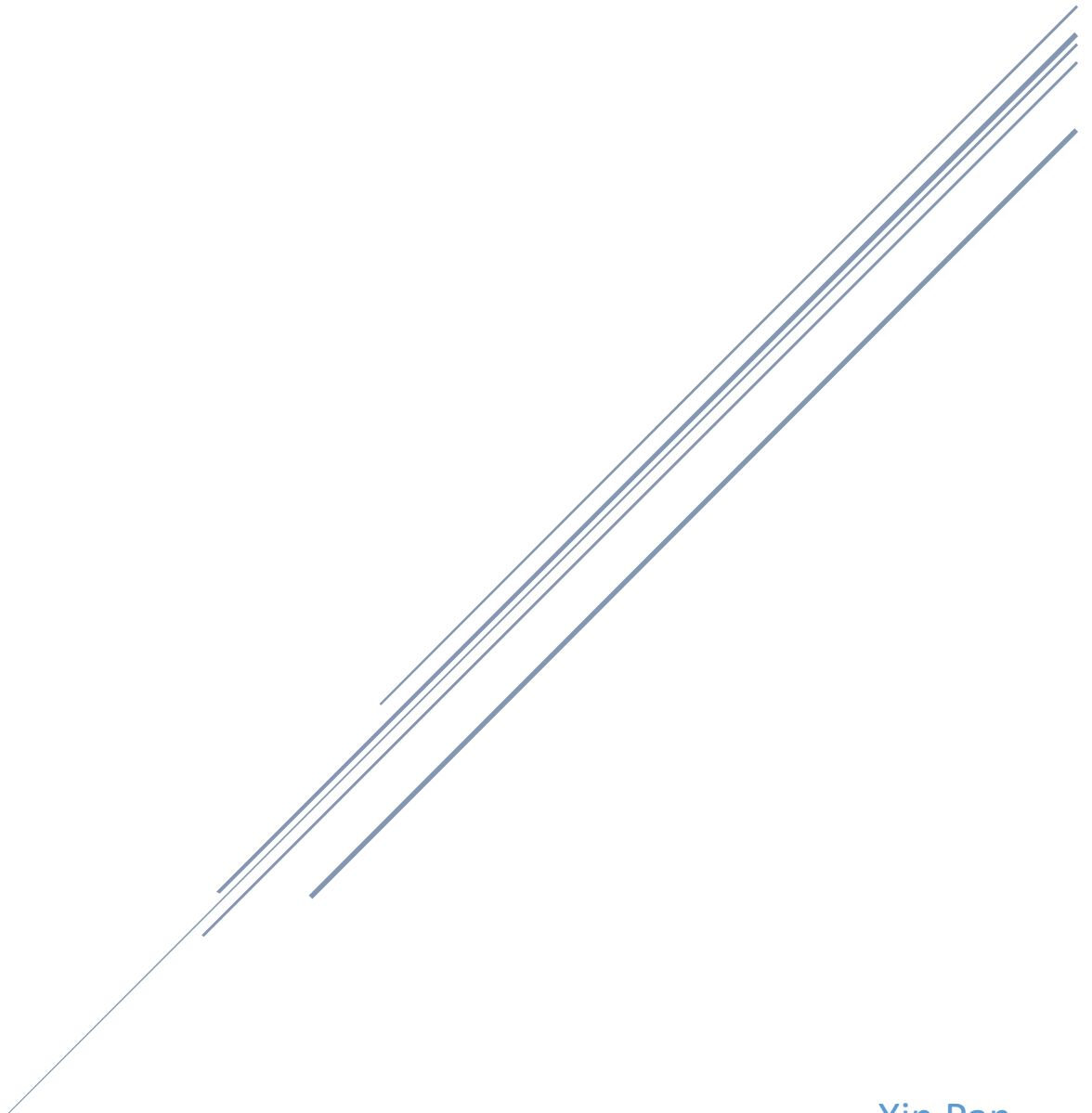


BIG HISTORY PROJECT

WHAT IS BIG HISTORY?



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Instructional Systems Design (Fall, 2016)

Instructional Design Document – “What is Big History?”

