
Engineering Experiential Learning: Building 3D Digital Archives and Fostering Student Intellectual Engagement

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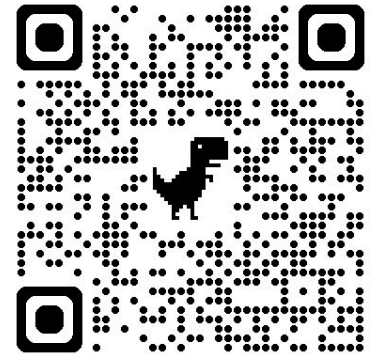
Illinois Wesleyan University

Dancing at Lughnasa 3D model

that even before the exact locales created by the playwright. Thus Trout emphasizes historical research, as did designers such as Oenslager. Set designs such as those for *Dancing at Lughnasa* balance this historical accuracy with symbolic effect.



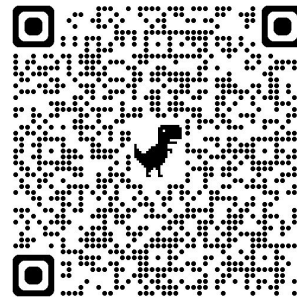
The presentation below highlights the historical research Trout did for this production, and every production.



[Link to 3D model itself](#)

This highlights some of the major points we want to make

- Exploration/engagement
- Student exploration/engagement in creating archival exhibit
- Narrative Form



[Website we
will be
discussing
through the
presentation](#)

This presentation will cover....

- Background/Necessity
- Principle 1: Multimodality
- [question break]
- Principle 2: Time
- Principle 3: Set up Framework
- Principle 4: Divide Tasks
- Putting it all together: what makes a good project?

...in thinking about creating experiential archival experiences for undergraduates

Necessity: Archival Practicalities

Type ▾ People ▾ Modified ▾ Source ▾

Name ↑

1 Afraid of Frankenstein...	1 Bold Stroke for a Wife...	1 Boys from Syracuse IWU...	1 Cinderella for bulletin...	1 Crucible IWU 2016-17	1 Curtains
1 Dancing at Lughnasa...	1 DMCP 2016-17	1 Drowsy Chaperone...	1 Frank Sparrow	1 IWU 1990-91	1 IWU 1991
1 IWU 1992-93	1 IWU 1993-94	1 IWU 1994-95	1 IWU 1995-96	1 IWU 1996-97	1 IWU 1991
1 IWU 1998-99	1 IWU 1999-2000	1 IWU 2000-01	1 IWU 2001-02	1 IWU 2002-03	1 IWU 2000
1 IWU 2004-05	1 IWU 2005-06	1 IWU 2006-07	1 IWU 2007-08	1 IWU 2008-09	1 IWU 2000
1 IWU 2010-11	1 IWU 2011-12	1 IWU 2012-13	1 IWU 2013-14	1 IWU 2014-15	1 IWU 2010
1 IWU 2016-17	1 IWU 2017-18	1 IWU 2018-19	1 IWU 2019-20	1 IWU 2020-21	1 IWU 2020
1 IWU Summer Theatre...	1 Liz & Curt	1 Marriage of Figaro IWU...	1 Of Thee I Sing IWU...	1 Scrooge IWU 2007-08	1 South Pa
1 Stage Door Scenic 2021	1 The Children's Hour...				
W How to collaborate.docx	1 Rags sweatshop interio...				

"How to Collaborate and Produce"
A Designer and Director's Guide to
THE DESIGN AND PRODUCTION PROCESS
FOR THEATRE FROM 2010-2021

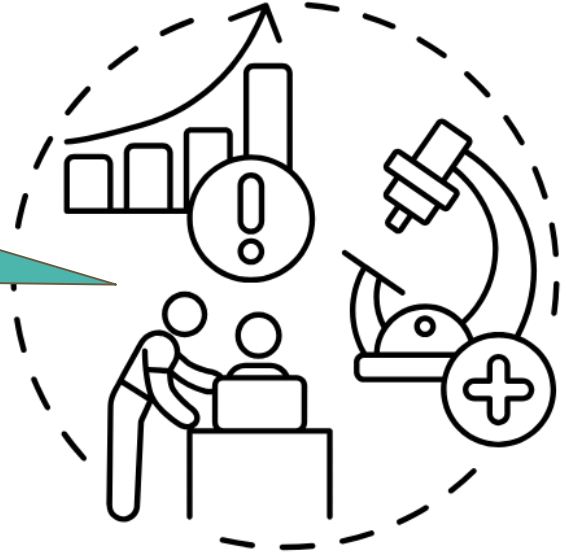


Necessity: Experiential Learning

independent intellectual engagement,
including

- concrete experience,
- reflective observation,
- abstract conceptualization,
- and active experimentation

