



User Documentation

V.2.0

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By Sero! Learning Assessments, Inc.

Sero! Learning Assessments, Inc., offers Sero!,
a concept mapping-based assessment software tool.

This document describes Sero! version 2.0,
its goals and the user roles it supports,
and functions and features available to each user role.

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Terms

Roles	Assessor	user type with the ability to author MasterMaps, create assessments, assign to Takers, review results, and manage Taker accounts
	Taker	user type with the ability to complete assignments and review results
	Group	group of Takers assembled by an Assessor
Maps	concept map (or "map")	organized set of propositions
	proposition	statement in concept > linking phrase > concept format that serves as a building block of a concept map
	concept	anything or event represented by a word or phrase inside a box
	linking phrase	description of the relationship between a pair of concepts, represented by a word or phrase on a connector
	connector	line between concepts and linking phrases
	arrowheads	shape appearing at the end of a connector between linking phrase and concept
	MasterMap	concept map comprising valid propositions that serves as the basis for assessments
	Start from scratch	method for creating a MasterMap that requires entering propositions manually
	Import from file	method for creating a MasterMap that requires importing propositions from a file outside Sero!
	Balance	comparison of branches and branch size
Map structure	Crosslinks	propositions that cross branches
	Cycle	series of propositions that ends with same concept that initiated the series
	Fan	set of three or more propositions that share the same linking phrase and initial concept(s)
	Chain	series of propositions that are not connected to any other propositions
	Network	set of propositions with variety of connections between them

Assessments	assessment	product enabled by Sero! for learning, research, and evaluation; Taker's process of interacting with such a product
	assignment	assessment that has been assigned to Takers
	unassigned	status of assignment that has not yet been assigned
	assigned	status of assignment that has been assigned
	Build-a-Map	type of assessment that provides Takers with a set of concepts and linking phrases from which they are to build a concept map
	Skeleton Map	type of assessment that provides Takers with a partial concept map including assessment items to be completed or corrected
	assessment item	one of six methods for completing a Skeleton Map
	Multiple choice	assessment item type that requires Takers to select an option from a list to complete a proposition
	Fill-in	assessment item type that requires Takers to fill in content to complete a proposition
	Drag-and-drop	assessment item type that requires Takers to drag and drop concepts from a word bank to complete a proposition
	Connect-to	assessment item type that requires Takers to create connectors to complete a proposition
	Arrowhead direction	assessment item type that requires Takers to select which connector should include an arrowhead to state the direction of a proposition
	Error correct	assessment item type that requires Takers to select an option from a list to correct a proposition
Navigation	Dashboard	homepage for Assessors and Takers
	Workspace	page for Assessors and Takers where most work happens
	map area	area where maps are displayed
	Refresh	feature that gathers and displays any updates to the current page's information
	Archive	feature enabling maps to be removed from active list

Assessor-specific	My maps	list of all maps created and their statuses
	Author	tab, steps, and features that enable authoring and assigning maps
	Review	tab and features that enable reviewing results of Takers' work
	Compare Takers	review feature enabling comparison among Takers
	Compare to MasterMap	review feature enabling comparison of Takers to MasterMap
	Contact	feature enabling Assessor to send email to Sero! Team
	Consensus	in Build-a-Map review, the ratio of Takers whose maps include the displayed propositions
	Correct	in Build-a-Map review, proposition in Taker map whose concepts and linking phrase match those of a proposition in the MasterMap
	Incorrect	in Build-a-Map review, proposition in Taker map whose linking phrase does not match that of the proposition in the MasterMap
	Missing	in Build-a-Map review, proposition in MasterMap not included in Taker map
	Extra	in Build-a-Map review, proposition in Taker map not included in MasterMap
Taker-specific	My maps	list of maps created by a Taker
	Incomplete	assignment status prior to work
	In-progress	assignment status after work has begun but prior to submission
	Submitted	assignment status after submission
	Graded	assignment status after submission and grading
	View My Map	view of Taker's work
	View MasterMap	view of MasterMap
	Correct	in Build-a-Map review, proposition in Taker map whose concepts and linking phrase match a proposition in the MasterMap
	Incorrect	in Build-a-Map review, proposition in Taker map that is not a match to a proposition in the MasterMap

Sero! for Concept Mapping-Based Assessment

Sero! is the world's only software tool enabling concept mapping-based assessment.

Concept Maps

Concept maps are diagrammatic representations of knowledge that have been shown to be effective at facilitating learning for almost 50 years.¹ They have been applied in a wide variety of domains of knowledge and with learners and professionals of all ages.² As meaningful diagrams, concept maps can help to 'externalize' cognition, guide reasoning, reduce cognitive demands, support working memory, present information 'at a glance,' and shift some of the burden of text processing over to the visual perception system. In a team context, diagrams can support dialogue, help uncover hidden assumptions, facilitate the development of shared understanding, and act as a tool for supporting the communication of meaning and intent.³

Concept maps are defined by several hallmark features:

- A focus question provides context for the map,
- Elements comprise concepts, linking phrases, connectors, and arrowheads,
- Combined elements form directional propositions in the structure:
concept – linking phrase → concept,
- Propositions are organized in a mostly hierarchical shape, including propositions that cross branches of the hierarchy, called 'cross-links.'

¹ Novak & Gowin, 1984; Novak and Cañas, 2016; Ruiz-Primo & Shavelson, 1996; Shavelson & Ruiz-Primo, 1999.

² Novak & Cañas, 2010.

³ Hoffman et al., 2015.