Topic

The instructional module is learning world history through Big History Project. Target audience of the instruction would students from 9th grade and 10th grade (even including senior high school students). Which is different from conventional history, big history traces everything back to 13.8 billion years ago, where the universe started from the Big Bang. It weaves knowledge from multiple disciplines, such as geography, biology, astronomy, to form an integrated view that enables students to frame an understanding of the past, present, and future. The content source is from books including *Maps of Time: An Introduction to Big History* and *This Fleeting World: A Short History of Humanity*, which are written by David Christian, who came up with the idea of teaching big history, and the official website of BHP (<https://school.bighistoryproject.com/>). Since the history of the Universe cover so much time and so many topics, my design module will focus on the introduction section: What's Big History?

Needs Assessment:

What's the problem?

World history has gained increasing popularity in secondary education in the United States, showing an increase of more than 125 percent in the last 30 years (Cavanagh, 2007). The popularity of AP world history indicates that it is important to understand history beyond the border of the United States. Much as students know details about the events of world history, they are not able to put the pieces together and get the big picture of history. One challenge of learning arises from the fact that students' reflection of world history is on the temporal and spatial scales (Bain, 2012). They only get to know the fragmented study of civilizations and nation-states without any interconnection between these pieces. The fragmented view hinders students' process of forming an integrated and cohesive perspective of the history.

Will instruction solve the problem?

Since history is an “information rich subject,” students should learn to organize and manage information on a big scale as well as small pictures. This instruction module enables students to meet the challenge by providing a coherent and usable picture of the past, present, and future. The eight thresholds in big history indicate the milestones (the turning points) within a period of time. Through Big History Project, students will see the increasing complexity and close interrelationship through these thresholds. The extraordinary span of big history would help students to shift from spatial to broader scales when looking at history and examine the interrelationship between historical events better. The module would integrate texts, readings, graphics, videos, and interactive activities. Students would be able to explore world history and construct meanings through exciting activities.

Instructional Goals

Through the instructional module on “What’s Big History?”, the learning goals would be:

- 1) ninety-five percent of students are able to define threshold of increasing complexity, origin stories, and scale (Bloom’s Domain: remembering);
- 2) ninety percent of students are able to explain what Big History is in their own words (Bloom’s Domain: understanding);
- 3) ninety percent of students will demonstrate the ability to use the concept of “thresholds” to frame one’s past, present, and future as well as the history of the Universe (Bloom’s Domain: understanding);
- 4) eighty-five percent of students are able to create/draw timelines as a way to compare the scale of personal and historical events (Bloom’s Cognitive Domain: understanding)
- 5) eighty-five percent of students will demonstrate the ability to test their claims with historical information (Bloom’s Cognitive Domain: applying)

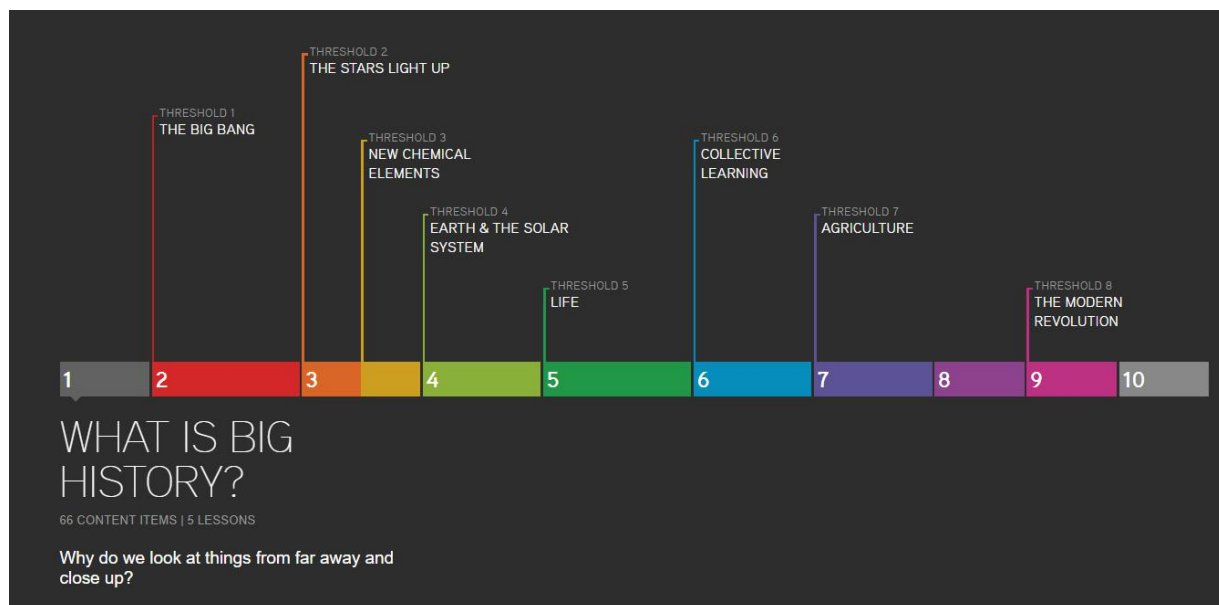
Instructional Analysis:

