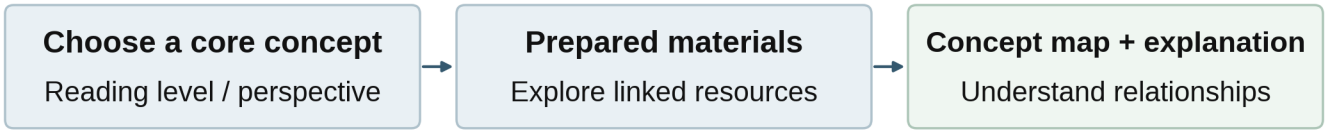
3D StudyLink Project Overview

Learning materials organized around concepts students choose

3D StudyLink connects a **3D map of textbook concepts** with materials shaped by students' choices.
Learners choose a **concept, perspective and reading depth**.
Prepared explanations, questions, activities and resources follow the selected concept.
Eight early-Joseon concepts form a prototype for connecting school levels and subjects.

Like a constellation, the map makes related ideas visible. Choosing a concept changes where reading begins and how its explanation is organized. The 3D space represents conceptual relationships.

A selected concept becomes a reading path



This diagram explains the link between selection and assembled learning material.

Current prototype Students can rotate and zoom the network, select one or several school-level ranges and compare perspectives. Content is prewritten. Broader connections to other subjects and specialist sources are proposed next steps. [1, 2]

About the developer

Jung-Hoon Lee Dongguk University and Yangjung Middle School

Jung-Hoon Lee holds a PhD in Educational Technology. In 2000, he was responsible for developing an AI search engine with automatic classification and for content planning. At the time, he presented a paper at an advertising society meeting on search-engine implementation and advertising applications on small screens. His published research covers teachers' voices, student doodling, support for students with tics, writing-tool grip and textbook concept maps.

He coordinated the **Rainbow Tray project** from 2014 to 2025 and participated in Samsung Tomorrow Solutions.

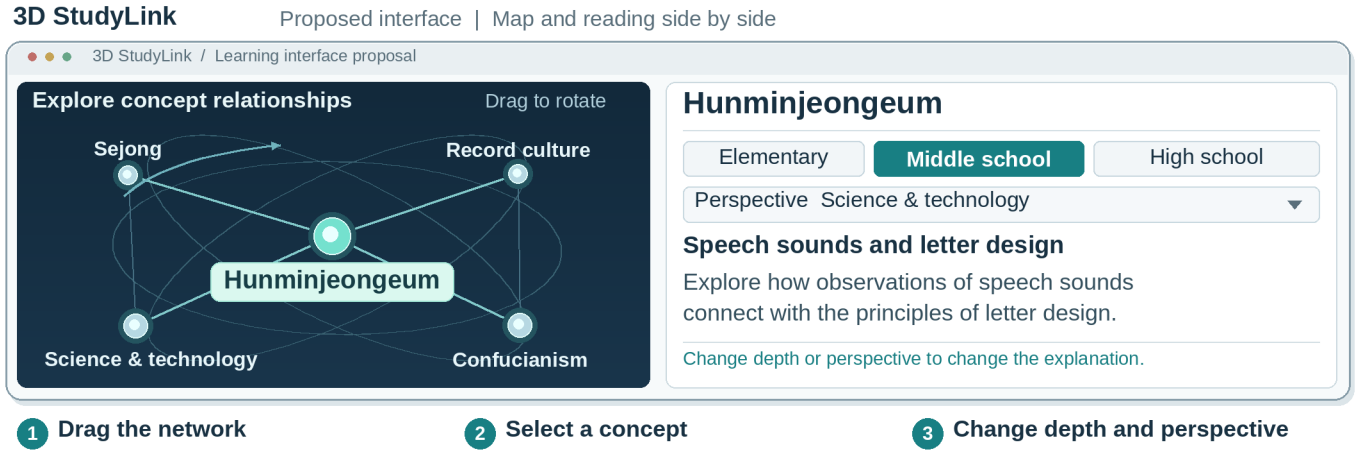
Recent work includes **Textbook Plus**, **배움이움**, a digital materials platform for students in graduate schools and departments of education, and the **3D StudyLink** prototype for exploring textbook concepts and learning content in 3D. An ongoing "research paper incubator" experiment converts papers into concept maps and connects them by topic and academic society.

Email yes@dgu.edu **Prototype** https://3dstudylink.com

Scan the prototype

Student exploration and experience

Choose Hunminjeongeum, then change the **perspective and reading depth**. These imagined screens show how selection and reading could work together.



Imagined prototype interface: concept, perspective and reading-depth choices. The side-by-side map and reading layout is a proposed redesign.

