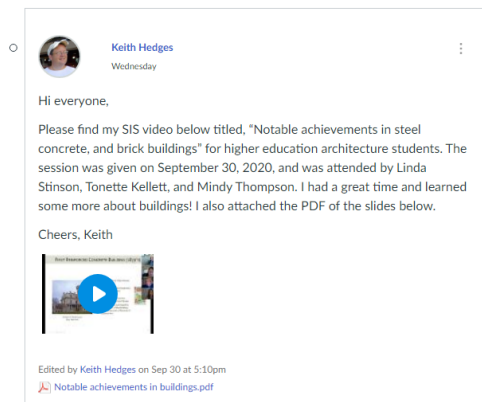


ARTIFACT 1.1 — SYNCHRONOUS INSTRUCTIONAL SESSION

Goal	Design and Development of Learning Systems
Objective	Students are able to design/develop learning and performance opportunities and systems including direct instruction, constructivist learning, collaborative work, and performance support.
Course	ISLT 9484 – Teaching Online Courses
Instructor	Dr. Jane Howland
Links	View the video presentation

SYNCHRONOUS INSTRUCTIONAL SESSION

STUDENT	Keith Hedges
INSTRUCTOR	Dr. Jane Howland
COURSE	ISLT 9484 Teaching Online Courses
DATE	October 4, 2020



PLANNING PHASE

CATEGORY	PLAN
GOALS	<ul style="list-style-type: none"> The session title is “Notable Achievements in steel, concrete, and brick buildings” The session is for higher education students in the field of architecture The students should be able to associate a notable building or event with its appropriate historical structural significance The general purpose for the session is direct instruction
PLANNING CONSIDERATIONS	<ul style="list-style-type: none"> The anticipated characteristics of the students are that they are in the second year of the pre-preprofessional program in architecture and beginning the structures sequence. They have successfully completed a prerequisite physics course and have a basic understanding of forces. The teacher will prepare PowerPoint slides as the primary visual aid, along with PowerPoint handouts to facilitate student note taking. The instructor shall engage the students through synchronous video and audio of Zoom and its deeper collaborative features of the chat box, reaction buttons, and screen sharing if needed The students should bring a general interest in buildings and a positive spirit into the session The session should take approximately 20-25 minutes
ACTIVITY OUTLINE AND PROCEDURES	<ul style="list-style-type: none"> Instructor shall open the Zoom meeting and activate the audio and video recording Students shall enter the Zoom waiting room and be admitted by the instructor Briefs introductions of the instructor and two participants Instructor shall share the monitor screen to view the PowerPoint show Slide 1: Introduction (topic and objective)

	<ul style="list-style-type: none"> ▪ Slide 2: Finding common ground (covers the basics of structural terminology) ▪ Slides 3 to 6: Steel structures (image of building and text), World's oldest iron-framed building, World's first skyscraper patent, First entirely self-supporting structural steel building, World's tallest structural steel building, check chat before continuing ▪ Slides 7: Show all four buildings on the same slide and ask the students which of the four steel structures possesses the most interesting historical significance and why they selected over the others. ▪ Slides 8 to 11: Concrete structures (image of building and text), World's largest unreinforced concrete dome, World's first patent combining concrete and iron, First reinforced concrete building in the U.S., World's tallest reinforced concrete building, check chat before continuing ▪ Slide 12: Show all four buildings on the same slide and ask the students which of the four concrete structures possesses the most interesting historical significance and why they selected over the others. ▪ Slide 13: Brick structures (image of building and text), Tallest load-bearing exterior masonry wall ever commercially constructed with an iron frame interior ▪ Slide 14: Summary (illustrates all nine buildings on a single slide) ▪ Allow the students to ask questions ▪ Slide 15: Matching question discussion
ASSESSMENT	<ul style="list-style-type: none"> ▪ The learning objective will be measured at the end of the presentation where the class discusses a question that matches a few of buildings with the significant achievements ▪ Student understanding will be verified twice during the session by asking them to identify their most interesting significances, and by offering opportunities for the students to ask questions ▪ Student attitudes and engagement will be monitored by observing their facial expressions and chat activities.