Context Analysis

Time Constraints	Instructional design team will have 3 months to complete design, materials production, and evaluation of the instruction. The learning module will be completed before December 1, 2016.
Constraints on Design Resources	Available resources in the classroom include chalkboards, projectors, and computers with internet connection. Technical person will be available through the instruction. Since students will do some interactive activities and go through the quizzes for this unit online after class, they need to have access to computers and internet at home.
Expertise Constraints	Due to the limited resources available, experts from Big History Project may not be available in person, but the team can be reached through email or yammer (the online forum for teachers). On yammer, teachers can ask questions and share information and the team will respond in a rapid manner. There are also plenty of resources available on the website of Big History Project and text books.
Characteristics of the Learning Environment	The design module will be delivered in a blended way. Face-to-face class will be delivered in high school classroom and online version will be used by students after school.
Support for Learning Materials	The online modules will require high-speed internet access and access to a computer that are able to project in front of the whole class.

Timeframe of application of newly acquired skills and knowledge.	The instruction would serve as a semester-long course (approximately 16 weeks/80 hours in total) in high school. This design module is based on Unit 1 “what is big history” and it would be 2 weeks/10 hours long. Unit 1 is composed of 4 lessons and instructors need to adapt the pace within this time frame.
Relevance to real-world application	The content of Big History is abstract in nature and there could be a delay in their learning processes and a real-world application. However, we can fill the gap through some problem-solving activities and group work so that students can learn through situated learning (Lave, 1988).

Thresholds of Big History



Learner Analysis

Since there will be diversity in high school classrooms, learners can reflect various characteristics and differences. The learners of this design module will be high school students from 9th grade to 10th grade. According to Piaget’s cognitive stages of development, adolescents in this stage are able to formulate hypotheses, collect evidence, and justify their assumptions. Therefore, they would have the capability to understand historical facts and the increasing complexities in history. Learners in this age group will have longer attention span and the design module will offer collaborative activities in order to enhance higher levels of thinking and skills.

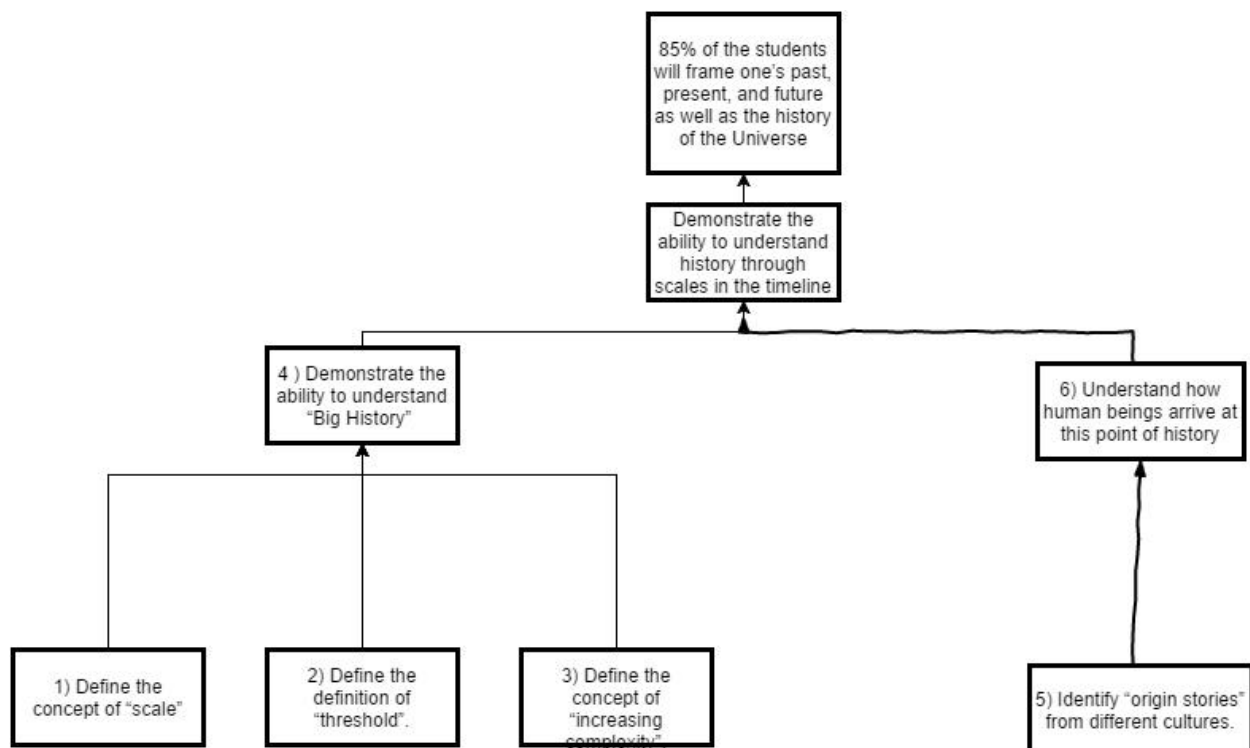
The majority of the students would use English or Spanish as a primary language and may include some ESLs from other cultures. Since ESLs might have limited reading capacities, difficulty of the reading materials need to be adjusted and they will be provided with a glossary on important terms. In addition,

