

Université d'Ottawa | University of Ottawa



GNG1103 – Engineering Design
GNG1503 – Génie de la conception
Effective Communication

Presented by: Emmanuel Bouendeu

<http://www.oldmilltoronto.com/wp-content/uploads/2014/05/images2.jpg>

Faculté de génie | Faculty of Engineering
uOttawa.ca




Université d'Ottawa | University of Ottawa

Agenda

- Reminders
- Comments on Quiz 3
- **Review Questions**
- **Introduction:** Importance, Design Day, Final Presentation
- **Qualities of an Effective Presenter**
- **Effective Communication:** Nonverbal & Verbal
- **Five Buying Drivers: TIRES**
- **Developing Presentation Skill**
- **Suggested Display for Design Day**

genie.uOttawa.ca | engineering.uOttawa.ca

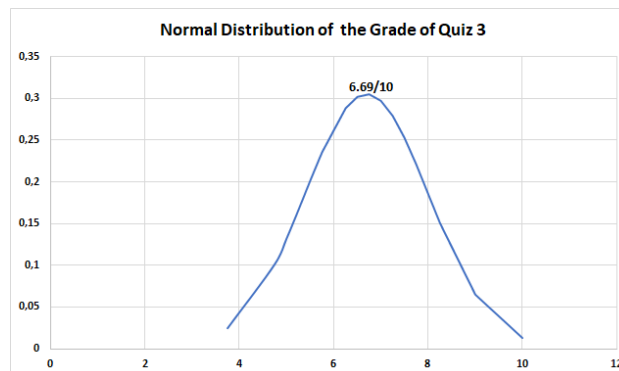


Reminders

- **Lab 9** (Project Woks: [This week](#))
- **Project Plan** (Week 4,6,8,10): [Weekly review & update](#)
- **Deliverable H** (Prototype 3 & Customer Feedback): [March 22](#)
- What is your summary of **Lecture 14**?
 - Four considerations for failure handling
 - Probability to operate and to fail of a system in series, parallel, mixed
 - Ways of predicting failures
 - Variables available for iterative prototype testing
 - Solutions to manage failure uncertainties and risks when prototypes cannot be used
 - FMEA & RPN

Comments on Quiz 3

- 41 attendees, **95%** passed , **5%** failed
- Highest grade: **10/10**, Lowest grade: **3.75/10**
- **Point to improve**
 - Creating a person
 - Usability heuristics
 - Modeling noise



Review Questions

1. Engineering designers should also have communication skills. List **four qualities** of an effective presenter.
2. Any presentation has **three key structure levels**. List these levels while indicating the levels on which the presenter may pay particular attention.
3. List the **five buying drivers** any presenter should be aware of for communication or presentation.
4. In the table below, indicate whether the statements are true or false.

#	Statement	True/False
1	65% of communication is verbal.	
2	An effective display is simple, easy and pleasant to watch.	
3	A non-speaker is authorized to murmur in the presentation.	
4	Eye contact and facial expression are part of communication.	
5	Using jargon is highly recommended in communication.	
6	Communication skills cannot be learnt.	

Why Are Presentation Skills Important?


- We **all** have to present
- **Design day** is fast approaching (**March 26th**)
- Each team will present to the **public**
- Each team will present to a group of **judges** and to the **professors**
- **This lecture** will help you **prepare for this** presentation and for the **many others** you will have



Université d'Ottawa | University of Ottawa

Design day

- **Design day** is a day where you will showcase your projects to the public
- Participation in Design Day is **mandatory**. At least **ONE** member of your team must be always present
- There will be a group of judges who will **judge** your project
 - The judges include **clients/users and other professors**
- **Each** team will have **3 minutes** to present followed by a question period of **5 minutes**
 - The venue is quite loud, so make sure that you pitch your voice towards the listeners....
- Use to **most skilled team member** in presentation to better sell your team and work, others members can jump in later


genie.uOttawa.ca | engineering.uOttawa.ca 

Université d'Ottawa | University of Ottawa

Final Presentation in Class

- Final presentation will be on **30 March, and 01 April**
- Each team will have **15 minutes** to present (12 minutes for presentation + 3 minutes for Q&A)
- Each team member must speak at least during **2 minutes**
- Your presence in all presentations is **mandatory**. You **forfeit** your presentation marks if you are absent
- Submit the **powerpoint** version of your final presentation in Brightspace on **29 March** before midnight