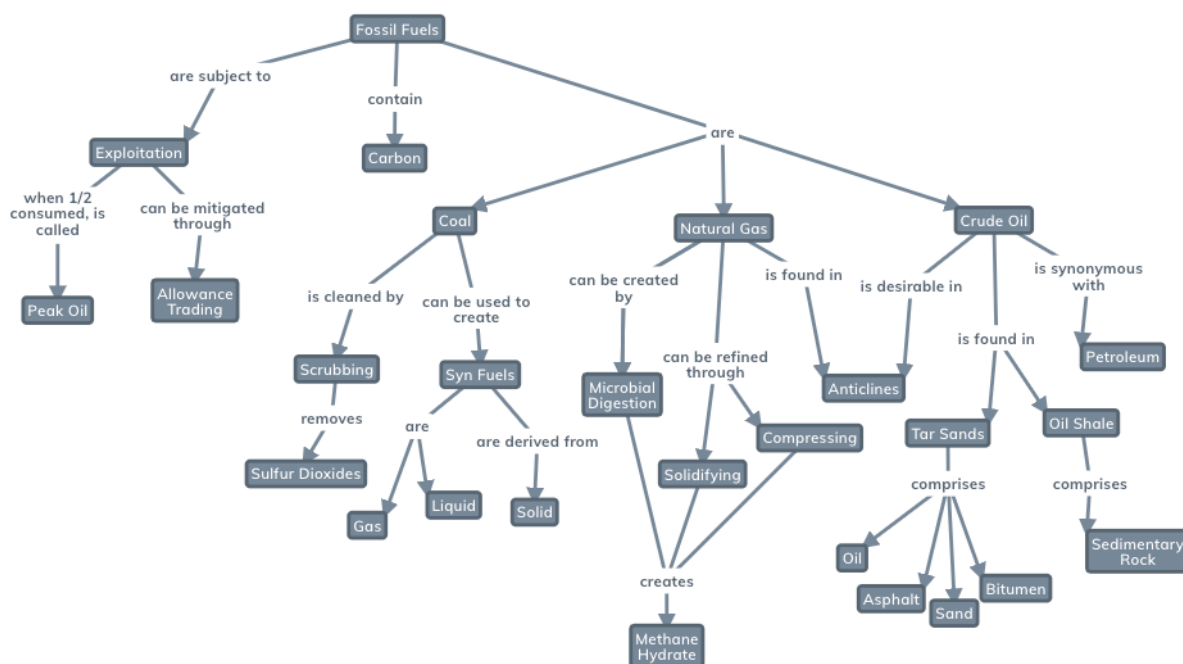


Figure 1: Concept map

These hallmark features serve to integrate the ‘**content**’ and ‘**structure**’ of people’s knowledge and understanding — and thus offer opportunities for assessing what people know.

Concept Mapping for Assessment

Concept mapping comprises a series of cognitive tasks, including generating concepts appropriate for and relevant to the map, creating links between them, labeling those links with phrases that express the nature of the relation, and organizing the resulting propositions into maps. Such tasks align with the hallmarks of higher-order thinking:

- Interpolation: filling in information that is missing from a logical sequence,
- Extrapolation: extending an incomplete argument or statement,
- Reinterpretation: rearrangement of information to affect a new interpretation.⁴

⁴ Bartlett, 1958.

Because concept mapping exercises these skills, the activity is ideal for use in assessment. The versatility of concept mapping is a key reason for the U.S. Department of Education calling for concept mapping as one type of interactive computer task that is highly recommended for inclusion in every National Assessment of Educational Progress (NAEP) Science Assessment at the 8th and 12th grade levels.⁵ As the NAEP *Science Framework* notes, concept mapping activities tap abilities that are difficult to measure by other means.

Concept mapping has been studied as an assessment strategy for decades. In 2008, Schaal reported that the “validity and reliability of Concept Mapping assessment has been properly explored”.⁶ Programs examining assessment strategies in the classroom have been implemented and evaluated worldwide, including among other places, the USA,⁷ Estonia,⁸ Italy,⁹ Finland,¹⁰ Panama,¹¹ Iran,¹² Costa Rica,¹³ and Greece¹⁴. Alla Anohina-Naumeca’s excellent book, *Concept Map-Based Formative Assessments of Students’ Structural Knowledge*¹⁵, provides a rigorous review of the theoretical and practical advantages and challenges for using concept mapping as an assessment tool.

A meta-analysis of concept mapping approaches for large-scale assessment found a strong correlation between concept mapping assessments and traditional assessment measures, and that methods that compare the learners’ performance against a criterion/reference/expert/MasterMap are the most valid and reliable method for scoring concept mapping-based assessments.¹⁶

⁵ NAGB, 2015.

⁶ Schaal, 2008.

⁷ Schau, Mattern and Weber 1997; Schau et al., 2001; Meel, 2005.

⁸ Henno & Reiska, 2008.

⁹ La Vecchia and Pedroni, 2007.

¹⁰ Ahlberg and Ahoranta, 2008.

¹¹ Miller and Cañas, 2008.

¹² Mirzaie, Abbas and Hatami, 2008.

¹³ Silesky, 2008.

¹⁴ Gouli, Gogoulou and Grigoriadou, 2005.

¹⁵ Anohina-Naumeca 2019.

¹⁶ Himangshu & Cassata-Widera, 2010.

There are dozens of approaches — i.e., tasks, rubrics — that guide using concept mapping for assessment. Because they exercise similar cognitive tasks, concept mapping assessment approaches provide many of the same diagnostic benefits as traditional assessment strategies. In addition, they also offer some unique assessment opportunities that traditional assessment items simply cannot, as suggested in Table 1.

Table 1: Comparison with traditional assessment items

Assessment process	Shared with traditional assessment items – e.g., multiple choice, fill-in, matching	Unique to concept mapping-based assessment
Authoring	Use of challenging distractors; Selective coverage of content	Meaningful reasoning about propositions that provide cohesive and coherent abstraction of content
Taking	Reasoning about discrete items and questions	Holistic and interdependent reasoning about and across propositions, considering dependencies and context
	Linear item presentation, with some sequencing	No particular order of items; Entire activity is the assessment process
	Recognition and recall	Higher-order thinking skills
	1-to-1 or 1-to-several matching and placement	1-to-EntireMap
Analysis	Pass/fail, correct/incorrect, duration between answers, answer revision, sequence of answers (including first answer), score per item types	Assertions about cognitive performance made across items, by proposition, and by map
Reporting	Rapid scoring and reporting at individual and group levels; Comparison of performance between individuals	Visualization of targeted conceptual understandings

While the theoretical basis for using concept mapping-based assessment in learning is well established, wide-scale implementation strategies have remained elusive. Research has suggested several reasons why effective and efficient implementation has been challenging. Several studies have focused on challenges of maintaining content and scoring reliability.¹⁷ Assessor, teacher, and student understanding of concept maps and their purposes can also hinder successful deployment, an issue that has been seen repeatedly in partial implementations.¹⁸

Given these challenges, the goals of Sero! are to efficiently enable concept mapping-based assessment by any Assessor or researcher, in any context and at any scale — e.g., classroom/large-scale/laboratory — and for multiple assessment purposes — e.g., learning effects and shared mental models. Importantly, Sero! helps people learn how to become good concept mappers by breaking down the process into learnable steps.