(Kolb, 1984)



Digitization as Experiential:

experience→observation→conceptualization→experimentation

- Workflow
- Standards
 - Metadata
 - File Format
 - Preservation

3 File formats

There is no single perfect format for the preservation and future use of 3D data. Decisions made on file formats should be dependent on the features and functionality to be preserved and the future use cases to be supported. The table below lists vendor-neutral or open formats compatible with multiple software systems. These open formats can be considered acceptable preservation formats for different 3D use cases. Compatibility with multiple software systems also makes these file formats potential access formats. [From the Digital Preservation Coalition.](#)

iii. Scanned 3D Objects

	Preferred	Acceptable
A. Formats	From the Library of Congress.	➤ STereoLithography (.stl) ➤ Reflectance Transformation Imaging (.rti) ➤ Polygon File Format (.ply) ➤ Wavefront (.obj)

Digitization as Experiential:

experience → observation → conceptualization → experimentation

Workflow (draft)

Question: Is this a WF for using the app, or for Curt's theater sets specifically?

Planning	- KIRI engine <i>various models</i> <i>locate area w/ lens windows + solid lighting</i> - prepare surface tall + thin enough to walk around + sit on comfortably (table - w/ walkable space) - for items w/ black or white space use string/sticky notes/chalk to create a grid (basically) → <i>add something else here?</i>
Capture	- The app shows you the rendering while you are scanning 3 stages: 1. Pick the item in hand (helps app know what to scan) 2. Move in a slow circle around the item. Use the white circle surrounding the rendering scan (like lights up when the angle it needs is captured) TAKE YOUR TIME 3. The app processes as the 1st stage, but at a low angle - the process, but scanning the top of the item - Press: "Finish" <i>(for whatever is being scanned)</i>
Process	- Wait while it processes - If confident in scan, move the sticky notes/string to the next item. - Prepare notes <i>Should this be its own category?</i>
Meta-data	- File name: - select scan, click on edit (button by the scan's name) - change "scanname" - i.e. 100% - 100% of 100% - Click the 3 dots on the scan for additional metadata <i>(should we put specifically what we are looking for?)</i> <i>Is this where the shape which is the scan is?</i>
Quality Control	I can make a list of what I want to preserve (short + long-term).
Rights & Copyright	Do we have the info for this yet?

3D Scanning with KIRI Engine Workflow

Planning	- Download KIRI Engine to mobile device (for LiDAR Capture you do NOT need premium) - Find location with solid lighting, and minimal windows, such as the Center for Engaged Learning near Popular Reading shelves - Prepare surface that is tall, thin, and easy to move around (table w/ walkable space), place object in the center, front facing you - For objects with a large amount of black or white space, create a colored grid so that it is easier to render (ie: sticky notes/string/chalk) - Place the sticky notes over the black or white area in a roughly-equally spaced grid. Book table sticky notes work well for this. It may take scanning the item once to know exactly where they are needed. Cover the borders well and then work your way in.
Capture	*To aid in the process of scanning, the app shows the object rendering as you scan* - Press the + at the bottom-center of the screen, press LiDAR Scan, click Object Capture - Fit the object into frame and click Continue 3 Stages: (the app guides you as well) - Holding the device in a straight-on angle, slowly walk around the object, use the white circle surrounding the actively developing scan to guide you (lights up as it captures what it needs, the circle needs to be completely lit before you move on. - The app advises that you do not flip the object, press continue to move to next stage - Following the first stage, move in a slow circle around the object, holding the camera at a downwards angle. Still following the white circle. - Same process, now from an above-angle. Follow the white circle. Click finish; scan will immediately begin processing
Process and Quality Control	After the scan processes, you should be able to look over the scan. In most cases, the scan may have few holes and blending in areas that were harder to physically scan. If it is not the quality wanted, rearrange and/or add sticky notes (or whatever you chose) and re-evaluate the lighting)
Metadata	- To extract and save the file, click on the 3 dots next to the object's name and download - The file will save as a zipped file, but after extracting that you will have .obt and .usdz files. - To obtain the metadata that is in the app, right click on the extracted files and click on properties. There you will see all the metadata, which includes:

experience→observation→conceptualization→experimentation

from the first branch, I want to give

Digital Humanities “enables” students “to envision a relationship between themselves