since there would be discrepancy in students' previous performance and reading level, the instruction module would take this into account and adjust the level of reading materials. Students need to use computers or mobile devices to read materials, watch videos and finish the quiz online after class.

Content Analysis

In the content analysis, it would be helpful to identify a procedure to analyze the content components of the design module. The instructional goals can be categorized by the type of learning they represent. In order to fulfill the best result, the content analysis should match the type of learning.

Big History is different from typical history course. It is approaching history in a brand-new way and students do not necessarily need a large amount of knowledge in historical concepts. Most students would have a partial knowledge of some historical events through classes, articles, books, and even games, while this is not a prerequisite. Through this module, students will be able to define what "Big History" is and how to frame their past, present, and future as well as the history of the Universe in the timeline. The ability to define certain concepts would be an intellectual-skill and the ability to modify ways of learning and thinking would require cognitive strategies. Therefore, content analysis can adopt a combination of hierarchical and procedural task analyses to identify steps to achieve the instructional goals.



Learning Objectives

	Target Behavior from Learning Map	Action	Strategy/Conditions	Criteria
Objective 1	The student identifies scale, origin stories and thresholds of increasing complexity.	The student completes the quiz for this section online.	The quiz for this section has 10 questions in total, including multiple choice and True/False questions. The student identifies correct answers to these questions in 15 minutes.	The student must correctly answer 9 of 10 questions in order to pass.
Objective 2	The student explains their own idea and definition of Big History to others.	The student explains Big History to classmates.	The student provides his or her explanation of Big History and how it is based on science and knowledge from various disciplines. The explanation will be reviewed by at least three classmates online.	The student's explanation will be evaluated by partners with a rubric. Passing score is at 8 of 10.
Objective 3	The student demonstrates the ability to use the concept of "thresholds" to frame his or her past, present, and future.	The student identifies and labels thresholds on his own timeline.	The student draws his or her own thresholds for the past, present, and future on the timeline on paper. The student will then explain to other students why he or she chooses each one as a threshold.	The student identifies and draws at least one threshold for past, present, and future on the timeline and provides justification for the choice.
Objective 4	The student identifies four "claim testers" - intuition, logic, authority, and evidence that help them evaluate claims.	The student does matching between the "claim tester" and examples.	The student matches the "claim tester" with its corresponding examples by writing one's letter beside the other's number.	The student correctly connects four "claim testers" and examples.
Objective 5	The student demonstrates the ability to test his claim with historical	The student writes an essay on one claim as	There are five claims and the student chooses one claim that he believes to be true. The student uses	Student's essay will be evaluated with a rubric.

	information.	an assignment after class.	“claim testers” and provides at least three details from different sources to justify his claim in the essay.	Passing score is 12 of 15.
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Assessment

Learning Objective 1: The student identifies scale, origin stories and thresholds of increasing complexity.