¹⁷ Ruiz-Primo, Schultz, Li, & Shavelson, 2001.

¹⁸ Ayala et al., 2008; McClure et al., 1999; Schau et al., 1997.

Sero!

Sero! is a cloud-based software platform developed by Perigean Technologies to advance concept mapping as an assessment strategy.

History

Sero! has been developed and evaluated by Perigean Technologies since 2014 through a series of projects funded by U.S. federal agencies.

- Intelligence Advanced Research Projects Agency | A game-based version of Sero! was developed to experiment with improving adaptive reasoning skills in adults,¹⁹
- Advanced Distributed Learning Initiative | Sero! v.1 was developed to facilitate a summative assessment capability, guided by user-centered design, and included in two experiments examining learning architectures,²⁰
- ReliabilityFirst | Sero! served as the basis for the design of an end-to-end model for eliciting and evaluating professional knowledge,²¹
- AFRL | Sero! v.2 is being extended into formative assessment and mental model comparison,
- ARI | Sero! v.3 will include support for automated authoring.

Architecture

Sero! is architected as a cloud-based software service and usable on any desktop web browser. It is built with today's internet standard tools and libraries — Angular JS, HTML5, D3 — and secures and stores data using the most advanced cloud capabilities — SSL, Amazon Web Services®, IBM Cloudant®. Sero! v.2.0 works best in Chrome and Firefox browsers. It is not currently optimized for use on mobile devices, but will be *optimized for mobile in future versions*.

¹⁹ Moon et al., 2014.

²⁰ Moon and Rizvi, 2018; Moon, Johnston, Moon, 2018; Moon and Johnston, 2018.

²¹ Moon et al, 2016.

Use Cases

There are two primary use cases for Sero!. The first is learning. Sero! is applicable in K-12, Higher Education, and Adult Learning contexts. The second is Mental Modeling; that is, studying the mental models people hold that inform how they act. Applications of this use case include scientific and consumer research.

Learning

Sero! assessments enable assessment of learning in any domain, at any level, and at any stage, including pre-, during-, and post-learning modules. As such, Sero! assessments offer opportunities to conduct diagnostic, formative, and summative assessment.

Table 2: Types of Assessment²²

Aspect	Diagnostic	Formative	Summative
Nature	Assessment for the planning of learning	Assessment for learning	Assessment of learning
Focus	Learning baseline	Learning and its progress	Achieved learning outcomes
Target	Prior knowledge	Achievement of specific learning objectives	Achievement of general learning objectives
Time	Before a study unit	During a study process	End of a study unit
Product	Summary of key aspects of understanding and misconceptions	Descriptive feedback and recommendations	Scores / Grades
Beneficiary	Teacher	Student	Teacher, Student, Assessment Admin
Reliability and Validity	No strict requirements	No strict requirements	Strict requirements

²² Adapted from Anohina-Naumeca 2019.

Mental Modeling

Sero! also enables people in non-learning contexts to represent their mental model(s) about any given topic. Once represented in Sero! using concept mapping features, mental models can be compared in a number of useful ways, providing researchers with insights into the mental models held by individuals and groups.

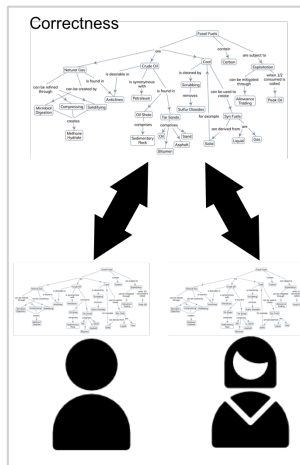


Figure 2: Correctness

Concept mapping has been applied to mental model comparison to understand and compare mental models in the context of military team training — e.g., crew coordination in aviation teams. Evans et al.²³ explored how concept maps could be fruitfully deployed:

Mental models, when elicited through concept mapping can be evaluated for correctness against an expert model, as well as for sharedness with other concept map elicitations. This quality allows for two distinctly different methods for which to evaluate team members' shared mental models, as they are correct with an expert model and as they are accurate regardless of correctness to a teammates' mental model (i.e., sharedness).

They suggest two approaches: correctness and sharedness. Correctness pertains to comparisons of each performer against the expert model, as illustrated in Figure 2.

²³ Evans et al., 2004.

The sharedness approach can be further differentiated into two approaches. Sharedness 1 pertains to the degree to which all performers' mental models are similar, as illustrated in Figure 3. Sharedness 2, which can also be called 'familiarity,' pertains to how accurately each performer can identify the other performers' mental models, as illustrated in Figure 4.

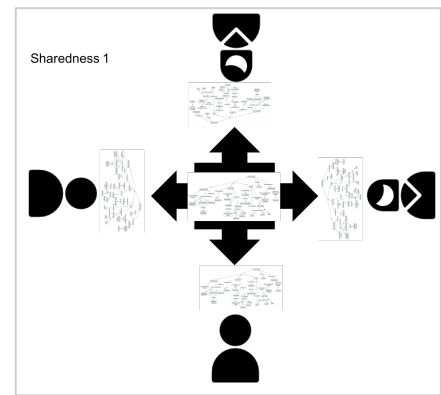


Figure 3: Sharedness 1 -

Evans and colleagues hypothesized that:

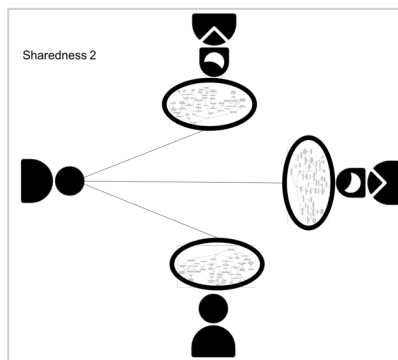


Figure 4: Sharedness 2

“teams showing the greatest amount of overlap with both the expert maps (correctness) and their teammates' maps (sharedness) will have the highest levels of performance on the simulation task. Additionally, of the teams that either score high versus the expert or high versus their teammates on the concept mapping task, the group scoring high against their teammates will perform at a higher level in (their performance) than those that only score high versus the expert map. This will provide support favoring the idea that familiarity of team members is a more important factor in team effectiveness than is team knowledge of the task.”