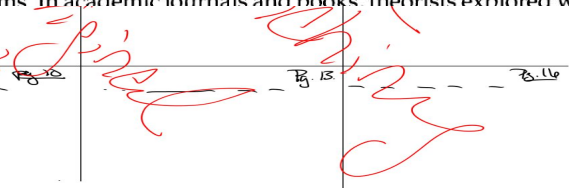
Changing Theories of Undergraduate Theatre Studies, 1945–1980

ANNE BERKELEY

Introduction

The history of theatre study in American undergraduate education is a story of prodigious quantitative success. Although it took two centuries to secure the right to perform plays at American colleges, it took only eighty years for the curriculum to grow from a few isolated courses at the turn of the twentieth century to well over 14,000 in the 1970s.¹ By far the steepest growth occurred during the unprecedented expansion of higher education between 1945 and 1979. But academic theatre's meteoric rise after the war years conceals more problematic qualitative achievements. Throughout its ascendancy, vexing questions persisted concerning the quality, standards, and evaluation of theatre programs. In academic journals and books, theorists explored with alacri-

*I don't know
but I think
it's
kind of
big*



- We can **shed light** here on the "student experience" at IWU with how they are able to work hands-on as an undergrad with a fully invested staff (can *pull quote* for sure from *Curt interviews*, and likely student interviews *when we have them*). Maybe provide some details on what the 'normal' theater program looks like to show how IWU is unique.

- Talk about how students are trained to not only prepare for productions, but also how to take those skills to other job fields

- **Shed light on** the value of collaboration

- Talk about the **value** of mentors: Curt talks a lot about his mentors (John Fica) and the impact they had. Maybe *string line this to show how Curt uses his education and experience to demonstrate to his students how to work collaboratively.*

But....

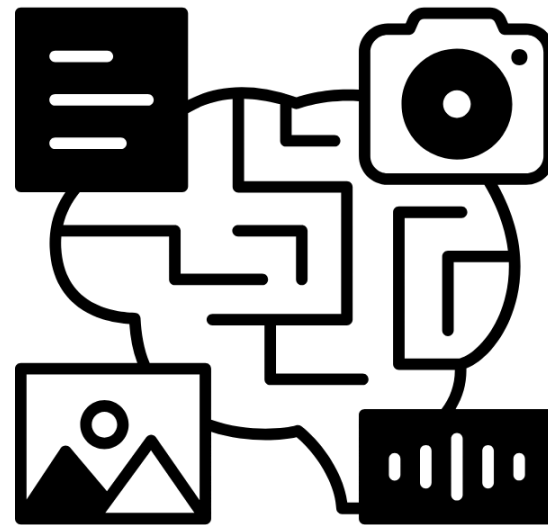
While the potential for using archival work to build experiential learning, particularly through DH practices, is high, the literature is scarce.

What there is tends to focus on best practices in teaching necessary technologies and creating partnerships (and not surprisingly, almost nothing on 3D digitization).

Our focus: actual practical and intellectual scaffolding that best prepares students to engage in experiential learning and DH work that makes them active participants in knowledge production.

Principle 1: Multimodality

- Object in and of itself
- Building a narrative through those objects and what they tell



Created by SBTS
from Noun Project

Object as Object

In terms of telling a story, Liz and I talked about how using 3D scans can not only help for accessibility in helping people find things like this, but also gives the opportunity for viewers to observe the set the way that it was intended.

2017 edition.
1: Branch holder is simpler, showing Curt's advances in effective design process.
2: The set now extends to the back of the stage, just shows more thought on how space, redesign additions made their way into Curt's design.





Dancing at Lughnasa (1994)
by amann4



1

Realistic Detail

The interior seeks to realistically portray the cottage of a poor Irish family of the 1930s. As Trout notes, "as a designer, you have to map out, develop and create... an environment on the stage that the characters can inhabit for the life that the audience is going to watch. And the great thing about it is, since it plays are based on the lives of people we can go back to that point in history. We can research what everything looked like, how it was used."



