ONTARIO COUNCIL FOR TECHNOLOGY EDUCATION

DESIGNING A COTTAGE TO SCALE BY HAND

Technological Design

TDJ1O / TIJ1O

Summer 2022

takeTECH

Table of Contents

Introduction

Course Code: TDJ1O/TIJ1O
Broad base Technology: Technological Design (Tech Design)
Grade Level: 9
Prerequisite: None
Project Name: Designing a Cottage to Scale by Hand

Project Outline

During the project students will be given the opportunity to investigate, problem solve and create working drawings/ floor plans to a well-designed cottage. Students will investigate the process of design, working/ interviewing for client needs and what needs to happen for effective design and planning of space.

This project should showcase their knowledge and understanding of basic drafting techniques and concepts that they have learned earlier in the unit/ semester. This could be used as a culminating project for the TIJ or TDJ 101 level of technological studies

Prior Knowledge

Students should have some basic knowledge of linetypes, scale and measurement. They should be at a point where basic design generation is possible and output use of ¼" grid/graph paper is possible.

Architectural drafting basics handout

Student Activities

Activity 1 – Finding your Inspiration - 25 Pictures of Your Dream Cottage

Objective: Let's get started ! This is a great opportunity for you and the class to start a conversation on *"what is a cottage?".*

Is a cottage a house with all the same elements and creature comforts of a home? (ie: technology, saunas, pools, extravagant interior and exterior spaces? Or is a cottage more of an "offline" and back to basics type retreat?

Having students gather their inspiration of what a cottage is to them. Have students identify their wants and thoughts through image gathering online with a few dot jots for each image on what they like or do not.

Having students develop and analyze common building materials, key elements of "home" design features of a working space.

Length of activity: 1 period

Resources:

Supporting videos:

- Tracing the sketches of Frank O Gehry
- Zaha Hadid documentary

Handouts:

25 pictures of your dream house/cottage (see Appendix A)

Materials Needed:

- Access to the internet and document writing software (ie: Google Docs, Word, etc.)

Activity 2 – Bubble Diagrams

Objective: Now that students have had some time to think about cottages, smaller spaces and what goes into a dwelling, it's time to start the planning process. When developing an effective floor plan, living sectors, locations and accommodations will need to be addressed.

This is a great opportunity for you to again open the floor up to class discussion and debate. Key client briefs/ criteria can be introduced at this time.

- Client accommodations
    - medical
    - age

- Room requests
    - Ie: how many bedrooms
    - living spaces
    - bathrooms
- What is a private space in a home (space you don't entertain guests in)?
    - bathrooms
    - bedrooms
    - office/den's
- What is a public space in a home (space where you do entertain guests in)?
    - kitchen
    - family room/ great room
    - dining room
    - etc.

Bubble Diagrams are a term that is regularly used in industries connected to architecture. This is a simple and effective way designers investigate, develop, and generate ideas for the client's space. The rough work at this point is conceptual, rough, and always open to interpretation and innovation. It's still a living document while working with the client to finalize the design.

STAGE 1: Is VERY rough space allocations. NO scale, building code or measurement is necessary at this point. At this point stage 1 is strictly *just* getting your ideas down on paper, how you plan your private spaces in conjunction with the public spaces. Where is your view, are your sleeping spaces in a quiet area of the home, will the sun be in the bedrooms early and so on. See the red loose circles on the handout for reference.

STAGE 2: This is when you start to shape your spaces into rooms. Students should be starting to think about room shapes and interactions with adjoining areas, and the scale of the floor plan. ** review with students how to use ¼" =1'-0" grid paper to generate plans Scaling using ¼" grid paper

STAGE 3: Plans should be rough drafted to scale, showcasing doors, windows, room names, fixtures like bathroom fixtures, kitchen layout and appliances and any feature that is built into the space. Consider this the copy you would show to the client for preliminary approvals.

Length of activity: 2 - 3 classes

Handouts:

Bubble Diagrams: activity (see Appendix B)

Supporting videos:

- Using A Bubble Diagram To Design The Layout Of Your Structure - Timber Framing Online Course Sample
- Floor Plan Design TUTORIAL

Materials Needed:

- pencil
- straight edge, ruler
- ¼" graph paper/ grid paper

Resources:
Scaling using ¼" grid paper supporting document (see Appendix C)

Cottage Design Assignment: reference to client brief information (see Appendix D)

Activity 3 – Final Design floor plans and elevation

Objective: At this point students and teachers have had some time to critique the rough work. Students will hopefully iterate their design work to suit the client's needs/ changes.

Final submission with proper drafting technique (line types, lettering and line weights) should be showcased. Floor plans should be finalized with proper scale and measurements based on the supplied supporting documentation.

Length of activity: 2 classes

Handouts:

Cottage Design Assignment: activity (see Appendix D)

Marking Rubric (see Appendix E)

Materials Needed:

- pencil
- straight edge, ruler
- ¼" graph paper/ grid paper

Planning Notes

The teacher will need to plan and supply students with the supporting materials needed to complete this unit/ project.

- HB pencil
- Erasers
- Straight edges for line work
    - ruler
    - drafting set squares

Assessment and Evaluation

Progress of students' design and research stages will be examined through formative evaluations. (Activity 1 and 2). The project is configured to support the learning in the progression of the design process and project.

Students will have an opportunity to receive peer and adult feedback with time and support to reflect, iterate and build on their knowledge throughout this project.