IMPLEMENTATION PHASE

CATEGORY	SESSION DETAILS
ATTENDEES	Linda Stinson, Mindy Thompson, Tonette Kellett
DATE AND TIME	Wednesday, September 30, 2020, at 4:00 p.m.
GRADE LEVEL / CONTENT AREA	The session is for higher education students in the field of architecture.

PURPOSE AND EXPECTED OUTCOMES	<p>The general purpose for the session is direct instruction. The students should be able to associate a notable building or event with its appropriate historical structural significance.</p>
ACTIVITIES	<ul style="list-style-type: none"> ▪ Instructor shall open the Zoom meeting and activate the audio and video recording ▪ Students shall enter the Zoom waiting room and be admitted by the instructor ▪ Briefs introductions of the instructor and the participants. <i>This may have occurred before I started the recording.</i> ▪ Instructor shall share the monitor screen to view the PowerPoint show ▪ Slide 1: Introduction (topic and objective). <i>I did not type the learning objective onto the slide. I chose to verbally described the objective and anticipated outcomes.</i> ▪ Slide 2: Finding common ground (covers the basics of structural terminology). <i>I deleted this slide as there since I used language they everyone could understand.</i> ▪ <i>Slide 2: I create new cover slides for each of the three content slides. Each cover slide included a giphy related to the material. A giphy is a short video loop. This one was of the comic hero Iron Man.</i> ▪ Slides 3 to 6: Steel structures (image of building and text), World's oldest iron-framed building, World's first skyscraper patent, First entirely self-supporting structural steel building, World's tallest structural steel building, check chat before continuing. <i>This was the first of three groups of content slides based on the primary structural material steel. I used one slide per achievement.</i> ▪ Slides 7: Show all four buildings on the same slide and ask the students which of the four steel structures possesses the most interesting historical significance and why they selected over the others. <i>This was the first assessment slide where each student identified their most interesting structural achievement for steel.</i> ▪ <i>Slide 8: I create a new cover slides for concrete. This included a giphy of three laborers removing a precast concrete pipe from a truck and breaking it.</i> ▪ Slides 8 9 to 11 12: <i>Concrete structures (image of building and text), World's largest unreinforced concrete dome, World's first patent combining concrete and iron, First reinforced concrete building in the U.S., World's tallest reinforced concrete building, check chat before continuing. This was the second set of content slides based on the primary structural material concrete. I used one slide per achievement.</i>

	<ul style="list-style-type: none"> Slide 12 13: Show all four buildings on the same slide and ask the students which of the four concrete structures possesses the most interesting historical significance and why they selected over the others. This was the second assessment slide where each student identified their most interesting structural achievement for concrete. Slide 14: I create a new cover slides for brick. This included a giphy of laborers stacking brick on wood panels to transport on their heads. Slide 13 15: Brick structures (one image of building and text), Tallest load-bearing exterior masonry wall ever commercially constructed with an iron frame interior Slide 14 16: Summary (illustrates all nine buildings on a single slide). Allow the students to ask questions. Slide 15 17: Matching question discussion. This is where each student used the annotate draw feature in zoom to manually connect one of the nine structures to each of the four achievements shown. Slide 18. A thank you slide connecting with the Pet Patrol with a giphy of a cat struggling to squeeze through a cat door.
ASSESSMENT	<ul style="list-style-type: none"> The learning objective will be measured at the end of the presentation where the class discusses a question that matches a few of buildings with the significant achievements. This occurred on the cumulative summary slide 17. Student understanding will be verified twice during the session by asking them to identify their most interesting significances, and by offering opportunities for the students to ask questions. This occurred on slides 7 and 13 through the content summary slides. Student attitudes and engagement will be monitored by observing their facial expressions and chat activities. This occurred throughout the session. The primary idea was to provide an environment where the students could ask the instructor questions anywhere within the session and at designated target points or summaries based on the primary structural material. This would be shared using the audio and video Zoom features. The broader learning objective connecting notable achievements and structures will be measured at the end after a cumulative summary slide.
ZOOM FEATURES	<ul style="list-style-type: none"> The traditional zoom features of audio and video engagements and instructor screen share occurred. The new one I learned for this course was the annotate drawing tools. This helped to visually connect the matching question on slide 17.

