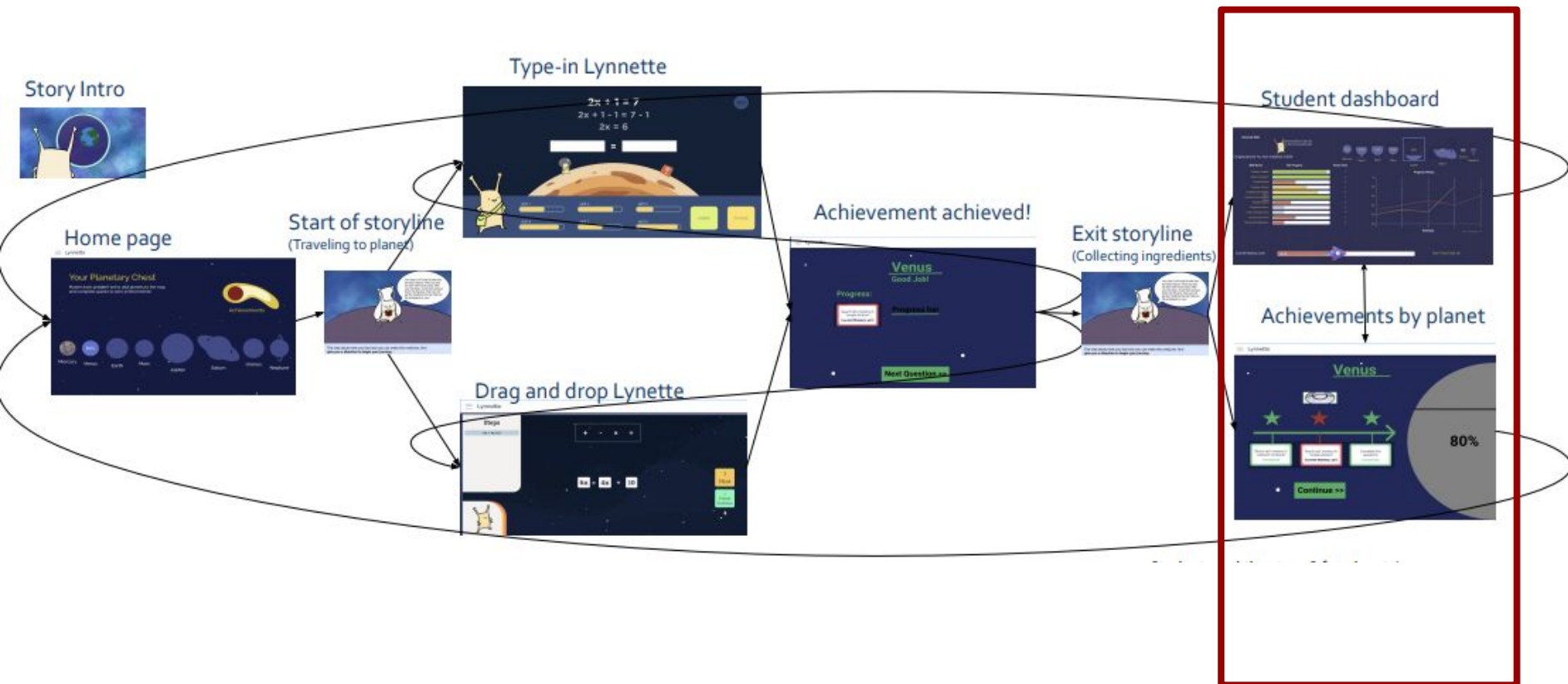
LAとGamificationで学習体験をデザイン



LAとGamificationで学習体験をデザイン



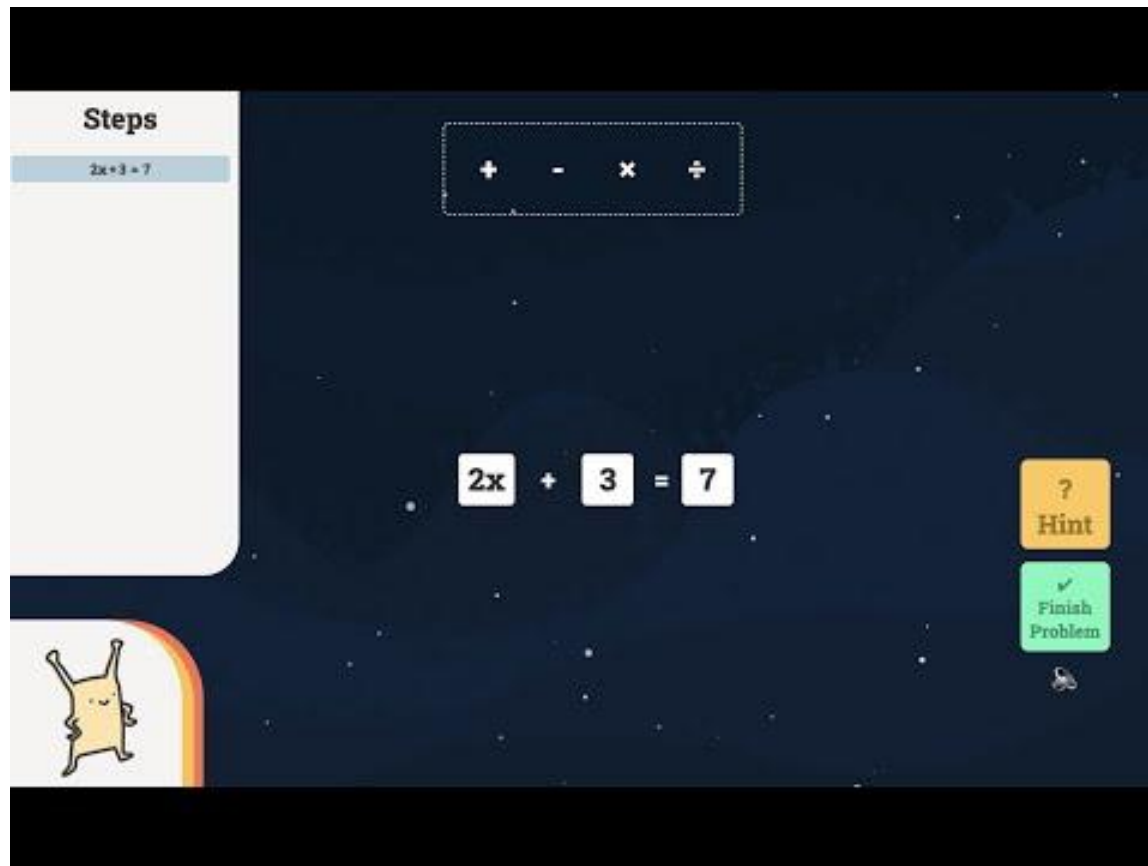
LAとGamificationで学習体験をデザイン



LAとGamificationで学習体験をデザイン



LAとGamificationで学習体験をデザイン

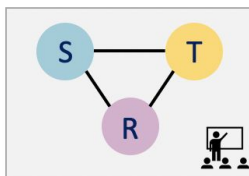


コロナ禍の(学校現場における)教育研究

リモートでの学習支援、研究活動は困難

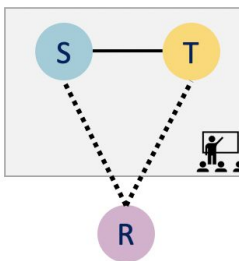
A.

In-person synchronous class and researcher



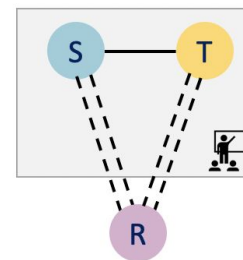
B.

In-person synchronous class, remote synchronous researcher



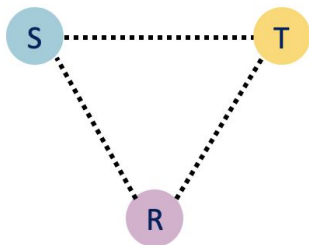
C.

In-person synchronous class, remote asynchronous researcher



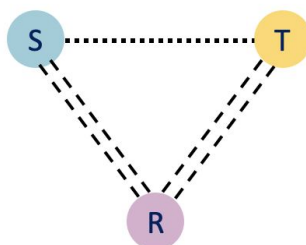
D.

Remote synchronous class, remote synchronous researcher



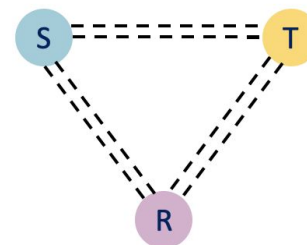
E.

Remote synchronous class, remote asynchronous researcher



F.

Remote asynchronous class, remote asynchronous researcher



LAとGamificationで学習体験をデザイン



コロナ禍の(学校現場における)教育研究

教師と生徒へのサポート

Deep dive - Figma

figma.com/file/NjnFsy5LOCgyowMfKw9uF/Deep-dive?mode-id=431%3A235

Tutorshop

Home > Classes > Dashboard > Students > John Johnson

John Johnson

AREAS OF STRUGGLE

- 1 Subtract variable 10 ATTEMPTS 30% View
- 2 Subtract variable 10 ATTEMPTS 50% View
- 3 Subtract variable 10 ATTEMPTS 80% View

PROBLEM SETS

PROBLEMS

- Blue level 10 Today 2:02 PM
- Blue level 10 Today 2:02 PM
- Blue level 10 Today 2:02 PM
- Blue level 10 Today 2:02 PM
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- Blue level 10 Today 2:02 PM
- Blue level 10 Today 2:02 PM

Blue level 10

10 6 13

Student may be abusing hints Today at 2:02 PM

mc_bear_man

Frac Add: Activity 1 of 3

1 = 6
4 = 24
+
1 = 4
6 = 24
10 = 24
24 = 24

Determine Lcd
Reduce Denominator
Convert Numerator
Reduce Numerator
Copy Answer Denominator
Add Numerators
Multiply Denominators

Hint

Done

11:56 20-7-2021



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