Final assessment of the cottage floor plans will be assessed based on the criteria supplied in the final rubric.

Assessment As Learning

- The teacher will be able to determine the student's progress and ability to handcraft concepts to scaled drawings. Supportive guidance and conferencing to redirect where needed.

Assessment For Learning

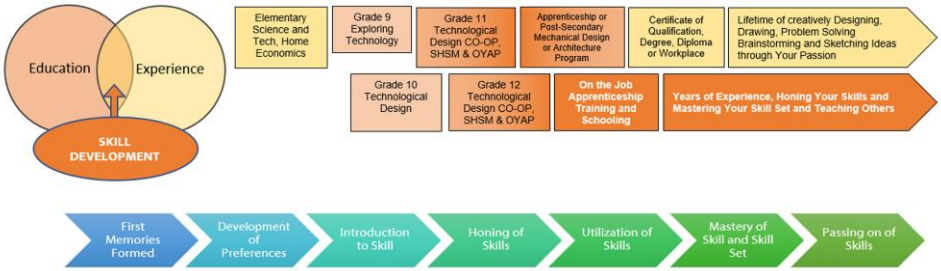
- Students in group or class discussion to supporting, ideas, concepts
- classroom conversations and “teaching moments” that can further the concept and understanding
- 1 on 1 conferencing or peer conferencing supporting progression of floor plans

Assessment Of Learning

- Possible check points/check ins for floor plans and pre-design work, prior to final submission
- Students are able to speak to and draw fundamentals of local building code and incorporate these strategies into their plans
- Plans are drawn to scale and using the fundamentals of architectural design

Skills Continuum

We all have different moments in our lives where we are affected by an experience. This can include learning a new concept or skill, experiencing something for the first time, taking a new course, developing a talent through practice and hard work, or even calling upon a skilled tradesperson to fix, repair, design, construct, maintain, build, bake, and create innovative solutions. The continuum of influence is a graphic representation of how those experiences can lead to developing a passion and talents in areas of technology and skilled trades as a designer, architect, mechanical engineer, or draftsperson.



Career and Industry Extensions

The world of design comes in many shapes and sizes and post-secondary pathways. There are many opportunities for students to continue their interests via multiple post-secondary routes. Most design, architecture and drafting career paths will have apprenticeships, college, and university opportunities. The career development, growth and opportunity may alter based on the pathway chosen.

Careers related to floor plans, drafting and design

- Architects.
- Interior designers.
- Product designers
- Architectural Drafter.
- Civil Drafter.
- Electrical Drafter.
- Mechanical Drafter.
- Structural Drafter.
- anyone who builds or creates.
- app designers.

Resources

Lesson Plans

See each activity for lead in ideas , class discussion starters, and supporting documents

Handouts

1. 25 pictures of your dream house/cottage
2. Bubble Diagrams
3. Scaling using ¼" grid paper
4. Cottage Design Assignment:
5. Marking Rubric
6. Printable ¼ " = 1'-0" PRINT HERE

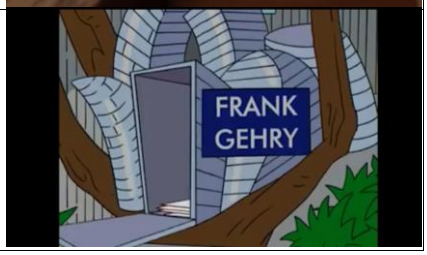
Tools/Equipment

- HB pencil
- Erasers
- Straight edges for line work
    - ruler
    - drafting set square

Websites for Teachers

- United Nations 17 sustainable development goals
- Canadian Green Building council - LEEDs design

Videos

30 X 40 Design Workshop Floor Plan Design TUTORIAL https://www.youtube.com/watch?v=R7YxG4nsqeg (8:36)	
Ishwar Bhat Tracing the sketches of Frank O Gehry https://www.youtube.com/watch?v=Q913D83a-3s (7:38)	

N sapkota Zaha Hadid documentary https://www.youtube.com/watch?v=lKT-mCO66GY (12:21)	
Shelter Institute Using A Bubble Diagram To Design The Layout Of Your Structure - Timber Framing Online Course Sample https://www.youtube.com/watch?v=7enyR4wFRJM: (4:43)	

Instructional Strategies

This unit has the opportunity to use many different strategies to support all styles of student learning and growth. Staff may like to use a 3-part lesson structure. A 3-part lesson is an effective way to teach design. The “minds on” could be showcasing any of the above listed YouTube designer/ Architect’s inspiration and starting concepts. Frank Ghery is a Canadian born designer and Architect. Zara Hadid is an amazing pioneer for Women in trades and world famous for never designing a space with a right angle incorporated. This leads students to go out and explore the internet for inspiration and design that sparks their design flow. (25 pictures of inspiration - activity 1)

The second stage of the 3-part lesson - action, think aloud, think-pair-share. When students are working through activity 2 (bubble diagrams) this is an opportunity for the teacher to travel the class, visit with individual students and table groupings to consult and peer review with each other. When reviewing their plans, give constructive feedback for editing floor plans, missed client requests and this opens the floor to cultural design, religious considerations in planning process

Stage 3 - Consolidation Students are asked to finalize their floor plans into a “good copy” for submission by hand. At this point the teacher may ask for a design brief where each student is to reflect on their design and how it will best support local building code, client requests and needs.