Assessment: Multiple Choice

Students will complete a quiz which composes 10 questions, including five multiple choice questions and five True/False questions. They will be asked to answer multiple choices on important definitions in Big History, including scale, threshold, etc.

The quiz includes multiple-choice questions and True/False questions. Try it out and see how well you’ve understood some of the key ideas from this lesson.

Example:

In Big History, _____ refers to the degrees of magnification, or perspective, used to measure time, space, and size.

- A. Threshold
- B. Goldilocks Conditions
- C. Scale
- D. Complexity

Key: C. Scale

Assessment: True/False

The quiz also contains five True/False questions. These questions are intended to test students’ concepts on Big History, scale, origin stories etc.

The quiz includes multiple-choice questions and True/False questions. Try it out and see how well you've understood some of the key ideas from this lesson.

Example:

The story of Pangu (Chinese origin story) are based on real people and events.

- True
- False

Key: False

Learning Objective 4: The student identifies four "claim testers" - intuition, logic, authority, and evidence that help them evaluate claims

Assessment: Matching

Students will be asked to complete matching between the "claim tester" with its corresponding examples by writing one's letter beside the other's number.

Here are some claims that we will encounter in daily life. Try to identify these claims with "claim testers" that we have discussed in class. Write the Letter (A.B.C.D) of each claims on the corresponding blank on the second column.

A. Linda should wear a read skirt today	___ 1. Logic
B. Chelsea did not do the in-class test because she was not in class.	___ 2. Evidence
C. Yingzheng was the founder of the Qin Dynasty and reunified China.	___ 3. Intuition
D. You hand will burn if you touch the hot plate.	___ 4. Authority

Key: BDAC

Learning Objective 5: The student demonstrates the ability to test his claim with historical information.

Assessment: Essay

Students will be asked to write an essay that he/she believes to be true. There are five claims that students can choose from. Students need to provide at least three details from different sources to

justify his claim in the essay (textbooks, encyclopedia, peer-reviewed journals, etc). They will know the grading criteria before submitting their work.

Above are five claims and you pick one from all the statements you believe to be true. Then you need to write an essay with at least three details from different sources to justify the claim (textbooks, encyclopedia, peer-reviewed journals, etc). You can also take a look at the rubric for this essay before submitting your work.

Claims:

1. The Earth is flat.
2. The Universe is 13.8 billion years old.
3. We should believe the information shared with us in Big History videos.
4. In the northern hemisphere, it is hotter in the summer and colder in the winter.
5. The use of differing scales makes Big History different from other approaches to history.

Rubric

Description	Below Standard (1)	Approaching Standard (2)	At Standard (3)	Above Standard (4)
<u>Focus</u> The essay focuses on a topic to inform a reader with ideas, concepts, and information.	The essay has an unidentifiable topic with minimal ideas, concepts, and information	The essay has an unclear topic with some ideas, concepts, and information.	The essay focuses on a topic to inform a reader with ideas, concepts, and information.	The essay focuses on an interesting topic to inform a reader with ideas, concepts, and information.
<u>Development</u> The essay presents relevant facts, definitions, concrete details, quotations, and examples. The conclusion ties to and supports the information/explanation.	The essay does not provide facts and examples related to the topic. The essay may fail to offer a conclusion.	The essay provides facts, quotations, and examples from less than three sources to develop and explain the topic. The conclusion restates the development.	The essay provides relevant facts, definitions, concrete details, quotations, and examples from three sources. The conclusion ties to and supports the information.	The essay provides effective facts, definitions, concrete details, quotations, and examples from more than three sources. The conclusion provides the implications,

				significance, and future relevance of the topic.
<u>Cohesion</u> The essay uses appropriate and varied transitions to link the major sections of the essay, creates cohesion, and clarifies the relationships among complex ideas and concepts	The essay contains few, if any, words, phrases, and clauses to link the major sections of the essay. The essay does not connect the topic and the examples or facts.	The essay contains limited words, phrases, and clauses to link the major sections of the essay. The essay attempts to connect the topic and the examples or facts.	The essay uses words, phrases, and clauses to link the major sections of the essay. The essay connects the topic and the examples or facts.	The essay skillfully uses words, phrases, and clauses to link the major sections of the essay. The essay identifies the relationship between the topic and the examples or facts.
<u>Language and Conventions</u> The essay presents a formal, objective tone and uses precise language and topic-specific vocabulary to manage the complexity of the topic. The essay also demonstrates Standard English conventions	The essay illustrates a limited or inconsistent tone and awareness of topic-specific vocabulary. The essay contains multiple inaccuracies in Standard English conventions of usage and mechanics	The essay illustrates a limited awareness of formal tone and awareness of topic specific vocabulary. The essay demonstrates some accuracy in Standard English conventions of usage and mechanics.	The essay presents a formal, objective tone and uses precise language and topic-specific vocabulary to manage the complexity of the topic. The essay demonstrates Standard English conventions of usage and mechanics along with discipline-specific requirements (for example, MLA or APA).	The essay presents an appropriate formal, objective tone and uses relevant language and topic-specific vocabulary to manage the complexity of the topic. The essay uses Standard English conventions of usage and mechanics along with discipline specific requirements (for example, MLA or APA).