Sero! v.2.0 enables the first two types of mental model comparisons; *a coming version will enable Sharedness 2.*

User Roles

There are two user roles for Sero!: Assessors and Takers. Assessors can author, assign, analyze, and review maps. Takers can take assignments and review results, when appropriate. The two roles access different functions, depending on the nature of a given assessment.

Assessor

The Assessor role may be executed in two contexts. In a learning context teachers, professors, and instructors at any learning level may execute the Assessor role, as well as instructional system designers. In a mental modeling context, researchers may execute the Assessor role.

Taker

The Taker role may be executed in the same two contexts. A learner can execute the Taker role in the context of a learning pathway or by any person holding mental model, or by a participant in a mental modeling research project. *A coming version of Sero! will enable anonymous Takers in a “Proctor” version assessment.*

Registration

Registering accounts in Sero! is handled by first registering for a Free, 30-day Trial account at serolearn.com/trial. By the end of the trial period, Assessors can pay to register for an Individual account. *A coming version of Sero! will enable Registering Organizational accounts.*

All Assessor accounts can register Takers in the app Dashboard. Takers can be entered individually or as a list — a template for import is available [here](#). Takers can also be grouped depending on your assessment needs. Once registered, Sero! will send each Taker an email inviting them to login. Once they login, they can see and take any assignments they receive, and create and save their own concept maps under My maps.

Assessment Types, Functions, and Features

Sero! v.2.0 provides two types of concept-mapping-based assessments. Each offer sets of functions and features that can be applied to the variety of use cases. Table 3 on the following page provides a summary of assessment types aligned with Sero! user roles, use cases, and functions, showing the full range of options and suggested implementations.

MasterMap

The two types are Skeleton Map and Build-a-Map, both of which make use of MasterMaps. A MasterMap is concept map comprising valid propositions that serves as the basis for assessments. The MasterMap should capture standard, generally-agreed-to, learning-case-specific, or expert knowledge. **For Sero! v.2.0, they are necessary for authoring Skeleton Maps and Build-a-Maps.**

Guidance for creating good MasterMaps is provided in [Tips for Authoring Sero! Maps to Assess Learning](#).

In v.2.0, MasterMaps can be created from scratch by entering propositions, using maps that were previously created, and importing from proposition lists — a template for import is available [here](#).

Table 3: Summary of assessment types aligned with Sero! user roles, use cases, and functions

Roles		Assessor						Taker		
Use Cases	Functions							Functions		
	Assessment Type	Map Type	MasterMap	Assign (to)	Analyze		Review	Take	Review	
Learning	Diagnostic	Build-a-Map	Preferred <i>(future)</i>	Taker	Compare to MasterMap		- MasterMap agreement score - Group and individual results styled against MasterMap	Build-a-Map	Compare to MasterMap (optional)	
					Compare to other Takers		Similarity to other Takers' scores		Similarity to other Takers (optional)	
		Skeleton Map (misconception)	Required	Taker	Compare to MasterMap		- MasterMap agreement score	Skeleton Map (misconception)	Compare to MasterMap (optional)	
	Formative	Build-a-Map	Preferred <i>(future)</i>	Taker	Compare to MasterMap	Feedback (preferred)	- MasterMap agreement score - Group and individual results styled against MasterMap	Build-a-Map	Compare to MasterMap	Feedback (ideally)
					Compare to other Takers		Similarity to other Takers' score			
		Skeleton Map	Required	Taker	Compare to MasterMap	Feedback (preferred)	- MasterMap agreement score - Group results per items - Individual results per some items	Skeleton Map	- MasterMap agreement score - Compare to MasterMap (preferred)	
	Summative	Build-a-Map	Required	Taker	Compare to MasterMap	Feedback (optional)	- MasterMap agreement score - Group and individual results styled against MasterMap	Build-a-Map	- MasterMap agreement score - Compare to MasterMap (optional)	
		Skeleton Map	Required	Taker	Compare to MasterMap	Feedback (optional)	- MasterMap agreement score - Group results per items - Individual results per items	Skeleton Map	- MasterMap agreement score - Compare to MasterMap (optional)	
Mental Modeling	Correctness	Skeleton Map	Required	<i>Future Proctor version</i>	Compare to MasterMap		- MasterMap agreement score - Group results per items - Individual results per some items	Skeleton Map	None	
	Correctness	Build-a-Map	Required	<i>Future Proctor version</i>	Compare to MasterMap		- MasterMap agreement score - Group and individual results styled against MasterMap	Build-a-Map	None	
	Sharedness 1 - similarity	Build-a-Map	Not necessary <i>(future)</i>	<i>Future Proctor version</i>	Compare to other Takers		Similarity to other Takers' scores	Build-a-Map	None	
	Sharedness 2 – familiarity <i>(future version)</i>	Build-a-Map	Not necessary <i>(future)</i>	<i>Future Proctor version</i>	Compare to author		Individual correctness of assignments	Build-a-Map Assign to authors	None	

Skeleton Map Assessments

In Skeleton Map Assessments, concepts, linking phrases, connectors, arrowheads, and propositions can be converted to assessment items, leaving a 'skeleton' view of the map that Takers can 'flesh out.' Takers are required to complete and/or correct the map using the various items. An example Skeleton Map from the Taker point of view is shown in Figure 5.