The Hook / Motivational Strategies

Everyone loves to get away from their day-to-day life every once in a while. From the perspective and lived experience of a well-designed space, to the mindfulness of the outdoors, cottage life checks many boxes for most people.

Create a living document like a Google Jamboard. Show 2 images of cottages (compare and contrast their style and features). Ask the class to post/ vote which they feel is the "best idea of what a cottage is" and have a class discussion around what makes a cottage a cottage.

Lead into Activity 1- 25 pictures of inspiration.

Learning Goals and Success Criteria

- Students are able to research and select meaningful and design criteria appreciate building and design materials
- Students are able to effectively design a layout based on client's needs, requests and personal accommodations for both physical and cultural needs.
- Floor plans are drafted to scale and local build code

Overall and Specific Expectations in Support of Ontario Curriculum Grades 9 - 10 Technological Education

Overall Expectations

A1. Demonstrate an understanding of the fundamental concepts and skills required in the planning and development of a product or service, including the use of a design process and/or other problem-solving processes and techniques;

A2. Demonstrate the ability to use a variety of appropriate methods to communicate ideas and solutions;

B1. Use problem-solving processes and project-management strategies in the planning and fabrication of a product or delivery of a service;

C2. Demonstrate an awareness of how various technologies affect society, as well as how society influences technological developments;

D2. Identify careers in various technological fields, and describe the educational requirements for them.

Specific Expectations

A1.1 Describe a design process or other problem solving process for planning and developing products and/or services;

A1.3 Apply correctly the mathematical and scientific concepts and skills required in the planning and development of a product and/or service;

A1.4 Incorporate appropriate technological concepts (e.g., aesthetics, control, environmental sustainability/stewardship, ergonomics, fabrication/building/ creation, function, innovation, material, mechanism, power and energy, safety, structure, systems) in the design, fabrication or delivery, and evaluation of a product or service;

A1.5 Describe the characteristics of a variety of materials used in the fabrication of a product or the delivery of a service (e.g., strength, durability, possible toxicity, lifespan, density, nutritional value, flavour, asepsis) and identify other relevant considerations to be made in relation to those materials;

A2.1 Use a variety of appropriate methods to communicate information or ideas and concepts during the planning and production stages of a project (e.g., production plans, scripts, flow charts, storyboards, sketches, technical drawings, recipes, client consultation reports, design briefs);

A2.3 Use metric and imperial units of measurement (e.g., metric: degrees Celsius, joules, micrometres [microns], millimetres, kilohms, L/100 km, tonnes; imperial: degrees Fahrenheit, BTUs, knots, mils, inches, feet, miles per gallon, pounds per square inch, tons) and the abbreviations or symbols associated with them correctly and as appropriate to the task;

B1.1 Apply the steps of a design process or other problem-solving process to plan and develop products and services (e.g., define the problem or challenge, taking into account relevant contextual or background information; gather information [about criteria, materials, constraints]; generate possible solutions, using techniques such as brainstorming; choose the best solution; develop and produce a model or prototype; test the model or prototype; incorporate improvements or redesign and retest; report on results);

B2.2 Make accurate measurements using a variety of tools (e.g., ruler, scale, tape measure, caliper, micrometer, thermometer, measuring cup), in metric or imperial units, as appropriate;

B2.3 Meet all design criteria (e.g., technical requirements, type and quality of materials, appearance, ease of use, safety, timeline, client's expectations) in creating a product or delivering a service; B2.4 demonstrate the ability to use, maintain, and store tools and equipment properly and with care;

C2.3 Describe economic, ecological, social, and safety considerations facing consumers when they make choices between particular products or services (e.g., natural versus synthetic materials, renewable versus non-renewable resources; inexpensive products created in developing countries versus more costly products created domestically; higher-priced products with additional safety features versus less costly products without them);

C2.4 Demonstrate an understanding of, and respect for, cultural and social diversity as they develop and create various products or services (e.g., prepare foods from various countries around the world, use video or graphic images that are representative of the school population, demonstrate hairstyles from various cultures, compare traditional landscaping styles of different cultures);

D2.1 Describe secondary and postsecondary education pathways (i.e., selection of courses, programs, experiential learning opportunities, and other learning opportunities at the secondary and postsecondary levels, including apprenticeship training, certificate programs, college programs, and/or university programs) leading to a variety of careers in technological fields.

Safety Concerns (including PPE if required)

Since this is a design style of project, the safety concerns are minimal. If you wish to conduct proper drafting techniques by using drafting tables, T-squares, set squares, etc. you will need to go over safe operation and use of those items. Learners may need to practice physical distancing, and the school board adopted cleaning processes for shared tools. (e.g., shared tablets, keyboard, mice, etc.) Additionally, it may be good practice to cover ergonomic designs and set up of their workstation.

Applicable SAFEDocs and ToolSAFE videos

Please refer to the OCTE SAFEDocs for BBT Technology for safety documents in order to properly address and instruct this project.

Project Challenges

Not all students will have access to a cottage or may have traveled outside of their local jurisdiction. While this is a minor challenge, most will have knowledge of what a cottage is and may look like. You simply need to be cognizant of your student population. An adaptation would be a tiny home or building shelters for the homeless.

Differentiation of the Project / Activity

Teachers can also refer to the Differentiation Scrapbook to take into account for learner ability, multiple intelligences, exceptional students, and ESL learners.

Videos provided all have the option of closed captioning for additional visual support.

Should students wish to submit their work digitally, students may choose to complete activities using the Google Read & Write Extension.