REFLECTIONS

CATEGORY	THOUGHTS
ATTENDEE FEEDBACK	<p>I requested that the students provide some feedback and this is what they shared:</p> <ul style="list-style-type: none"> Linda Stinson I thought the lesson was very effective. I enjoyed learning about the advances in architecture. Strength is Keith was very knowledgeable about his topic. The topic flowed very well. Keith had great examples and kept my attention. The cat at the end was really cute. Keith was also personable. Maybe send the notes out earlier. I was on the road traveling with work. So I did not check my inbox until later. whether they felt the learning objectives and general purpose had been met. Keith covered the learning objective at the beginning of the lesson. His material covered the learning objectives throughout the presentation. Mindy Thompson I found Keith's presentation to be very interesting, and he was an engaging and knowledgeable instructor. He broke the content up into manageable smaller sections, with informal comprehension checks between each, and then used the notations tool for a simple final evaluation of our learning. I appreciated that Keith kept the presentation simple and chose Zoom features judiciously, which made sure that the technology didn't overshadow the content. I really enjoyed both the content and Keith's instructional style. Tonette Kellett I loved the class, especially looking at the old structures. I have never thought much about what they were made of. It was eye-opening. <p>I noticed a couple of patterns reveal themselves through the feedback</p> <ul style="list-style-type: none"> The students enjoyed the session The students learned something from the session The students noticed that the learning objective was covered throughout the session and there were intermediate knowledge checks along the way The presentation was kept simple The zoom technology was blended into the content and presentation
SUCCESSES & CHALLENGES	<ul style="list-style-type: none"> <u>Multi-media</u>. The session worked even though we had one student at home, another in a car and then at home, and one in the car the whole time. <u>PowerPoint</u>. This was new content so I had to develop the lecture material specifically for this session. This took more time than expected and became more noticeable in an 8-week course.

SUCCESS & CHALLENGES	<ul style="list-style-type: none"> ▪ <u>Engagement</u>. I was not sure if I could be engaging in a zoom session. I am used to teaching face-to-face and can read the students body language as to when they are connected and when they are disengaging. I enjoy communicating with students whether it is through learning objectives or building a rapport. Linda wrote that I was personable. I did not know whether this would show in a zoom session, but apparently it did. Our early assignment was to describe ourselves with one word, and I used 'joyful'. ▪ <u>Q&A</u>. There was one question I could not answer regarding building adjacent to the Willis (Sears) Tower. This was a question I did not anticipate and reveals that I was extending myself by teaching outside of my comfort zone as I am more of a math and formula nerd.
ZOOM EVALUATION	<ul style="list-style-type: none"> ▪ <u>Annotate</u>. The Zoom technology worked much better than I anticipated. I never knew there was an Annotate feature in Zoom. I found this while attending the Less Lawn, More Flowers session. I drew something during that presentation. Then I came up with the idea of using the draw feature to connect with lines the notable achievements with the structure. This was a way to seamlessly blend in the technology and engage while not overwhelming the content with the technology. ▪ <u>Chat</u>. The chat feature was not used by the attendees. When there only four people in the Zoom the chat almost becomes unnecessary because everyone has a voice that is easily heard and they are not lost in the crowd.
ADJUSTMENTS	<ul style="list-style-type: none"> ▪ <u>Content</u>. I might abandon the brick content and use only the steel and concrete buildings. The brick with only one slide seems to be the outlier for the group. ▪ <u>Handouts</u>. I need to send out the handout earlier. The issue was that I was still creating the PPTX.
TIPS & STRATEGIES	<ul style="list-style-type: none"> ▪ <u>Recording</u>. When setting up the zoom meeting, I clicked the record automatically command just in case I forget. One suggestion is that one may choose to pause before they formally start the session, otherwise the instructor may have several meetings of unessential class start-up activities. I also place a post on the monitor to remind me to record! ▪ <u>Reminders</u>. Send a reminder to the attendees regarding the time with the zoom link and session handout. I sent one out the morning of the session, but should send one a week in advance too. ▪ <u>Rehearsing</u>. Always go through a dry run of your session for several reasons. Familiarizing yourself with the content, identifying and mistakes, and having a feel for the timing are just a couple. ▪ <u>Q&A</u>. Think about what questions you most likely ask if you attended your own session. Being able to predict and anticipate questions will help you appear more knowledgeable about the content.