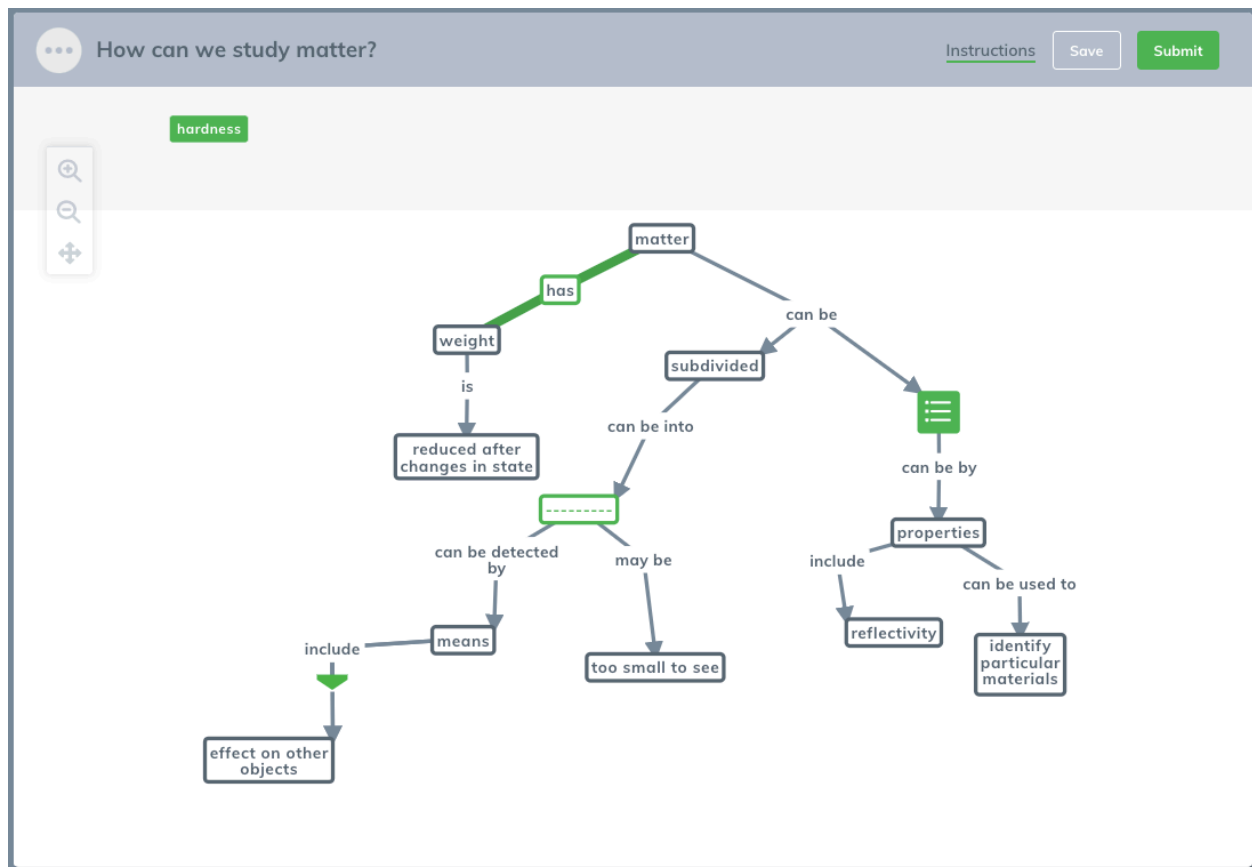


Figure 5: Example Skeleton Map from Taker view

Authoring

Authoring Skeleton Map assessments begins with authoring a MasterMap, then introducing assessment items.

Sero! v.2.0 includes six types of assessment items that an Assessor can introduce to create an assessment. By introducing the items

throughout the map, Sero! enables Takers to see, in real-time, how an answer to one item may affect how they provide subsequent responses and think about the rest of the map. Most of the items have been drawn from the research literature.

Descriptions of the assessment items and tips for introducing them can be found in in [Tips for Authoring Sero! Maps to Assess Learning](#).

Skeleton Maps provide a partial view of a structure and content of the underlying MasterMap. Each assessment item type varies by views they provide, as suggested in Table 4.

Table 4: Structure and content in items

MasterMap Elements	Partial	Suggested	Absent	Misconceived
Structure	✓	Connect-to, Arrowhead direction		
Content	✓	Multiple choice, Drag-and-drop	Fill-in	Error correct

Difficulty

The difficulty of a Skeleton Map can be adjusted by the content of the MasterMap and the number and types of assessment items.

Hints

Some assessment items can offer hints to Takers. Hints may be appropriate for younger Takers, Takers who are new to Sero!, and difficult maps. Table 5 includes optional hints that can be introduced into assessment items Sero! v.2.0 and hints that will be available *in future versions*.

Table 5: Hints

Type of Hint	Description	v.2.0 / Future
Number of Items	Displays a countdown of the number of assessment items remaining	Future
Multiple choice	No hints	
Fill-in	Displays the number of characters expected	v.2.0
Drag-and-drop	Displays target nodes where node <i>could be</i> connected	v.2.0
Connect-to	<ul style="list-style-type: none"> - Displays target nodes where line <i>could be</i> connected (identified as potential targets) - Displays number of connections to make 	v.2.0 Future
Error correct	<ul style="list-style-type: none"> - Display number of Error Correct items - Alerts for unaddressed Error Correct at Submit 	Future Future
Arrowhead direction	- Alerts for unaddressed Arrowhead directions at Submit	Future

Randomization

Some assessment items take advantage of randomization to present unique assessment experiences for each Taker. Multiple choice items randomize the order of the optional choices. *Future versions will introduce additional randomization.*

Assign

Assessors can assign Skeleton Maps to their Takers. *A future version will enable assigning to anyone in proctor mode.*

Analyze

Comparing Takers' maps to the MasterMaps enables scoring for Skeleton Maps. All answers provided by Takers are compared to the MasterMap, resulting in the scoring calculations shown in Table 6.

Table 6: Skeleton Map scoring scheme

Item	Scoring
Multiple choice	Correctly selected = 1 Incorrectly selected = 0 Not selected = 0
Fill-in	Correctly entered = 1 Incorrectly entered = 0 Not entered = 0
Drag-and-drop	Correctly connected = 1 Incorrectly connected = 0 Not connected = 0
Connect-to	Correctly connected = 1 Incorrectly connected = 0 Not connected = 0
Error correct	Correctly selected = 1 Incorrectly selected = 0 Not selected = 0
Arrowhead direction	Correctly selected = 1 Incorrectly selected = 0 Not selected

Review

Assessors can review results from all Takers for all assessment items — including average score and duration — and each Takers' map to view their individual results. Pie charts show the results for each assessment item, as shown in Figure 6.