Instructional Strategies

Objective 1: The student identifies scale, origin stories and thresholds of increasing complexity.

Objective 1 – Type of Skills: Concepts	
Strategies for Teaching Concepts	Ways to Carry Out the Strategy
Demonstrations of Examples: gives examples of the concept that point out and draw attention to its defining features or characteristics	<p><u>Concept of Scale</u></p> <p>In Big History, scale refers to the degrees of magnification, or perspective, used to measure time, space, and size. Visual strategies will be used to present how different scales influence the way to look at things, including presenting the video <i>powers of ten</i> (a short documentary film in 1977) which depicts the relative scale of the Universe according to an order of magnitude based on a factor of ten (link: https://youtu.be/OfKBhvDjuy0) and presenting the interactive map that can be zoomed in and out by students.</p> <p><u>Concept of Origin Stories</u></p> <p>Give the verbal statement of the word along with the series of examples: let students know that cultures around the world have their own origin stories which describe the way they believe how the Universe and human being came into being, examples of origin stories include Chinese origin stories, Jedeo-Christian, Mayan, Creek, Zulu, etc. Origin stories are not necessarily based on real people and events.</p> <p><u>Concept of Threshold of Increasing Complexity</u></p> <p>Big History is divided into eight “thresholds” to grasp the entirety of the Universe. Thresholds can be understood as a transition point, or an event that create something completely new. Visual strategies will be used to present thresholds of the history: present students with a table of the development of the Universe and the timeline of the eight thresholds. The table and timeline includes all the thresholds of Big History and the year.</p>

	<p>For example:</p> <table border="1"> <tr> <th>Threshold</th><th>Years Ago</th></tr> <tr> <td>Threshold 1: The Big Bang</td><td>13,800,000,000</td></tr> </table> <p>Let them calculate the distance of each threshold if the whole length is 100 feet (math problem!)</p>	Threshold	Years Ago	Threshold 1: The Big Bang	13,800,000,000
Threshold	Years Ago				
Threshold 1: The Big Bang	13,800,000,000				
Practice of Feedback: Give sets consisting of one item that is an example of the concept and more that are not	Students are required to complete the online quiz related with these concepts after the class. They will be provided with scores after the assessment as well as explanation for each question so that they will be able to know why they are right or wrong.				

Objective 3: The student demonstrates the ability to use the concept of “thresholds” to frame his or her past, present, and future.

Objective 2 – Rules	
Strategies for Teaching Rules	Ways to Carry Out the Strategy
Review of component concept: point out and discuss the prerequisite concepts that must be used when applying a rule.	Review of concept of threshold of increasing complexity and present students with the table they have completed in Objective 1.
Rule development: illustrate the steps in applying the rule.	<p>Divide the class into four groups and ask each group to label the timeline on paper using information provided to them. Students also need to include: start of the timeline, end of the timeline, and the timeline title.</p> <p>For example,</p> <p>Group A</p> <ul style="list-style-type: none"> - Big Bang (13.8 billion years ago) - The first star light up (13.6 billion years ago) - The formation of our sun (4.5 billion years ago) - Early human appear (1 million years ago) <p>Group B</p>
Rule uses: show sample situations that can use the rule.	

	<ul style="list-style-type: none"> - Your birth year - When you started going to school - When you went to high school - When you are supposed to graduate from high school
Practice with feedback: give multiple instances of when the rule applies and have students solve problem using rules	Sum up the group activity of labeling the timeline and provide feedback to their performance. Then ask students to draw his or her own thresholds for the past, present, and future on the timeline. Ask them to explain to other students in groups why he or she chooses each one as a threshold.