SESSIONS
ATTENDED

- Less Lawn, More Flowers

Instructor: Valeria Duever

Attendees: Barbara Hill, Alysia Carrillo-Elliott, Keith Hedges

The purpose was to coordinate plant selection with pollinators. I was a blank slate going in, just knowing what not to mow! I learned several things: (1) Different plants attract different pollinators; (2) There are several different kinds of pollinators, while bees are the most common; (3) Butterflies, moths, hummingbirds, and even people can be pollinators; (4) Pollination from bees occurs through incidental contact as the pollen adheres to their bee 'fur' and then withdraws onto other plants; (5) Less grass allows plants and subsequent wildlife to flourish; (6) Pollinators see color differently; (7) The pollinators has a life-cycle that can be nurtured through multiple growing seasons such as three months at a time for three seasons equals a nine month potential pollinator; (8) Sunlight, soil, and water are some of the factors to consider when selecting plants; (9) Some plants can be evasive and overtake other plants when left unattended; and (10) plants have geographic zones. The instructor was very knowledgeable about the subject and had a background in the area. This was evidenced by the instructor's ability to answer the students' questions. I was able to add comments into the chat and to draw on the PowerPoint images. The slides balanced the images and text quite well without information overload. The students seemed engaged throughout. The session was upbeat and fun. I totally enjoyed the experience and learned along the way.

- Boom Card Math

Instructor: Tonette Kellette

Attendees: Solveig Lasses-Greene, Keith Hedges

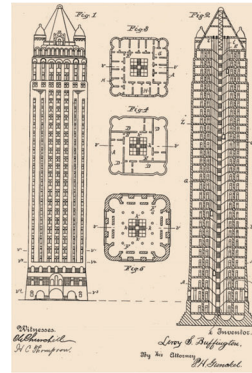
The purpose was to teach fifth grade students how to compute volume using commutative mathematical techniques and snap cubes with an assessment with boom cards. Although I have an advanced degree in structural engineering, I did learn a few new things about math: (1) The commutative principle permits the rearrangement of which numbers can be multiplied first. For example, one can multiply the base times the height or use the whole equation of length times width times height, and so on. The strategy is to select the two easiest numbers first, which are most likely the smallest numbers. (2) When a '10' is involved, multiply the other numbers first, then simply add a zero. I wish I knew this when I was younger, would have been much faster! (3) I learned how to visualize volumes through snap cubes, which is an adjustable type of Rubik's cube. (4) I used the boomlearning website for the first time. I was able to correctly compute the volume of a snap cube visualization. The software had positive reinforcements for the students such as a bell when the boom card was correctly answered. There was also a progress bar. The instructor was well versed on snap cubes and boom cards. This was evidenced by surviving the pressure of having to teach the class twice due to recording issues. The slides were well balanced with images, text, and formulas. The students were engaged throughout. The instructor paused to ask the student questions during the presentation. The session was fun, cheerful, and I had a great learning experience.

NOTABLE ACHIEVEMENTS IN STEEL, CONCRETE, AND BRICK BUILDINGS

ISLT 9484
Teaching Online Courses
University of Missouri
Keith E. Hedges
Fall 2020

1

FIRST US AND INTERNATIONAL PATENTS FOR 'CLOUDSCRAPERS' (1888)



- Structure: Patent for steel frame
Date(s): May 22, 1888
Designer: Leroy Buffington
Significance:
- First US and international patent for 'cloudscrapers'
 - Pursued remuneration in the courts and never won a case

4

Achievements in Steel



2

FIRST SELF-SUPPORTING STEEL FRAME (1889)



Rand McNally Building
Chicago, Illinois

- Structure: Rand McNally Building
Date(s): 1889
Designer: Burnham and Root
Significance:
- First structure where the steel frame did not rely on a load bearing exterior or interior wall.
 - The exterior wall system was suspended from the steel frame like a 'curtain'.

5

OLDEST IRON-FRAMED BUILDING (1796-1797)



Shrewsbury, England

- Structure: Ditherington flax mill
Date(s): 1796 – 1797
Designer: Charles Bage
Significance:
- Uses both cast iron columns AND beams.
 - This idea was the beginning of the modern steel frame from which skyscrapers were borne.