- Support for Google Read & Write

or

- Tinkercad
- SketchUp
- Editable ¼”=1’-0” grid paper

Religious Considerations

Religion and geophysical culture heavily influenced design and architecture. This is a topic in which years of study and practice can be had. To start this conversation, look at what is happening both culturally and religiously during this time period of school.

For example: During the time of Jewish Passover, this would be a great opportunity to have a class discussion on what this holiday is and means to the Jewish faith as well as home design requirements in support of their cultural and religious beliefs. When designing for people of Jewish faith, special consideration needs to happen in and around their food preparation and storage. Separate kitchen spaces for separate milk and meat spaces including separate counters/ovens/cooking ranges/sinks/dishwasher/dishes storage.

This is a wonderful way to showcase culture and design in a cohesive and supportive manner.

Career and Industry Extensions

Technological Design is in all trades, no matter what someone has designed the product, structure and or fabrication process. Connecting this program and subject area is an easy task with a little thought. When starting out in this project you may wish to offer up some time individually and or as a class to take a look at the OCTE Technological Design page.

There are wonderful references to many careers and pathway associated industries connected to Tech Design. Enjoy the classroom tour (That is my classroom !)

Here are a sample of industry extensions and careers with backgrounds in technological design that you can pursue,

Architect
Civil Engineer
Computer Numerical Control (CNC) Programmer
Die Designer
Draftsperson - Mechanical
Draftsperson - Plastic Mould
Design Draftsperson - Tool and Die Design
Industrial Designer
Instrumentation and Control Technician
Interior Designer
Pattern Maker Precision
Micro Electronics Manufacturer
Relay and Instrumentation Technician

Ethical Considerations

When introducing the final project. Connect the students with the United Nations 17 sustainable development goals. This is a cultural, economical, and environmental set of goals that the United Nations is progressing towards for all human beings. Challenge your students to achieve at least 2 or more UN goals into their project's design.

Environmental Considerations

Should the teacher wish to expand on the design concept; sustainable development, design and construction methods are consistently a necessity. LEEDS design and the UN 17 goals are a culture within the Design and Architectural field.

Supporting Websites:

- United Nations 17 sustainable development goals
- Canadian Green Building council - LEEDs design

Reflection or Design Report

Teachers may wish to have the students complete a design report, reflection or create a foldable to consolidate their learning. This would be a nice way to capture the student's understanding in a summative format and be used in preparation for their examination, entering post-secondary education or the workforce.

Appendix A – 25 Pictures of Your Dream House/Cottage

What does my Dream Cottage look like?...

Welcome to the starting stage for house planning ! The entire idea of this stage is to gather information regarding the design project, criteria and wants of your client. In today's class you will need to compile a resource file of key design and architectural features for a home.

Things to look for

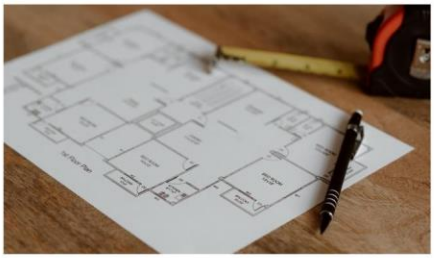
- exterior features
- exterior finishes
- exterior styles
- 1 story floor plans
- 2 story floor plans
- interior features
- stairs windows
- built in features / bookcases / mill work
- fireplaces
- bathrooms ideas
- kitchen ideas

With this report, create a file of inspiration. Explain in dot jots what you like and how you would like to incorporate this into your up and coming house design.

Submission Requirements:

- 25 useful pictures and descriptions
- format for submission
  - o Look book from Houzz.com
  - o Google document
  - oWord document

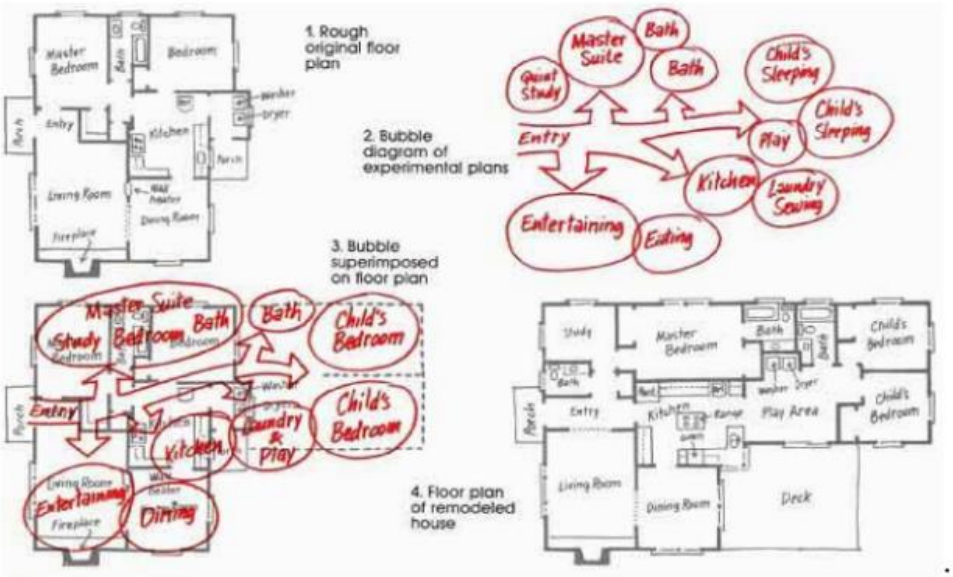
- **Have fun and enjoy the day dream !**



Appendix B – Bubble Diagrams

Bubble Diagrams:

Before you begin to actually draw house plans, it is a good idea to create simple house bubble diagrams to design floor plans in a very loose form. This will allow you to play around with the locations of rooms and how they interact with one another.