Evaluation Criteria of the Final Presentation		
Content (70%)	Structure (15%)	Style (15%)
Problem (20%) Solution (30%) Lessons Learnt (20%)	Introduction (5%) Body (5%) Summary (5%)	Nonverbal (3%) Appearance (3%) Demeanor (2%) Q&A handling (2%) Impression (5%)

genie.uOttawa.ca | engineering.uOttawa.ca 


Université d'Ottawa | University of Ottawa

Qualities of an Effective Presenter

- Well Prepared
- Confident
- Knowledgeable
- Relaxed
- Clear, concise and organized
- Believe in what you are saying



genie.uOttawa.ca | engineering.uOttawa.ca

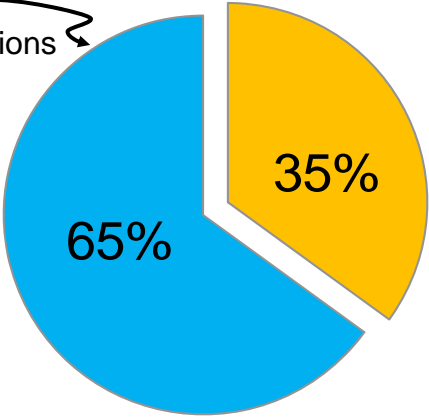


Université d'Ottawa | University of Ottawa

How to Be an Effective Communicator?

NONVERBAL:

- Facial expressions
- Tone of voice
- Movement
- Appearance
- Eye contact
- Gestures
- Posture




65%

35%

VERBAL

genie.uOttawa.ca | engineering.uOttawa.ca



Nonverbal Communication

A form of communication without using any words

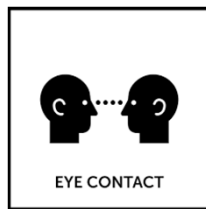
- Eye contact
- Hand gestures
- Movement
- Posture
- Facial expression



Nonverbal communications has a cultural meaning

Eye Contact and Facial Expressions

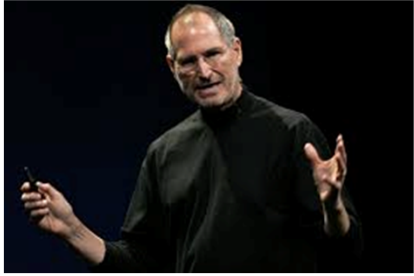
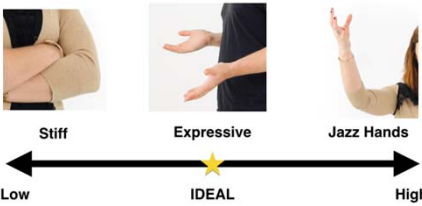
- Establish eye contact with your audience
- Avoid talking to your notes
- Don't scan faces, **focus on one face** per thought
- Seek out **friendly** faces
- Develop **appropriate** facial expressions



Université d'Ottawa | University of Ottawa

Hand Gestures

- Show what you are saying
- Say what you are showing
- Enhance your message
- Avoid closed hand position
- Novice speakers may have issues with (and should try to avoid):
 - Stuffing your hands in your pockets
 - Fidgeting
 - Tugging at your hair


genie.uOttawa.ca | engineering.uOttawa.ca

uOttawa

Université d'Ottawa | University of Ottawa

Posture and Movement

- Posture: Stand up straight
- Movement:
 - Move with purpose
 - Stop when delivering key messages
 - Avoid pacing, swaying from side to side, etc...



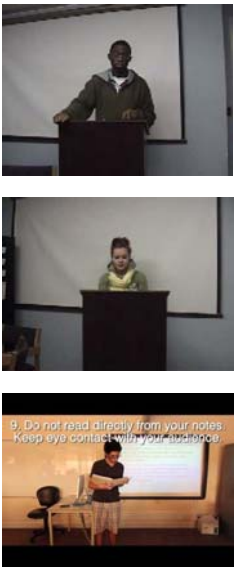
genie.uOttawa.ca | engineering.uOttawa.ca

uOttawa


Université d'Ottawa | University of Ottawa

Examples of Bad Presentations

- <https://youtu.be/kqI-pvniD0s>
- <https://youtu.be/ck5vVU8qQWA>
- <https://youtu.be/S5c1susCPAE>



genie.uOttawa.ca | engineering.uOttawa.ca



Université d'Ottawa | University of Ottawa

Verbal Communication

- Speak **clearly** and **expressively**
- **Raise** your volume
- Avoid **filler words** (ah, umm, like, etc.....)
- Practice **pausing** for extra effect

It is not only **what** you say, but
also **how** you say it!


genie.uOttawa.ca | engineering.uOttawa.ca




Université d'Ottawa | University of Ottawa

Pitch Content

- **Pitch:** a speech or act that attempts to **persuade** someone to buy or do something (usually **short!**)
- Before you put your pitch together you need to understand **people's buying drivers**
- **Buying driver:** those things that **motivate** people to buy (what people **"takeaway"** from buying)!



genie.uOttawa.ca | engineering.uOttawa.ca



Université d'Ottawa | University of Ottawa



So *What* Motivated **YOU** to Buy?