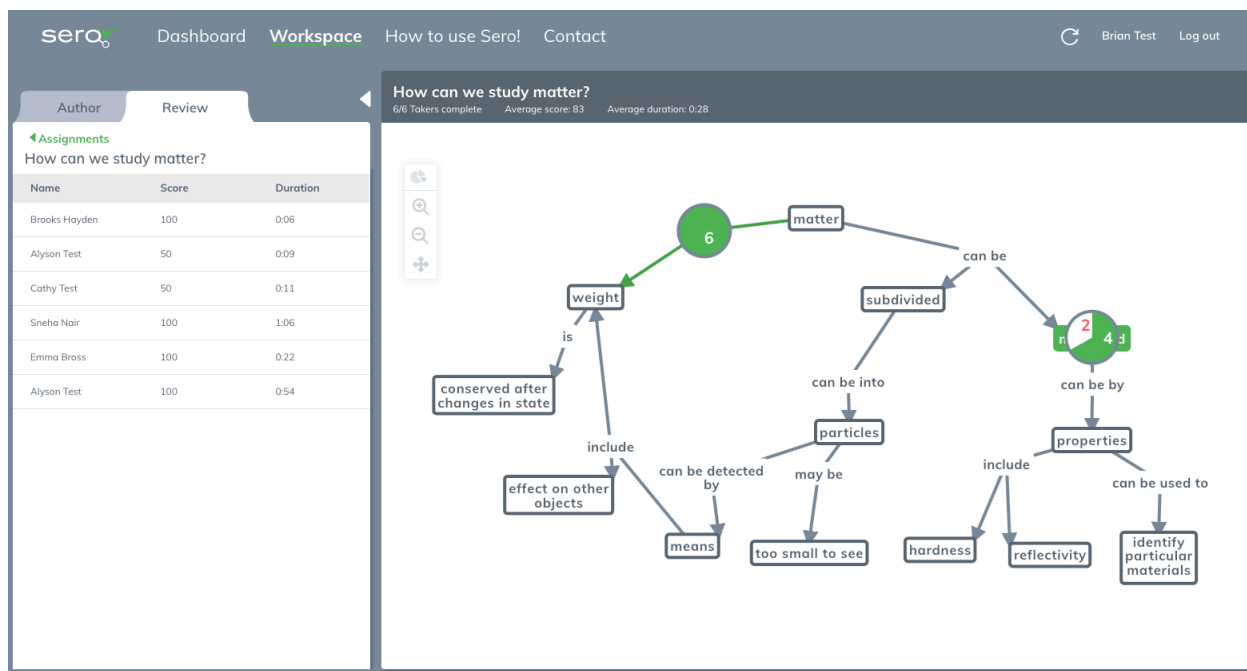


Figure 6: Skeleton Map Review

Takers can review their own score, duration, and performance on each assessment item, and they can View the MasterMap, if permitted, as shown in Figure 7.

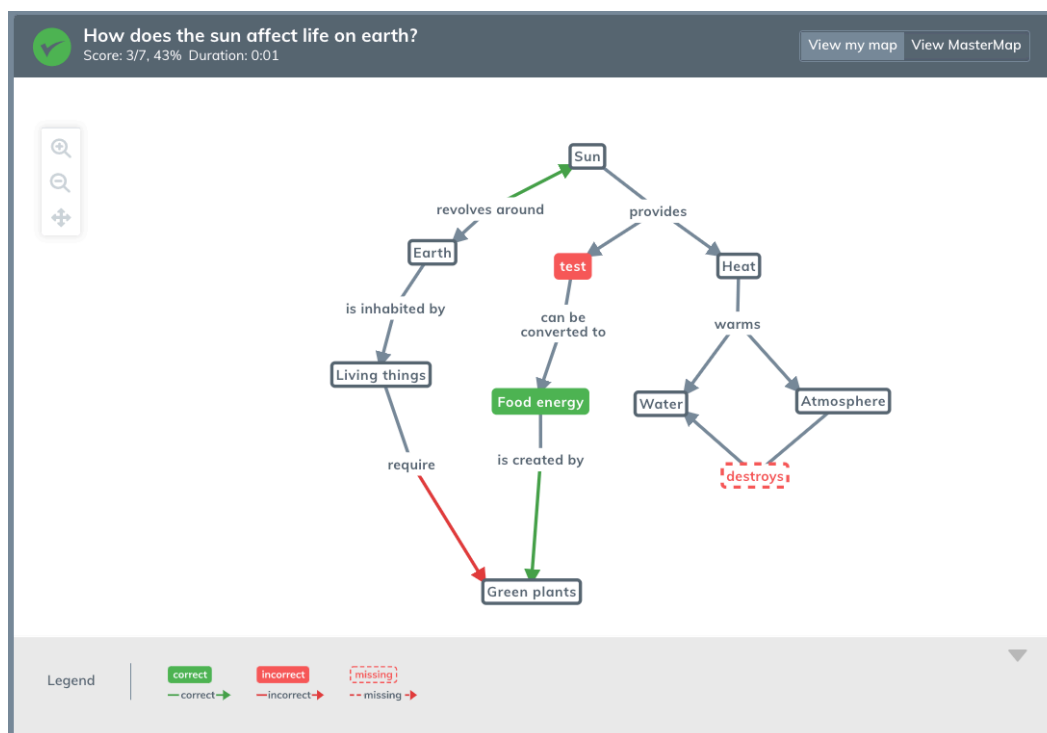


Figure 7: Taker view of results

Build-a-Map Assessments

For Build-a-Map assessments, Sero! provides Takers only the concepts and linking phrases and requires Takers to assemble the structure of the map. Concepts are provided in the workspace and linking phrases are provided in a word bank, as Figure 8 shows.