The 3D concept view. JavaScript rotates and projects concept coordinates onto the screen. SVG nodes and links update as learners rotate, zoom and select concepts. [T1]

Materials follow the choices. The concept, perspective and reading depth select **prepared texts**. Responsive CSS adapts the layout; mouse, touch and keyboard inputs support exploration. [T1, T2]

Findings from initial use

An initial-use study collected responses from 57 middle-school students. Positive reactions to choice and exploration appeared alongside difficulties with access and navigation.

Observation	Response	Design implication
Eight positive-experience items	80.4–89.3% agreement	Initial reactions to choice and exploration
Difficulty opening resources	23/54 students 42.6%	Improve access and guidance
Confusion while navigating	27/55 students 49.1%	Show the current position and route

Agreement means a rating of 4 or 5 on a five-point scale. Valid response counts differ by item. These are reports of use experience, not measured gains in conceptual understanding.

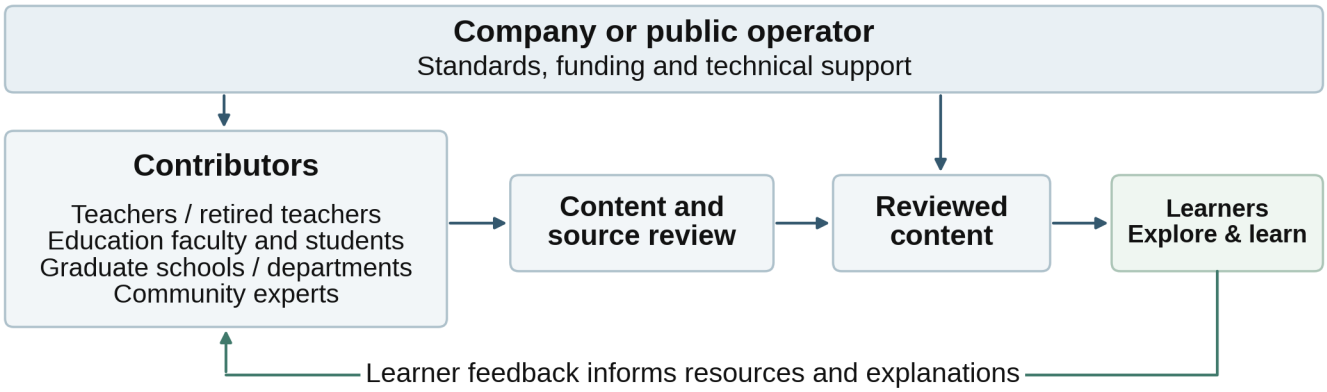
Study: development manuscript, Table 5 and follow-up interviews [1]. Public implementation: [T1] https://3dstudylink.com/jarvis-engine.js
[T2] https://3dstudylink.com/lesson-composer.js · https://3dstudylink.com/jarvis.css

Operations and expert participation

A proposed structure for enterprise or public-sector operation

An operating organization provides the technical and content-management infrastructure. Teachers and specialists review concepts and the reasons for their connections. Sources, authors and review status remain attached to the explanations students read.

Proposed operating model



Proposed operations connecting content creation, review and classroom feedback.

Participant	Proposed contribution
Practicing teachers	Define lesson scope and questions and review students' exploration and explanations.
Retired teachers	Contribute examples and introductory explanations for review with classroom teachers.
Graduate and undergraduate education students	Analyze material and develop concept links and teaching resources under supervision.
Professors in education	Review analysis criteria and relationships and support classroom research.
Community specialists and institutions	Provide domain examples and local resources and check their accuracy.

A public operator could support continuity across school levels and local learning resources. An enterprise could develop materials and provide institutional services. A partnership could combine those roles with content review by schools and universities.

The proposed workflow retains authorship, review status, sources, usage rights and revision history.

Learning grows from a student’s question

Connecting textbook concepts with more resources and support

Students may choose the same concept but need different explanations and support. A shared concept can connect basic explanations, other subjects, specialist sources and local learning opportunities around each student’s situation.



Imagined prototype interface. The layout and ‘My notes’ are proposed extensions; node sizes and connections are illustrative.

Application examples could pair foundational reading with a teacher, multilingual resources with a mentor, or local-history inquiry with museum and community expertise.

Extending resources and support

More materials and educators could connect around the same concept: school textbooks, university introductions, dictionaries and papers, with explanations from teachers, professors and practitioners. **Foundational learning, multilingual and accessible reading support, and local educational services** are proposed extensions.

Next development steps

Begin with one lesson topic and refine its evidence links and reading sequence. Expand with teachers of other subjects and examine whether students can explain why concepts connect. Links to educational services would be introduced in stages with the responsible organizations and clear access conditions.

Sources

[1] Lee and Kang. Development of a learning platform based on three-dimensional concept networks and exploration of middle school students’ use experiences. Supplied development manuscript, Table 5 and discussion.
[2] Public prototype and research introduction: https://3dstudylink.com/ and https://3dstudylink.com/research-en.html