From: Trevor Wilkins

genie.uOttawa.ca | engineering.uOttawa.ca



Université d'Ottawa | University of Ottawa

Buying is ONLY motivated by improved...

genie.uOttawa.ca | engineering.uOttawa.ca

Université d'Ottawa | University of Ottawa

I Will Takeaway Improved...

	T ime:	Earlier/Controlled/Reassigned/Predictable/Repeatable
	I ncome:	Increased/Predictable/Shaped/Guaranteed/Cap/Floor
	R isk:	Decreased/Understood/Predictable/Reassigned/Mitigated
	E xpense:	Reduced/Managed/Reshaped/Reassigned
	S tate:	Smile, Satisfy, Stress, Shine, Seen, Status <i>Easier Decisions/Increased Satisfaction/Social Success/Warm Glow/Happy/Less Stress</i>

genie.uOttawa.ca | engineering.uOttawa.ca

Université d'Ottawa | University of Ottawa

T I R E S in Summary

TIME

Earlier/Control/Reassign/Predict/Repeatable
Does something happen earlier and thus more usefully?
Is the time more under their control?
Is that time period re-assigned elsewhere?
Can you predict the length or start point more accurately?
Does the frequency or period of an event improve?

EXPENSE

Reduce/Manage/Reshape/Reassign
Is their expenditure reduced?
Is the rate of expense more controllable?
Is the shape of the expense curve more beneficial?
Is the expense reassigned elsewhere?

INCOME

Increase/Predict/Shape/Guarantee/Cap/Floor
Is their income increased?
Is the size or timing of income more predictable?
Is the shape of the income curve more beneficial?
Is the income more likely to occur?
Is there a lower/higher value beyond which it will not go?


STATE

Smile, Satisfy, Stress, Shine, Seen
Are they happier?
Are they more fulfilled?
Are they more content?
Is their stress (however they define it) reduced?
Do others see them in a better light?
Is their pleasure increased?

RISK

Decrease/Understand/Predict/Reassign/Mitigate
Is the risk of something bad happening decreased?
Is their risk better understood or monitored?
Does the predictability of an event improve?
Has the result of that risk been reassigned elsewhere?
Can the risk be mitigated more effectively?

TIRE COMPOUNDS - EXAMPLES:
T/R - is the risk of delay reduced?
T/I - is the time income arrives reduced or more predictable?
R/S - is the risk of feeling uncomfortable reduced?
E/S - are they more comfortable with less money going out?
(probably needs chunking)

genie.uOttawa.ca | engineering.uOttawa.ca 

Université d'Ottawa | University of Ottawa

All decisions have
buying drivers...

whether you're offering:
 an **idea** or a **prototype**
 or even
 asking for a job!
 Or for **Communication!**

genie.uOttawa.ca | engineering.uOttawa.ca 

Group Activity 1: Buying Drivers for Ski-Hill Rescue Device

- Divide yourselves into groups of 3-5 and spend 3 minutes discussing the buying drivers for the ski-hill rescue device
 - Remember there are only 5 possible buying drivers
 - Give an example for each driver

Developing Your Presentation Skills

1. Plan
2. Prepare
3. Practice
4. Present



Université d'Ottawa | University of Ottawa

Planning Your Talk

- Who is your audience?
- Why are they there?
- What is your goal?
- How long will it be?
- Where will it take place?
- What equipment/aids will you have?




genie.uOttawa.ca | engineering.uOttawa.ca

uOttawa

Université d'Ottawa | University of Ottawa

Preparing Your Talk

- Select and order the **critical points** of your presentation
- **Outline** your presentation
- Include **stories**, **examples** and **facts**
- Develop and include **visuals**



genie.uOttawa.ca | engineering.uOttawa.ca

uOttawa

Université d'Ottawa | University of Ottawa

Course Attendance: Registration

- Use your smartphone or laptop to **register/notify** your attendance in this lecture
- Allow **geo location** in the attendance site
- Accept **cookies** from third parties applications
- Log in using only your **Uottawa** account at the link below
<https://attendance.azarm.ca/attendancerecord/gng1103f>
- Your attendance must be registered only **during the lecture** and at the **time specified by the professor**
- You can also use the **QR code** below, to register quickly