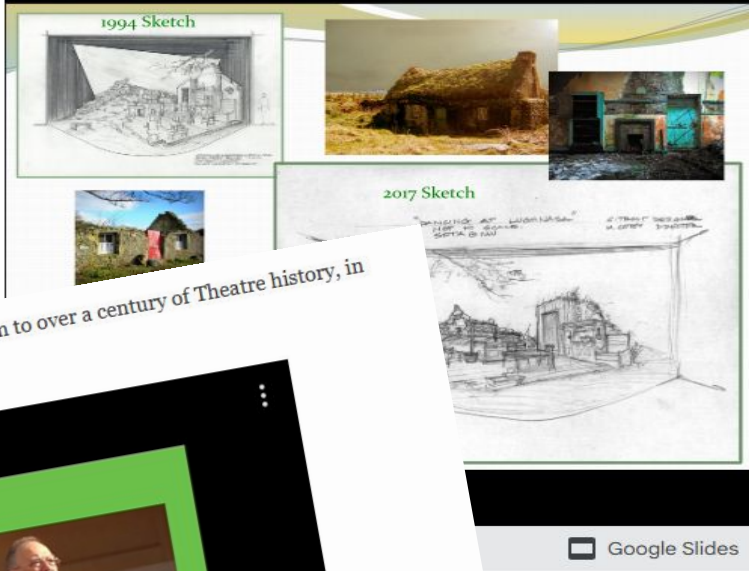
Realistic Detail



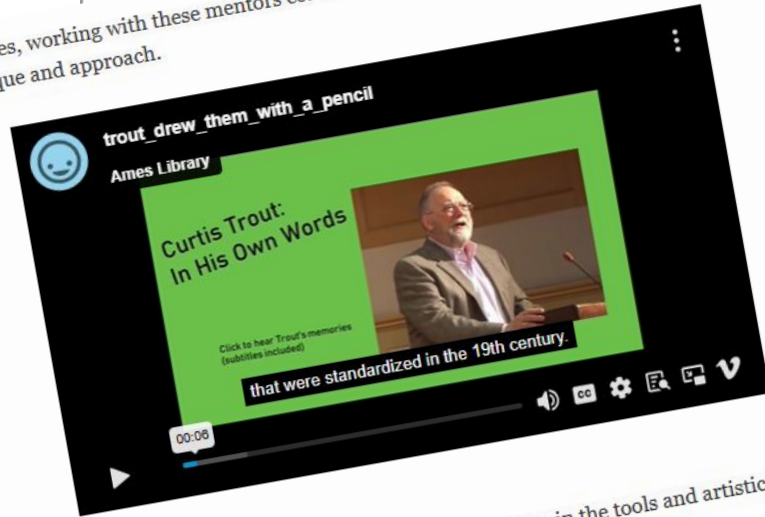
HD



Building a narrative through those objects and what they tell



As Trout notes, working with these mentors connected him to over a century of Theatre history, in both technique and approach.



We can see Trout's (and contemporary Theatre Design's) roots in the tools and artistic approaches he used in both his 2D and 3D design.

as the complexity of se
Adolph Appia (1862-19

vectorworks design software. Included in the Archival model shots is an affected image of the original model. In blue marker those things that will not be included in the new design costing. Those things in solid red simply not

igner for two productions: one in g year. The documents reflect addition, I wings nt, 2017, t of the lation le rd to

through which s that allowed art ne in which Trout basis on realism g at Lughnasa: rian theorists, like nsional actors

Question Break

Principle 2: Time

- Deep Engagement
 - Scanning
 - Reading
 - Interviewing

Concurrently!



A 3-Dimensional [or 3-Pronged] Approach

We have found that Curt really values the process of creating these sets and the collaboration behind them. With the readings we have done, they also find those aspects vital.



Repeated Engagement with Readings

★ [Changing Theories of Undergraduate Theatre Studies, 1945-1980](#)

This article examines the evolution of theatre education in American undergraduate programs during the mid-to-late 20th century, tracing how shifts in educational ideology and cultural trends influenced the development of theatre curricula. The author highlights that while theatre studies struggled for academic legitimacy for nearly two centuries, the post-World War

II era saw a shift in the way we saw a movement towards a more technical practice and learning, a program that mirrored the Theatre studies interdisciplinary current era. It is an interdisciplinary and flexible discipline.

- We can **shed light** here on the "student experience" at IWU with how they are able to work hands-on as an undergrad with a fully invested staff (can *pull quote* for sure from *Curt interviews, and likely student interviews when we have them*). Maybe provide some details on what the 'normal' theater program looks like to show how IWU is unique.
- Talk about how students are trained to not only prepare for productions, but also how to take those skills to other job fields

Theater Education Timeline

1850: Victorian Teaching	
1945: Theater	
1980: Curtis Trout Joins the Professional World	
2016: Trout Evolves Design Technology	

We want to share important aspects of the history of theater education without being boring. I created a timeline in a google-doc titled, "Trout: History Strand." Its purpose is to provide you with a couple notes to hit while writing, but we do not want a boring "in 1850 symbolism was important."