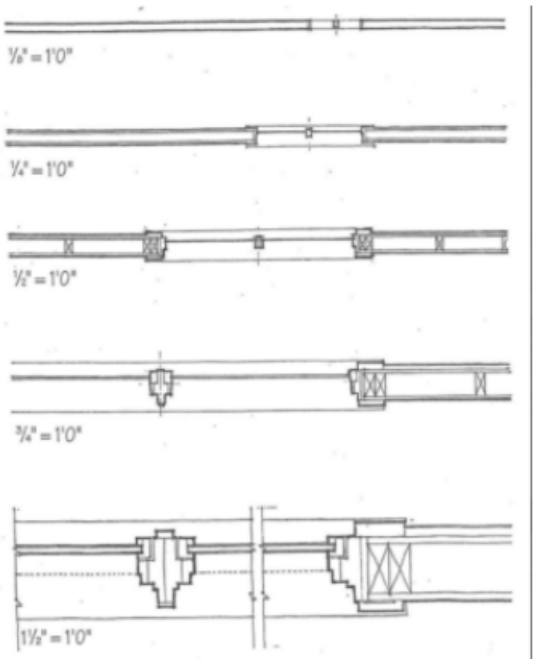
Step 1 – start off with LARGE bubbles representing the main and KEY areas/space

Step 2 – adding layers of trace paper of a second sheet of graph paper refine your general area/design and create a more defined space, rooms, areas, hallways and stairwells o Repeat this step as many times as needed to create an effective and useful space

Step 3 – add in doors , windows, stairs, walls, wall openings

Appendix C - Scale

SCALE:



A scaled drawing is a drawing that represents a real object. The scale of the drawing is the ratio of the size of the drawing to the actual size of the object. Architects, Map Makers, Aerospace engineers are examples of people who use
scale in their field.

This is an example of a wall detail scaled from full view drawing up to large detail scale

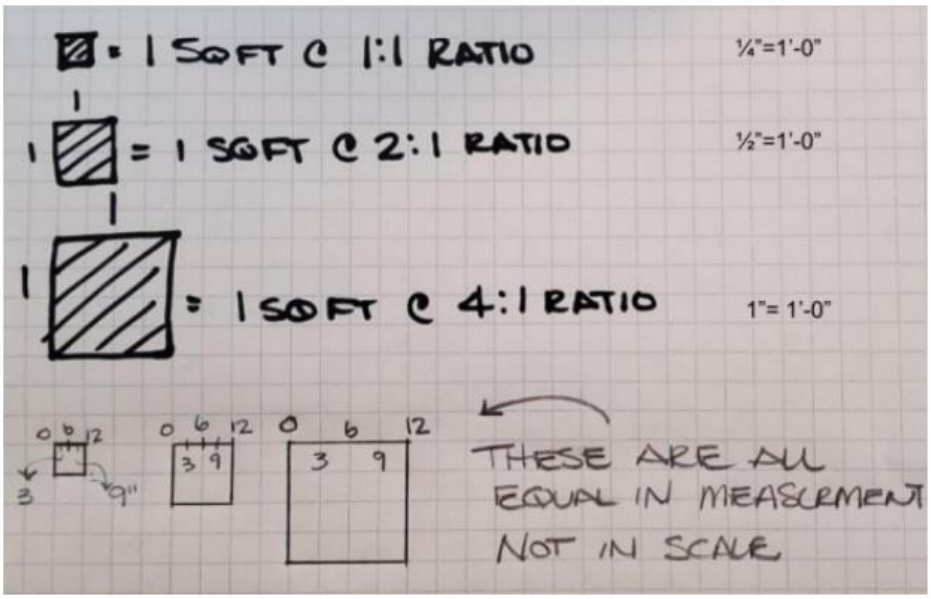
Hand drafting your plan on grid paper:

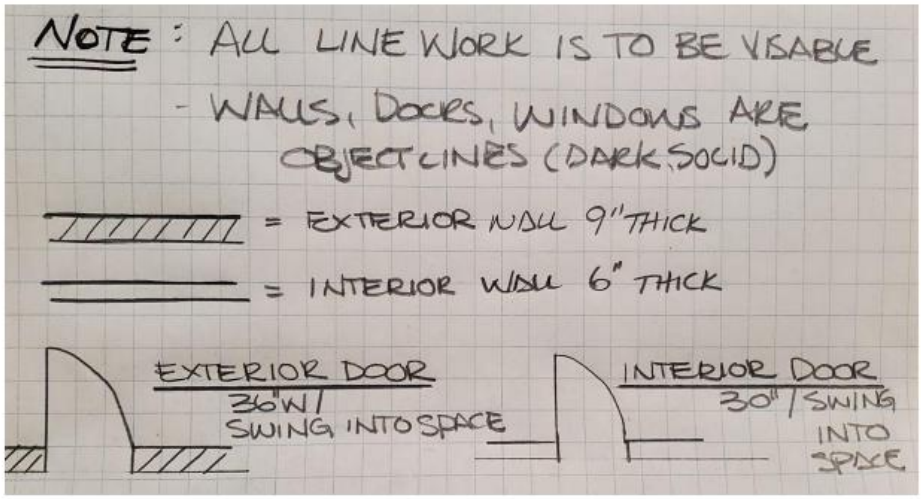
ASSIGNMENT:
Now that you have had your bubble diagram meeting and you have chosen your final plan to move forward with. It's time to draft out your plan to scale!