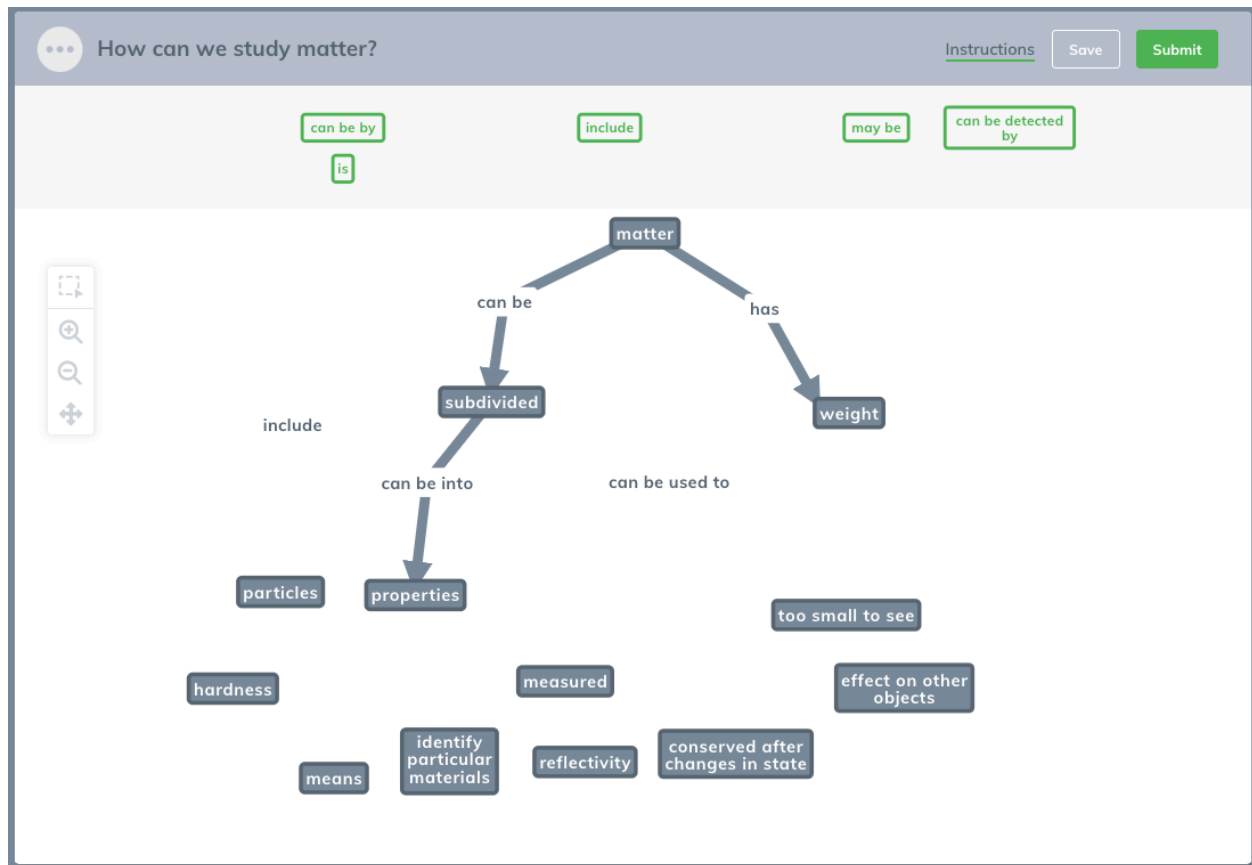


Figure 8: Example Build-a-Map from Taker view

Authoring

Authoring Build-a-Map assessments begins with authoring a MasterMap, then designating the assessment as a Build-a-Map.

Difficulty

The difficulty of a Build-a-Map can be adjusted by the content of the MasterMap, including the number of propositions. MasterMaps with more than 30 propositions will likely be extremely difficult.

Hints

No hints are provided in Sero! v.2.0 for Build-a-Maps. *Future versions will introduce hints.*

Randomization

No randomization is provided in Sero! v.2.0 for Build-a-Maps. *Future versions will introduce randomization of the initial presentation of the concepts and linking phrases.*

Assign

Assessors can assign Build-a-Maps to their Takers. *A future version will enable assigning to anyone in proctor mode.*

Analyze

Individual Takers' maps are compared to the MasterMap at the proposition level. Scoring reports correct propositions divided by total propositions in the MasterMap.

Review

Sero! v.2.0 also provides visual results of all propositions created by Takers in a composite view. In Takers' maps, four types of propositions are possible, as described in Table 7.

Table 7: Build-a-Map Taker proposition types

Types of Propositions	Description
Correct	Matches a proposition appearing in the MasterMap
Incorrect	Connects two concepts that are also connected in the MasterMap, but includes an incorrect linking phrase
Missing	Proposition that appears in the MasterMap that does not appear in a Takers' map
Extra	Does not match any proposition in the MasterMap

The composite view shows all propositions created by all Takers, with thickness of line indicating consensus across takers, to show all results at a glance, as shown in Figure 9. Figure 10 shows how the view can also be filtered by the proposition types and consensus levels to home in on desired views.