1. After learning more about the history of theater education, the debate over whether theater as a major would be successful was left unanswered. Theater departments were criticized for not teaching "humanity values." Did you feel in your teaching that you had to justify how valuable the stage was? Is that reflected in any of your shows?
2. Based on our research, the field of theater education has been torn between teaching culture and craft. Where did you fall in this debate?

Principle 3: Set Up Frameworks

- Reasonable Expectations

Timeline

What needs to get done and by when?

Archival Prioritization

What should we prioritize for archiving?

Reading

How do the readings inform the story told through the objects?

Reasonable Expectations: Timelines

I fear I won't get the scan completed in time. I have more time for this next week, but we lose a lot of time as we troubleshoot and deal with new problems.

Create first draft of digitization schedule and activities to maximize experiential learning	Decide on necessary background information, readings, activities and questions for student engaged in digitization, prioritize archival objects for digitization, and create schedule	✓	✓	✓	Mid March 2025
Digitize materials and collect data on effectivity of plan	Perform digitization with weekly meetings and completion of tracking instruments discussed above	✓	✓	✓	Late March-May 2025
Finalize 3D digitization workflow and best practices	Review completed process and notes	✓		✓	
Plan a digital display with compelling narrative	Explore and select DH tools for creating digital exhibits; draft a guiding statement about narrative goals of exhibit	✓	✓	✓	June-July 2025

Reasonable Expectations: Archival Prioritization

Name 

 COSTUME FOLDER

 Cotey_Lighting Images

 Daves Zipped Pics

 Moss

 Props

 Radios

 Rehearsal/Meeting...

 Ruins

 Stage Management

 8 8 2017Dancing at at...

 COTEY_sketch_adjust...

 COTEYresponse_resea...

 eighth inch GP 2017...

 IMG_1799.MOV

 IMG_1800.MOV

 LUG scene breakdown

 Lughnasa 2017...

 Lughnasa 2017.pdf

 Lughnasa 2017.pptx

 Lughnasa Model 2017...

 Lughnasa Sketch #2...

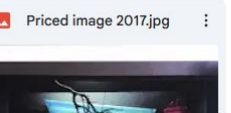
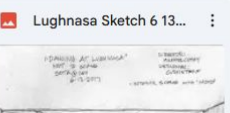
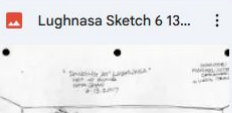
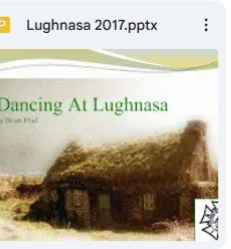
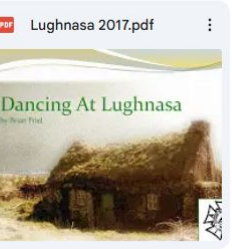
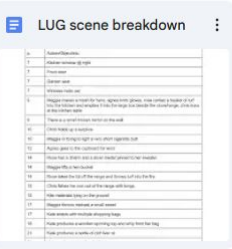
 Lughnasa Sketch 6 13...

 Lughnasa Sketch 6 13...

 Lughnasa sketch...

 Priced image 2017.jpg

 The building 2017.pptx



Clear and reasonable (and enforced) prompts for reading

Reading Notes Questions

Describe the central “so what” of the reading: what idea is the writer addressing and how do they want us to change our understanding and/or practice?

Select two concepts or principles in the reading applicable to this project. For each, clearly define or describe it and explain how it relates to this project.

Can you identify any gaps in this article, either in terms of issues ignored or places for more complex exploration?

(if applicable) What primary sources did they engage with and how were they used? What overall story did they tell with those objects? With what “so what”?

(if applicable) As best you can tell, how did the authors select the objects to use in their projects? Did they base their selections in the historical and institutional contexts? If so, how?

(if applicable) If you were to offer a critique of their choice of archival objects, what would you praise and what would you say they should consider further?

