Comixplain

Explaining STEM-Subjects with Comics

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WHY – INTRODUCTION

Comics foster learning through sequential combinations of texts and images, appeal to diverse audiences, and can serve as material for informal, self-paced learning. However:

- There is a lack of clear and accessible **guidelines** for creating effective teaching comics.
- Educators often face constraints in **preparation time and perceived drawing skills**.
- Keeping educational resources **updated** is more challenging with comics.

HOW – METHOD

User Research: Surveys & discussions on teaching materials, strategies, topics, and constraints

Ideation & Co-Design: Workshop with students, formulation of requirements for our comics:

- Structure (Modular Solution)
- Format (Scalability, Availability, Usage Rights)
- Content (Terminology, Student Experience, Real-World-Metaphors, Balanced Character Roles)

Development & Refinement of Comics: Iterative creation, assessment, and refinement of four comics

Assessment: Focus group with lecturers, implementation in two visualization lectures, evaluation through a survey
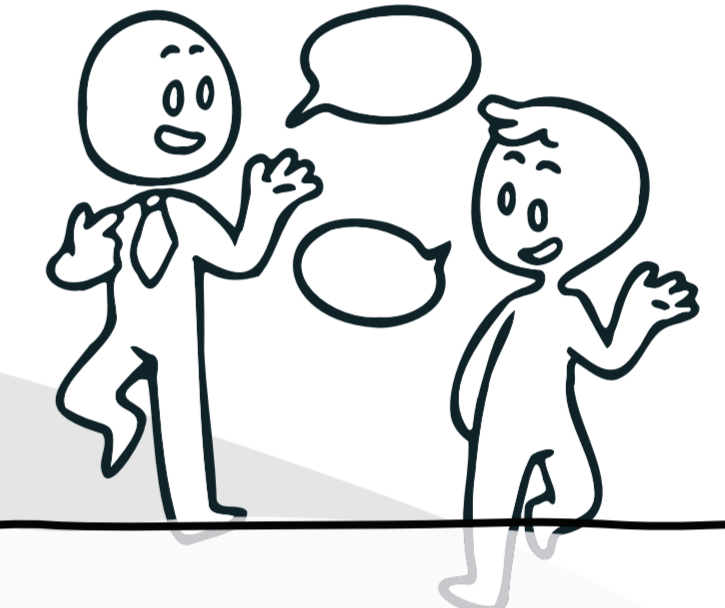
COMIC DEVELOPMENT

Script > Storyboard > First Version > Assessment > Polish

Narrative panels   Descriptive panels   In-Depth panels **(optional)**

The panel structure is modular, so the comic can be left as is, split and used in slides, or condensed to specific parts. Additionally, all characters and assets can be used to expand our comics or create fully custom ones. The comics are editable or can be made from scratch in PowerPoint, so no familiarity with drawing tools is needed.

LEARNINGS & CONCLUSION

Our comics were well-received among both students and lecturers, but we observed some challenges for the wider adoption of the medium:

- Striking a balance between thorough explanations and spatial constraints can be challenging.
- Some lecturers, unlike students, expressed concerns about comics not conveying a serious tone and questioned their face validity.
- Even with PowerPoint templates, challenges in creation remain (e.g., finding the right assets...)

Comixplain introduces a series of **empirically evaluated** and **customizable** educational comics to promote student-centered teaching and learning and facilitate the creation of derivative comics. All comics and materials are **open-source** (CC BY-SA license). We encourage readers to use and add to the growing repository of currently four comics in six languages, a comic creation guide, and over 600 hand-drawn assets.
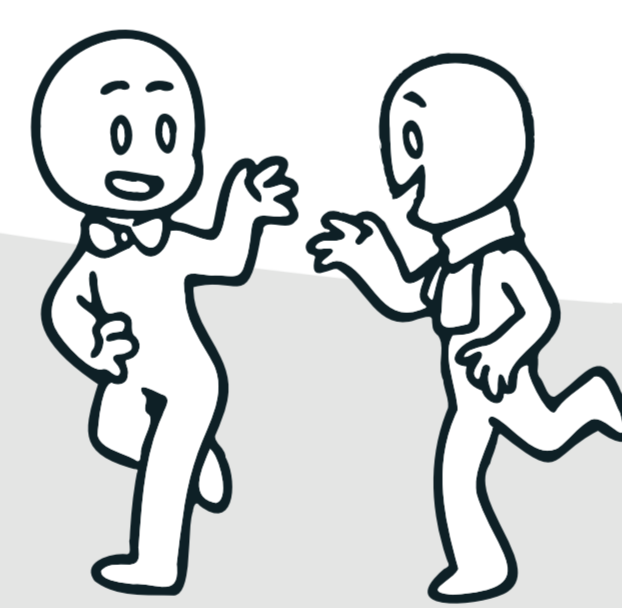
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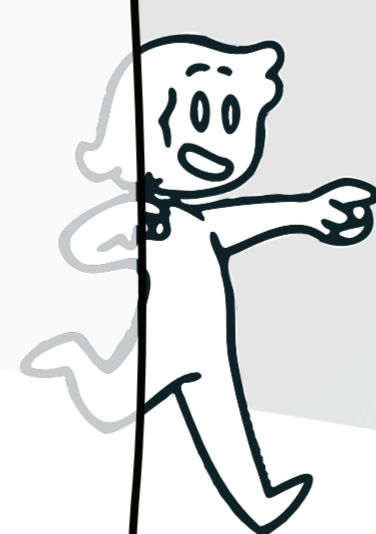
We aim to broaden our comic collection to include more topics. Everyone can contribute to our repository:
fhstp.github.io/comixplain