3

TALLEST STEEL BUILDING (1973)



Willis Tower
Chicago, Illinois

- Structure: Willis Tower (formerly the Sears Tower)
Date(s): 1973
Designer: Bruce Graham (architect), Fazlur Khan (engineer)
Significance:
- World's tallest free-standing, structural steel frame building, 1,450 ft (110 stories)
 - Formerly the world's tallest building (1973 – 1998), now its 22nd.

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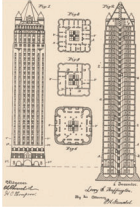
WHICH STEEL ACHIEVEMENT IS THE MOST INTERESTING?

Annotate, chat,
or unmute

Ditherington Flax Mill
Shrewsbury, England



'Cloudscraper'
Patent



Rand McNally Building
Chicago, Illinois



Willis Tower
Chicago, Illinois



7

FIRST IRON-REINFORCED CONCRETE BRIDGE (1875)



Castle of Chazelet Pedestrian Bridge
Chazelet, France

Structure: Multiple patents for iron and concrete

Date(s): 1867 – 1878

Designer: Joseph Monier

Significance:

- 1867 – iron-reinforced troughs for horticulture
- 1868 – iron-reinforced cement pipes and basins
- 1869 – iron-reinforced cement panels for building façades
- 1873 – bridges made of iron-reinforced cement
- 1878 – reinforced concrete beams

10

Achievements in Concrete



8

FIRST REINFORCED CONCRETE BUILDING (1870's)



William E. Ward House
Rye, New York

Structure: William E. Ward House

Date(s): 1870s

Designer: William Ward (engineer),
Robert Mook (architect)

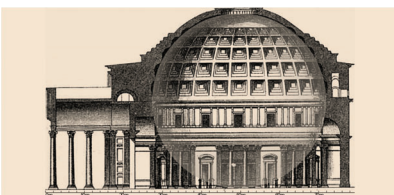
Significance:

- First reinforced concrete building in the United States
- The house was purchased by Mort Walker of *Beetle Bailey* fame and became a Museum of Cartoon Art!



11

LARGEST UNREINFORCED CONCRETE DOME (126 AD)



Pantheon
Rome, Italy

Structure: Pantheon

Date(s): 126 A.D.

Designer: Hadrian (emperor)

Significance:

- World's largest unreinforced concrete dome (142 ft)
- After nearly 2000 years, it is still standing!

9

TALLEST REINFORCED CONCRETE BUILDING (2009)



Burj Khalifa
Dubai, United Arab Emirates

Structure: Burj Khalifa

Date(s): 2009

Designer: Skidmore, Owings and
Merrill (SOM)

Significance:

- World's tallest building (2,717 ft) since 2009.
- World's tallest reinforced concrete building

12

WHICH CONCRETE ACHIEVEMENT IS THE MOST INTERESTING?

Annotate, chat,
or unmute



William E. Ward House
Rye, New York



Burj Khalifa
Dubai, United Arab Emirates



Pantheon
Rome, Italy



Castle of Chazelet Pedestrian Bridge
Chazelet, France

13

SUMMARY



Pantheon



William E. Ward House



Ditherington Flax Mill



Chazelet Pedestrian Bridge



Rand McNally Building



Monadnock Building



Burj Khalifa



Willis Tower

16

Achievements in Brick



14

MATCHING USING THE DRAWING ANNOTATIONS

STRUCTURE

Pantheon

William E. Ward House

Ditherington Flax Mill

Burj Khalifa

Cloudscraper

Chazelet Pedestrian Bridge

Willis Tower

Rand McNally Building

Monadnock Building

ACHIEVEMENT

World's tallest reinforced concrete building

First entirely-self supporting structural steel building

Tallest load-bearing exterior masonry wall with iron frame interior

First reinforced concrete building in the US

17

TALLEST LOAD-BEARING BRICK BUILDING (1893)



Monadnock Building
Chicago, Illinois

Structure: Monadnock Building

Date(s): 1891 – 1893

Designer: Burnham and Root

Significance:

- The tallest load-bearing brick building ever constructed, it employed the first portal system of wind bracing
- The brick is 6 ft at the base (triple the norm) and 18 inches wide at the top.
- When completed, it was the largest office building in the world.

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MANY THANKS FOR ATTENDING!!!



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