Reasonable Expectations: Overarching Idea

History	Tech	Collaboration <i>why matters in terms of what prepared students for</i>
Foreshadow design process	Foreshadow design process	Design process: all of the members (FLoH?) Do we have 2d materials of interaction
Realism vs symbolism –more generally aesthetics of scene design –how does scene designer look at world (spectacle w/in + textbook) (tech)	Dancing at <u>lusthnsa</u> How design happened : CAD Realism vs symbolism CAD–Liberal arts education does/ IWU difference Draftsmanship to #D to cad (world w/o design)	Student Experimentation Changing job options Liberal arts education does/ IWU difference (problem solving–design W/o E)–look at different careers transferable skills
HOW TELL THROUGH SHAKESPEARE (maybe <u>revers e</u> story of knowing stage well vs constant change. Maybe show different set designs for same as curt had showing different theater's "problems" (texch connection))) Regional Theatre model + university education (collab)–see in his experimentation plus changes over time Look at curt's interview–how	Standardized set pieces (musicals (Rags) vs dramas) Connection to regional theater? Money + experimentation (1945 history)	Professional His mentors (link to history) Regional Theatre model + university education John Fica AoFL

Principle 4: Divide Tasks

- Collaborators vs. Facilitators
- Roles informed by individual strengths

Completed	Date Completed	Objective	Activity	B	M	T-C	Time Frame	Changes/Notes
☐		Refine best practices for using archival DH work to enhance student experiential learning	Continue to review literature; develop starting schedules and activities		✓		March-Early April	read available work on archival/primary sources experiential learning, following citations to more general works on experiential learning and undergrads as needed. kept running notes of ideas, references, and models see below: what am i looking for in reading--connect to lecture (Dagan) EITHER starting lecture plus current reading notes or more focused for each reading maybe demand answers to questions to readings vs loosey-goosey abby: define terms esp technical ones--ie, what is a workflow? how is it used?
☒		Obtain necessary background information on archival materials to shape meaningful narrative	Research IWU theatre history and 20th theatre education history	✓	✓		March-Early April	added several sources into zotero files and took notes in it. Surprisingly few that focus on theatre history. abby as of 3/25 and interview we think we have enough on IWU TH, will look for more as needed finalized scholarly readings 2nd interview with Curt would be nice to have little blurbs about why he selected what we preserved (Dagan) Now we have selected find supporting materials (photos,etc) connect with students (Liz) perhaps strat with overview lecture/background then let the reading connect in (Abby): Dagan: would have helped to know what theatre people think about their education and their perspectives Liz: our interviews with Trout raised new info (like he was trained by victorians; plays vs musicals)--when we go back and do that research --so second stage (will require submitting question answers and/or in meetings lead with the Qs) abby: add in 2nd stage of reaseach to process
☒		Develop preliminary workflow for 3D digitization	Further explore free/low cost 3D digitization tools and requirements with attention to issues of accessibility and storage; create draft of workflow	✓		✓	Mid March 2025	creating spreadsheet based on tools, metadata 3/25 have article on workflow that will use as model beginning testing with 3 models will takes notes as we do so
			Decide on necessary					Dagan: liked log, helped keep thoughts

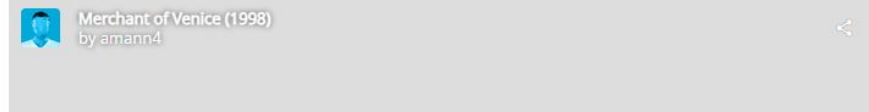
What does this look like? Discrete Tasks

- We want to share important as theater education without being timeline in a google-doc titled, It's purpose is to provide you w while writing, but we do not w symbolism was important." We Shakespeare sets to display thi
- Notes to keep in mind:
 - We are covering roughly 1850
 - Need to cover Curt's Career, t general, and at least hint at the (no need to go too deep, as it is
 - How does Shakespeare help?
 - Talk about how in 1850-ish standardized sets (different pr use the same scenes to build th often portrayed in the castle, e still scenes in the woods or else
 - Set designs are also based c place with the most action (Mi set design is often set in the wc live) --> All Shakespeare Scan
- Curt's Interviews help solidify the symbo different methods to get there.
 - Timestamps:
 - Interview 1
 - 1:55
 - one of the things that's really unique about iwu With very few exceptions. Our shows are alwa undergraduate students. Um, and that is a rer I'm so, I'm following a process and, and I do tl single show.
 - I guess I have to say the **the archive represe communicate the design to a variety of diff are going to build it. People who are going it and directors who are going to move pec who help start the entire idea.**
 - And as such, it it is a collection of ephemera t experience on the stage, right, right? It's the it **an architect saves all the drawings for a bu because 30 years later, somebody may nee hooked up on that floor, right? Um, I've sa do that, right? And I save everything. Beca to re-engage with the design**, and notably, I shows that that and then therefore designs.
 - 4:22
 - it's. Personal expression as as a an artist anc to, you have to find a happy spot right for sorr one single prop that