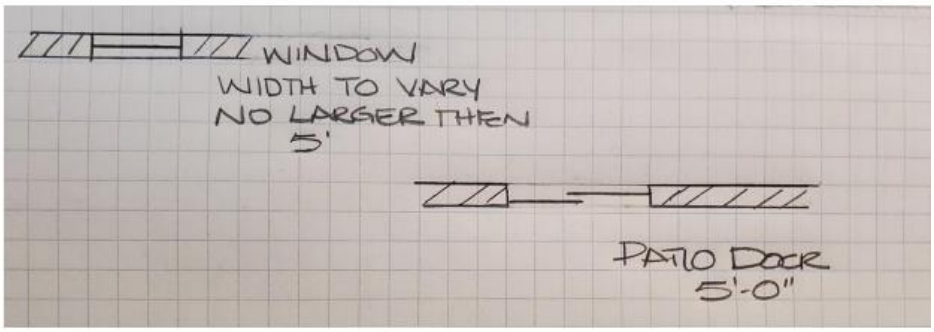
House Guideline Cheat Sheet OBC
Room sizes cheat sheet

STANDARDS IN HOUSE DESIGN:

- All walls must be present
  - Exterior walls 9"
  - Interior walls 6"
- Doors must swing into the space and not impede on the natural walking path
  - Exterior doors 36" w
  - Interior doors 30"w
  - Patio doors 60" w

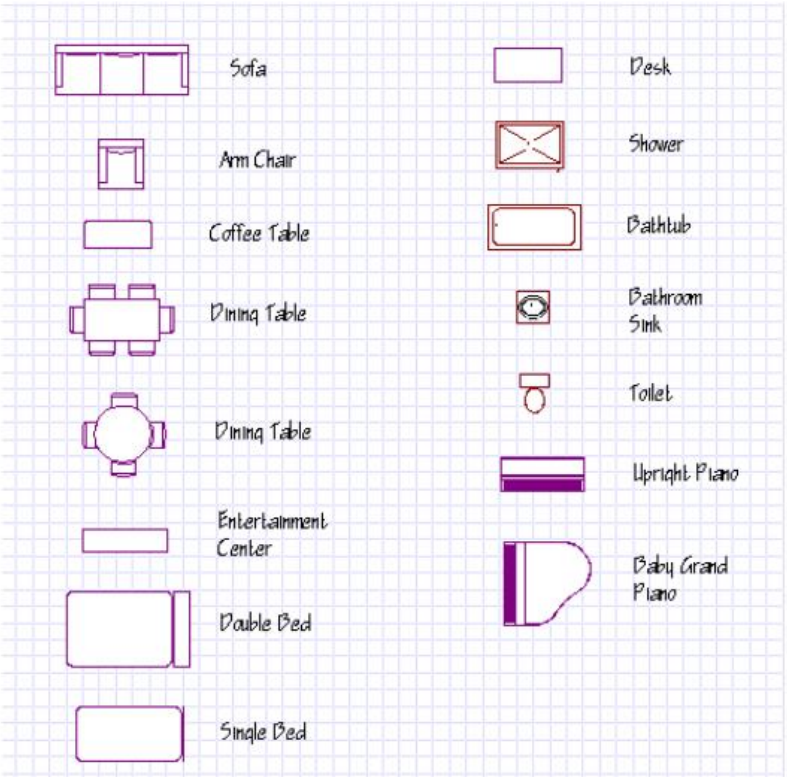

1 SQFT @ 1:1 RATIO
1/4"=1'-0"
= 1 SQFT @ 2:1 RATIO
1/2"=1'-0"
= 1 SQFT @ 4:1 RATIO
1"= 1'-0"
0 6 12
3 9
0 6 12
3 9
0 6 12
3 9
THESE ARE ALL EQUAL IN MEASURMENT
NOT IN SCALE