Instructional Materials

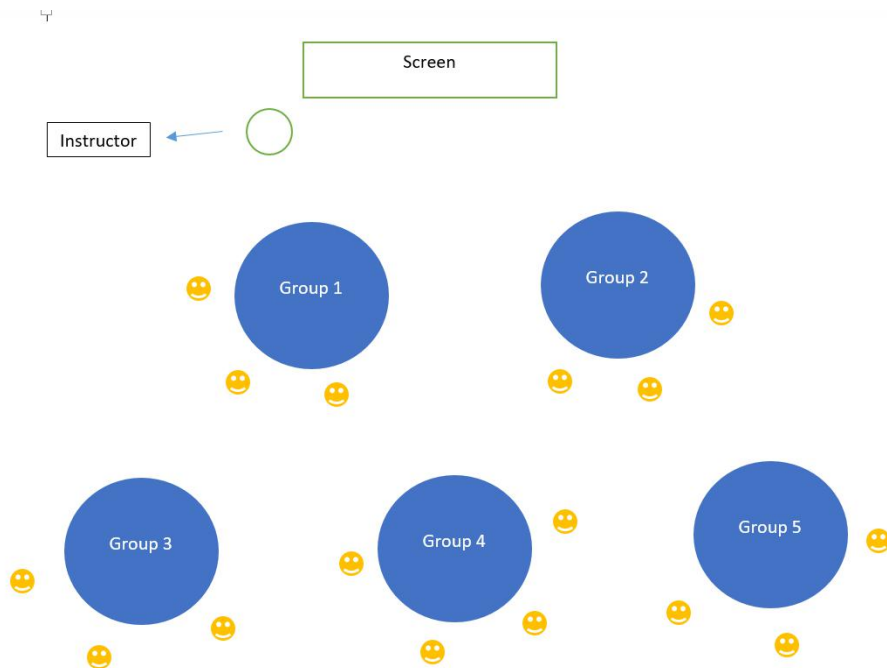
Instructional Objectives	Instructional Materials	Instructional Purpose
Objective 1: The student identifies scale, origin stories and thresholds of increasing complexity.	Text Materials	Students will be given worksheets to complete activities with regards to the threshold of Big History and the history of human beings.
	Multimedia	The video <i>powers of ten</i> which enables students to better identify how different scales change their perspectives and why people need to look at things from different scales.
Objective 2: The student explains their own idea and definition of Big History to others.	Text Materials	Students will be given assignment handouts to write down their own ideas about Big History.
	Multimedia	A video which introduces how Big History is based on science and knowledge from various disciplines will be presented to students.
Objective 3: The student demonstrates the ability to use the concept of “thresholds” to frame his or her past, present, and future.	Software tools	A software tool that enable students to create timelines on computer and label multiple thresholds on the timeline.

	Social media tools	Students will be able to share their timelines and explain timelines to others through message and media.
Objective 4: The student identifies four “claim testers” - intuition, logic, authority, and evidence that help them evaluate claims.	Instructional software	Drill and practice will help students to identify characteristics of different claims and provide feedback on correctness.
	Multimedia	A video in which the instructor explains the four “claim testers” and how to evaluate claims.

Learning Environment

The module of “what is Big History” will be delivered to high school students in the blended course model, which means it is offered in an in-person classroom but include several online activities. The learning environment of each objective and activities is presented in the table below.

For the face-to-face instruction, since this module composes several group work activities, the seating of the class should be arranged into several groups of 3-4 students. All seats are arranged to see the front easily and there won’t be any seat with its back to the front. In this way, students will be able to easily communicate with group members and see the instructor and the screen on the front. The classroom will have access to the internet and the equipment to project images to the whole class. Each group will be provided with a mobile device that they can use to search for information. (See seats map below)



The online instruction will be presented on a website which composes several parts. The prototype of this website will be created with Captivate 8/9. Videos and reading materials will be collected in “Document” folder for students to review after class; links to the resources will be provided as a separate section. “Quiz” is presented online in an interactive way and the instructor is able to assess their performance through teachers’ portal; “Discussion” area is where they students can post their assignment to the whole class and provide feedback to others.