When Trout joined the theater faculty at IWU in 1994, scenic design professors were a rarity. Many years later, speaking to a former IWU provost, Trout reflected on how few were in his position when he took it, highlighting IWU's emphasis on combining liberal arts and professional skills:



How could plays be produced on campuses without instruction in scenic design? You can see from this set for *Merchant of Venice* how much work creating design like this entails, as well as how much such sets contribute to the experience of the play:



What does this look like? Faculty still Facultying

here are the shakespeare ones. instructions on how to embed in scalar below.

[a winter's tale](#)

[merchant of venice](#)

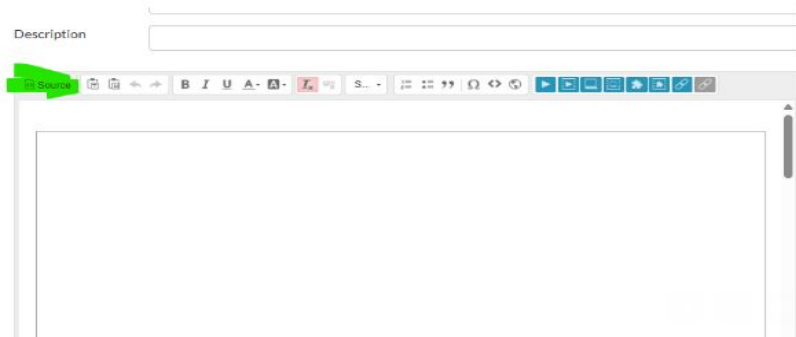
[measure for measure](#)

I can add **annotations** to the model--i'm not seeing a way to share editing abilities. So **Dagan**, you can just mark where you want an **annotation** on a screenshot, or we can do shared screen google meet at some point and do them together.

we `_may_` be able to add sound: [i'm leaving this here as a note for myself](#)

[You can embed them](#) in scalar, it's just a multi step process:

in scalar, switch to source

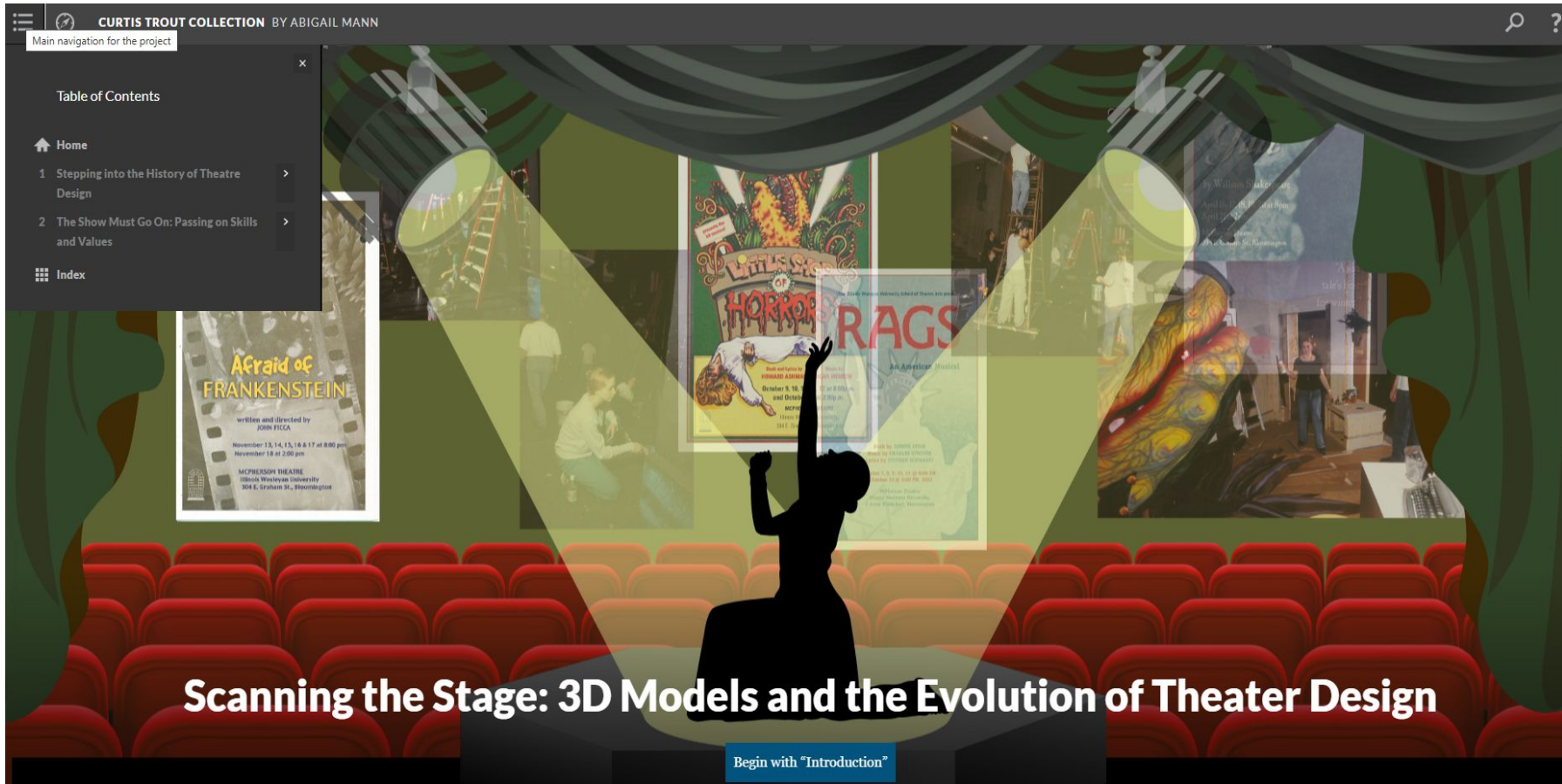


find where you want to put the model in, and paste this in:

What does this look like? Messy

History	Tech	Collaboration <i>why matters in terms of what prepared students for</i>
Foreshadow design process	Foreshadow design process	Design process: all of the members (FLoH?) Do we have 2d materials of interaction
Realism vs symbolism –more generally aesthetics of scene design –how does scene designer look at world (spectacle w/in + textbook) (tech)	Dancing at <u>lusthnsa</u> How design happened : CAD Realism vs symbolism CAD–Liberal arts education does/ IWU difference Draftsmanship to #D to cad (world w/o design)	Student Experimentation Changing job options Liberal arts education does/ IWU difference (problem solving–design W/o E)–look at different careers transferable skills
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Emphasis on Strengths



Emphasis on strengths

Builds Practical Skills:

Experiential learning equips you with real-world skills, including problem-solving, teamwork, and adaptability, and allows you to practice your skills in a safe environment. These are competencies that employers seek and that textbooks alone cannot provide.

<https://www.umgc.edu/career-connection/articles/experiential-learning>

One part of the answer is that until recently, there just weren't a lot of theater productions with professional values on college campuses. We can look at images of earlier productions at IWU to see the ways that they dealt with scenery and design. You can hover over the caption of each to get more detail about design elements to notice.



IWU's School of Theatre Arts was founded in 1948, making it an early adopter in the post-WWII boom in Theatre Education at the college level. Theatre began to be valued as a part of liberal arts education with an emphasis on creativity and humanistic inquiry, making it a great fit for IWU.

At the same time, theatre was spreading across the country. In the first part of the century, almost all professional theatre took place in New York, on Broadway. After the war, there was national investment in education and the arts: with financial support from governmental organizations like the National Endowment for the Arts (NEA) and the National Endowment for the Humanities (NEH), regional theatres were established all over the country, **providing more opportunities for Americans to see live theatre, and more opportunities for college graduates to find jobs in theatre.**

So throughout the 1960s and 1970s, Theatre departments struggled to define their role: were they spaces of academic study, or laboratories to prepare students for professional work? Trout notes that his own education was part of that shift: while he received a Master of Fine Arts (a degree more focused on artistic craft), he was one of the first at his university to do so.



Putting It All Together: What Makes A Good Project?

- Routine tasks vs. experiential learning in the archives
 - Hands-on
 - Engaged Time
- Bounded



Tangible Final Product

Website

Questions?

Liz Bloodworth

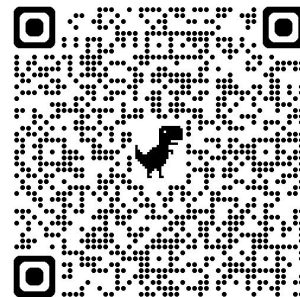
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