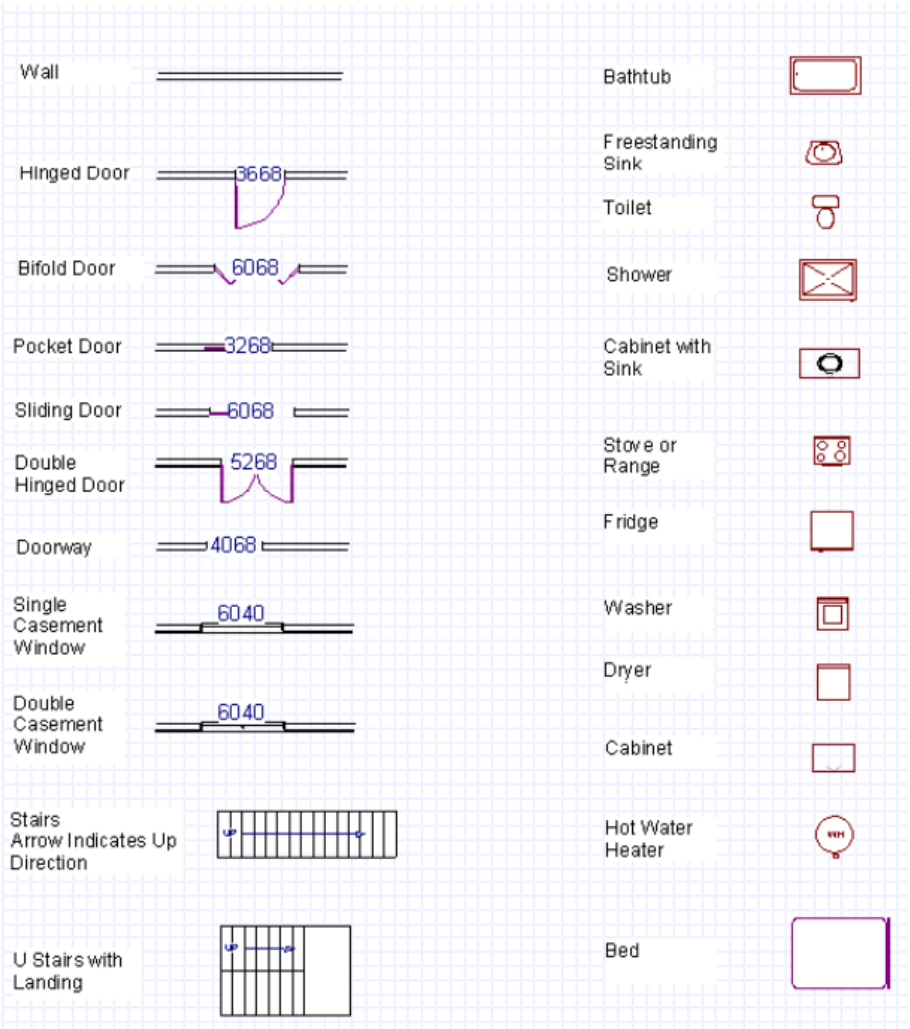

NOTE: ALL LINE WORK IS TO BE VISABLE
- WALLS, DOORS, WINDOWS ARE OBJECT LINES (DARK, SOLID)
= EXTERIOR WALL 9" THICK
= INTERIOR WALL 6" THICK
EXTERIOR DOOR
36"W / SWING INTO SPACE
INTERIOR DOOR
30" / SWING INTO SPACE



Basic drafting Interior Symbols

Please keep in mind that each symbol has a standard size. 1 cube is equal to 1' 1' Ie: Toilet is 21"w (almost 2 cubes) x 27" d (2 and a bit cubes)




Wall
Hinged Door
3668
Bifold Door
6068
Pocket Door
3268
Sliding Door
6068
Double Hinged Door
5268
Doorway
4068
Single Casement Window
6040
Double Casement Window
6040
Stairs Arrow Indicates Up Direction
U Stairs with Landing
Bathtub
Freestanding Sink
Toilet
Shower
Cabinet with Sink
Stove or Range
Fridge
Washer
Dryer
Cabinet
Hot Water Heater
Bed

Appendix D – Architectural Cottage Design

Architectural Cottage Design

Word has spread about your amazing designs and drawings.

A landowner in town has approached you to design a weekend retreat for their property on the lake.

Money is no object, so be as creative as you like, but they has requested the following in the design of the plan:

a) building size = approx **35' x 45'** (shape can vary *slightly* don't make it too much bigger/smaller & don't get hung up on a box shape)

b) would like the indoor and outdoor living space facing south and lake front

c) **rooms to include are**:- 2 bedrooms (with closets),
- kitchen,
- dining area (maybe a separate room or maybe included as part of the kitchen)
- family room,
- 3 piece bathroom (toilet, sink, bath/shower)
- foyer (entry area) with a closet.

c) You may also include:- Decks, fireplace, hot tub, landscaping,

d) ***No garage, office, computers*** – *give the client what she asked for!*

Architectural Cottage Design

Submission Requirements:

Create your design on graph paper. Making sure you are addressing all design required elements and to proper scale.

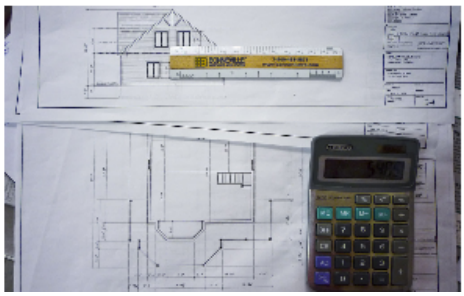
This will be submitted in a hand sketching / drafting.

Your Floor Plan is to show: - All walls, windows & doors
- Room names & room sizes (w x d)
- Drawing title
- Bathroom fixtures
(toilet, sink, shower/ tub)
- Kitchen appliances (sink, fridge, stove)
- Building width & depth
- Your name
- Border around the drawing

Your drawing may include: - Furniture
- Cars
- People
- Landscaping / walks / driveways /decks
- Exterior features (hot tub, pool, etc.)
- Vegetation (trees, shrubs etc.)