Model	Objectives	Learning Environment
Face-to-face Instruction	Objective 1: The student identifies scale, origin stories and thresholds of increasing complexity.	<p>Students are led by the instructor as a whole class. Videos will be presented on the screen in front of the class. They will be provided with mobile devices and have access to the internet to search for other resources.</p> <p>Based on the seat arrangement and group assignment, students will work in groups of 3 or 4. Each group will clearly be assigned with different tasks.</p>

	Objective 2: The student explains their own idea and definition of Big History to others.	Based on the seat arrangement and group label, students will work in groups of 3 or 4. Each group will clearly be assigned with the task. Students need to interact and provide feedback to each other.
Online Instruction	Objective 3: The student demonstrates the ability to use the concept of “thresholds” to frame his or her past, present, and future.	With the interactive function of the design module, students will be asked to label thresholds of their past, present, and future online and share their timeline on discussion area and through social networks.
	Objective 4: The student identifies four “claim testers” - intuition, logic, authority, and evidence that help them evaluate claims.	Students are going to do interactive quiz online on different statements.

Formative Evaluation

1) Expert/peer review

The formative evaluation of this instructional module is conducted among experts as the very first step. It is composed of the review of the instruction, including its content and activities, and the review of the interface design. Comments from experts will be reviewed and analyzed to decide what would be the appropriate revisions to the module before providing it to students in the classroom.

Expert Review of Instruction			
Instruction Name _____		Date of Review _____	
Thank you for reviewing this instructional module. Your comments are highly appreciated. As you review, please focus especially on the following instructional and technical aspects.			
Instructional Review			
Areas of Review	Checklist		Comments
Correct language mechanics: no misspellings or typographical, punctuation errors, or grammar errors.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Content is accurate and current in the area.	Yes	No	

	<input type="checkbox"/>	<input type="checkbox"/>	
Directions for all activities are clear and easy to follow.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
The sequence of the activities are logical.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Difficulty of readings is suitable to target learners who are using the instruction.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Activities are interactive and correspond with the content.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Quizzes and graded assignments are fair and valid.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Students find the instruction interesting and useful.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Recommendations:			

Online Interface Review			
Areas of Review	Checklist		Comments
The format of the design is easy to follow: <ul style="list-style-type: none"> Starting point of instruction is clearly indicated; Menus, option bars, or site map are provided to show where a user is at; Text, icons or images are clearly identified as links; Pages load quickly and easily 	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Videos and graphics are accessible and easy to see/hear for users.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
The visual design meets aesthetic criteria:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

<ul style="list-style-type: none"> • Fonts are easy to read for users; • Text-to-background contrast is comfortable; • Limited number of colors and fonts; • Graphics are not distracting to users 	<input type="checkbox"/>	<input type="checkbox"/>	
Recommendations: 			

2) Individual student review

Students (a small group of 4-5 students) are required to complete the design module. They will be asked about their learning experience during the instruction and after the instruction. After completing the instruction, students will be required to complete the individual student feedback as a formative evaluation. Their recommendations will be recorded and generated for further improvement of this module.

Individual Student Feedback on Instruction

Instruction Name: _____ Date of Review _____

Directions: Please answer the following questions regarding the instruction. Mark the answer that reflect your observation. Your recommendations will be appreciated!

Items to Review	Your reactions:		
Directions are clear so I know what to do and where to go next.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
The sequence of the course is logical for me to follow.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
Written activities and audio/video materials were helpful and easy to understand.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
Levels of reading materials are suitable for me; All tools and links work as they should.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		

Items to Review	Your reactions:		
It should take about the right amount of time to learn the content.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
Assessment are fair and reasonable.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
Students find this instruction interesting and useful.	In good shape <input type="checkbox"/>	Needs work <input type="checkbox"/>	Needs major work <input type="checkbox"/>
	Comments:		
Recommendations:			

Summative Evaluation

A summative evaluation is used to see whether the instruction is as effective as the previous one and should be adopted. CIPP model by Stufflebeam will be selected as an evaluation model for the evaluation. It would provide clear framework for us to see the effectiveness of the instruction. The questions to be asked for the step would include:

- Context: Are needs and problems of the environment (context) addressed? To be more specific, does the module provide learners with the knowledge to explain the concept of scale, origin stories, etc?
- Input: Is the instructional plan defensible? Is the time for face-to-face and online class effectively allocated?
- Process: Is the instruction used by the instructor as planned? How well the instruction is being implemented?
- Product: Does the instructional module make a difference? Does the module meet learners' expectations?

References

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