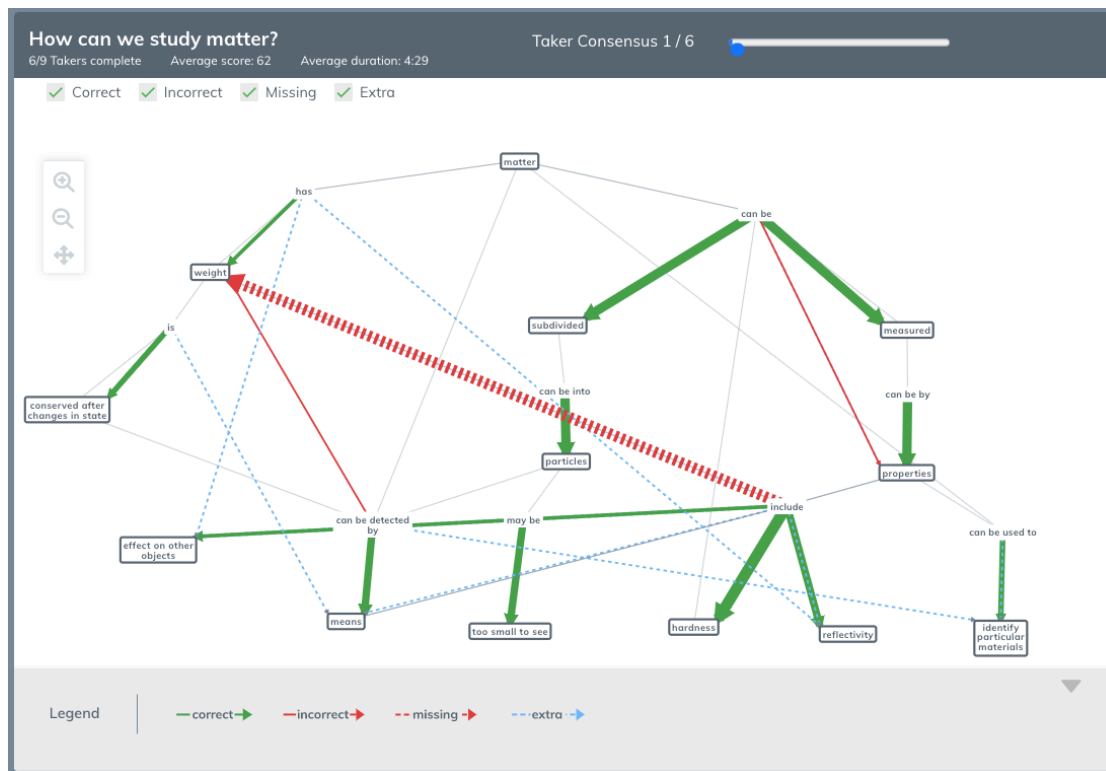


Figure 9: Build-a-Map composite view

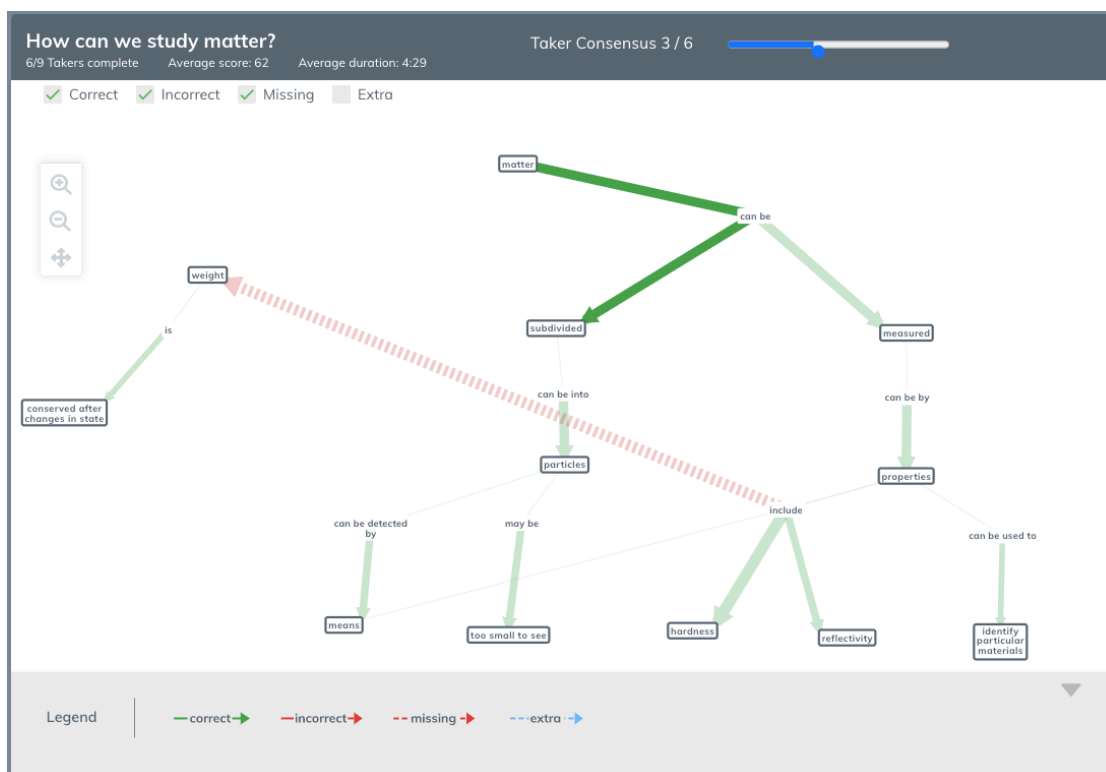


Figure 10: Filtered Build-a-Map composite view

Engage

We look forward to engaging with you as Sero! expands its offerings.

Get in touch

- ✓ through the app via the Contact form in the Dashboard
- ✓ by joining the [Community Forum](#)
- ✓ by sending us a message on the [Support page](#).

Happy mapping!



Appendix A: Sero! v.2.0 Features

ASSESSOR

Global

- Refresh
- Log out

Dashboard

- Sort a map by name, map type, due date, last edited date, or status
- Archive one or more maps
- Restore one or more maps
- Author an unassigned map
- Author or review an assigned or proctored map
- Create a new map
- Edit a Taker
- Delete a Taker
- Add Taker(s) manually
- Add Taker(s) by importing a list from a .csv
- Edit a group
- Create a new group

Workspace

Author

- Create a new map
- Edit an existing map
- Import a list of propositions from a .csv file
- Manually add a proposition from the left panel
- Delete a proposition from the left panel
- Add a Multiple choice, Fill-in, Drag-and-drop, Connect-to, Error correct, or Arrowhead direction assessment item to your map
- Remove an assessment item
- Select one or more Taker groups to assign to
- Set the instructions, availability date, due date, and other formatting options for an assignment
- Save a map
- Assign a map

Review

- Toggle between view of MasterMap and view of Taker comparison (Build-a-Map only)
- View an individual Taker's map
- Release grades to Takers (only if set up that way in formatting)

Map actions

- Zoom in
- Zoom out
- Zoom to fit
- Multi-select
- Undo
- Remove an assessment item
- Reposition concepts and linking phrases
- Toggle pie charts
- Click and drag map area background to pan
- Create a new concept and linking phrase from an existing concept
- Edit the text inside a concept or linking phrase
- Adjust agreement percentage in Build-a-Map review

Instructions

- Watch instructional video
- Read instructions

Contact

- Send a message to the Sero! team

TAKER

Global

- Refresh
- Log out

Dashboard

- Sort an assignment by name, map type, due date, or status
- Select an assignment to open it in Workspace
- Create your own map
- Sort a map you have created by name, creation date, and last edited date
- Archive one or more maps you have created
- Restore one or more maps you have created
- Select a map you have created to open it in Workspace

Workspace

- Complete a Build-A-Map
- Complete a Skeleton Map
- Create your own map in My Maps
- Select a map of your own to edit in My Maps

Map actions

- Zoom in
- Zoom out
- Zoom to fit
- Multi-select
- Undo
- Reposition concepts and linking phrases
- Click and drag map area background to pan
- Create a new concept and linking phrase from an existing concept
- Edit the text inside a concept or linking phrase
- Add a new concept

Instructions

- Watch instructional video
- Read instructions

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