What you need to hand in:
1. Final layout in bubble diagram form
2. Scaled floor plans final design and elements

/55 Marks



Appendix E – Cottage Design Unit Rubric

Cottage Design Unit Rubric

	LEVEL 1 -	LEVEL 2-	LEVEL 3-	LEVEL 4 -
Cottage Design - Floor Plan **(APP 20)**	Project not completed or handed in by the student	Project partially completed (only one of the two required drawings)	Project drawings submitted, but lacking fine detail.	Project drawings complete, correct and handed in on time. An excellent presentation.
Bubble Diagrams **(THINK 10)**	Bubble Diagrams were not submitted for marking.	Some bubble diagrams were submitted but not fully developed.	All 3 stages of bubble diagrams and submitted but not fully developed.	All 3 stages of bubble diagrams and submitted and developed to a high level of design and process.
Cottage Floor Plan Design. **Use of the OBC** **(KNOW 10)**	Did not follow the given design specifications for size and layout.	Followed some of the given design specifications for size and layout.	Correctly included most of the given design specifications.	Design is well laid out and followed the given design specifications as required.
Measurement and Scale of Drawings **(APP 10)**	Floor plans are not to scale nor drawn using the correct symbols	Floor plans somewhat developed, there is some issues with scale and using correct symbols	Floor plans developed and drawn to scale, using correct symbols	Floor plans are well developed and drawn to scale, using correct symbols
Final Appearance of Design Package **(COMM 5)**	Work was incomplete and lacked all required components.	Some of the drawings were completed as required, but parts were unfinished or incomplete.	Drawings were well laid out and for the most part, complete.	Drawings were complete and laid out in the appropriate manner.

References

21st Century Competencies: Foundation Document for Discussion. Phase 1: Towards Defining 21st Century Competencies for Ontario, Winter 2016 Edition, 2016
http://www.edugains.ca/resources21CL/About21stCentury/21CL_21stCenturyCompetencies.pdf

Architectural Cottage Design, 2022
https://drive.google.com/file/d/1kYPFHDBrNElvfcaGu2kAfMxdB22Zt11I/view?usp=sharing

Architectural Drafting Basics, 2022
https://drive.google.com/file/d/10zNZ3FvYKVbrmFB6ZCTalj1qwR8ra79G/view?usp=sharing

Architecture Plan on Wooden Surface, Anete Luisna (photo), 2020
https://www.pexels.com/photo/architecture-plan-on-wooden-surface-4792483/

Basic House Drafting Symbols http://www.the-house-plans-guide.com/blueprint-symbols.html

Bubble Diagrams, 2022
https://drive.google.com/file/d/1mCrl6seQLp6U0iDTcqp2EpQivCM9DuQ6/view?usp=sharing

Canadian Green Building council https://www.cagbc.org/our-work/certification/leed/

Editable ¼”=1’-0” grid paper by PDFiller - https://www.pdffiller.com/jsfiller-desk17/?requestHash=609d11f596e3b484895fd12a49bc8a5e330f187e19dd765198f40e68228bc4fa&projectId=1049671412&loader=tips&replace_gtm=false&NEXT_PDFJS=false#e5287c0d700447098c997e1d211e37ca

Floor Plan Design TUTORIAL, 30 X 40 Design Workshop (video), 2022
https://www.youtube.com/watch?v=R7YxG4nsqeg

Google Read & Write Extension. - https://chrome.google.com/webstore/detail/readwrite-for-google-chro/inoeonmfapjbbkmdafoankkfajkcphgd

Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools, First Edition, Covering Grades 1 to 12, 2010
www.edu.gov.on.ca/eng/policyfunding/growSuccess.pdf

Kitchen with White Wooden Cupboards, Mark-McCammon (photo), 2020
https://www.pexels.com/photo/white-wooden-cupboards-2724749/

Learning for All – A Guide to Effective Assessment and Instruction for All Students, Kindergarten to Grade 12, 2013 https://www.dcp.edu.gov.on.ca/en/

Commented [1]: look at

Commented [BF2R1]: Picture included on 25 pictures of dream houses assignment. We need to provide attributes and correct referencing of materials not owned by OCTE.

OCTE SAFEDocs for BBT Technology - https://www.octe.ca/en/resources/safety/safedocs

OCTE Technological Design page. - https://www.octe.ca/en/take-tech/our-curriculum-technological-education/exploring-tech-courses-in-high-school/bbt-technological-design

SketchUp (website/software), 2022 https://www.sketchup.com/

Skilled Trades Ontario https://www.ontario.ca/page/skilled-trades

Suburban Residential Villa with Trees, Max Vakhtbovych (photo), 2017 https://www.pexels.com/photo/suburban-residential-villa-with-trees-5997994/

The Differentiated Instruction Scrapbook, 2010 http://www.edugains.ca/resourcesDI/EducatorsPackages/DIEducatorsPackage2010/2010DIScrapbook.pdf

The Ontario Curriculum, Grades 9 and 10: Technological Education, 2009 (revised) http://www.edu.gov.on.ca/eng/curriculum/secondary/teched910curr09.pdf

Tinkercad (website/software), 2022 https:www.tinkercad.com

Tracing the sketches of Frank O Gehry, Ishwar Bhat (video), 2019 https://www.youtube.com/watch?v=Q913D83a-3s

Using A Bubble Diagram To Design The Layout Of Your Structure - Timber Framing Online Course Sample, Shelter Institute (video), 2022 https://www.youtube.com/watch?v=7enyR4wFRJM:

United Nations 17 sustainable development goals https://sdgs.un.org/goals

Zaha Hadid documentary, N sapkota (video), 2018 https://www.youtube.com/watch?v=lKT-mCO66GY

Commented [3]: look at

Commented [BF4R3]: Picture included on 25 pictures of dream houses assignment. We need to provide attributes and correct referencing of materials not owned by OCTE.