genie.uOttawa.ca | engineering.uOttawa.ca 

Université d'Ottawa | University of Ottawa

Group Activity 2: Planning and Preparing Your Pitch

- In your project groups, take 5 minutes to plan and outline your **Design Day** talk

genie.uOttawa.ca | engineering.uOttawa.ca 

General Structure of a Presentation

- Introduction – **IMPORTANT** to **start** well!
 - Introduces you and the **team**
 - States the **problem** and provides background info
 - Grabs **attention** (example, story, etc...)
- Body
 - Presents main points in an organized manner
 - Provides “enough” supporting material
- Summary – **IMPORTANT** to **end** well!
 - Reviews main points
 - Tell the listeners **what you want** from them

Tips On Presentations

- A presentation has **the same** general structure as that of the **technical document** (as seen in **Lab 1**)
- Be very clear about what **you did** versus what **others** did
- The **start** and the **end** are very important, make sure that you pay attention **to both of them**
- Make sure that you include **references** in your presentation

Pitch Structure

1. Tell them **who you are**. Tell a **short story**. Make them like either you or your idea (preferably both) ASAP
2. Tell them the **problem** as simply and as soon as you can. Keep it **simple**
 - “Elevator pitch” (time taken to ride an elevator a few floors)
3. Remember that **less is more** – only tell them your solution with the **appropriate** level of detail:
 - As **time** permits – your aim is only to interest & engage
 - That **matches** their technical/business/life expertise and the potential offering **on their side of the table**

Pitch Structure

- What else is out there? Why will they buy from you, **not the competition**...or do nothing?
 - Be clear about what **you** did or have to offer
- Timeline & Team – be truthful & clear about what's **happening/happened** and what's fantasy
- Tell them **what you want them** to do



Selecting Visuals

- Visuals should be **relevant and appropriate** for your audience
- Type of **visuals**
 - Your prototype
 - Images
 - Graphs, charts
 - Bulleted texts
- Keep visual aids **uncluttered**



Text
7%

Visual
55%

Vocal
38%

Practice, Practice, Practice

- **Don't memorize** your pitch
- **Know** the **key messages** and **takeaways**
- Include a **story**
- Ensure **smooth transitions** between teammates
- **Practice** in front of **mirror**
- **Record** and **time** yourself



Answering Questions

- **Anticipate questions** audience might have and **prepare** answers for each of them
 - Maybe include **key** visuals as backup slides
- **Listen** to each question **carefully before** responding to make sure you understand the question
- **Repeat each question** before you respond to ensure that the entire audience has heard them
- Keep your responses **brief** and don't deviate
- **Be honest**: if you don't know the answer, say so

Group Activity 3: Your Pitch

- In your project group, take 10 minutes to prepare a **2 minute** presentation about your project
 - This presentation will have the same basic structure as that of Design Day.
 - Presentation should include all the elements discussed in the lecture.
- Pitch time!

Suggested Display for the Design Day

- Basic guidelines of a good display
- What to do
- Design Day display format
 - Suggestions for Area 1: Solution/final product
 - Suggestions for Area 2: Product development
 - Suggestions for Area 3: Non-technical considerations
- Other suggestions

Important Note

The following are suggestions to guide you through the mysteries of a good **Design Day** display.

HOWEVER, you are free to be as creative as you want!

Basic Guidelines

There are four basic guidelines for a good display:

1. Keep the display as **simple** as possible.
2. The items in your presentation should be **consistent**.
3. You should make your display **easy** enough for the judges to appreciate your message.
4. The display should be **pleasant** and striking without being tacky.

What to Do

- Emphasize Your **Most Important Points**
- Use subheadings to emphasize your key points.
 - A subtitle in a **large font** might also be effective.
 - Use **bullet points** and large fonts, rather than long paragraphs, to concisely make your points.
- Consider Your **Audience**
 - You will be judged by both **engineering** and **non-engineering** professionals
 - Your project is complex but you need to speak in **Layman terms** so a non-engineer can understand you and appreciate your project
 - **Number** your graphs and figures, and give each a **caption**.
 - Make sure you properly **cite all your sources**.

Université d'Ottawa | University of Ottawa

Display Format of Design Day

**These are the pitch and presentation you have already created.

genie.uOttawa.ca | engineering.uOttawa.ca

Université d'Ottawa | University of Ottawa

Suggestions for Area 1: Solution/Final Product

TITLE: PRODUCT NAME
SUBTITLE: CATCHY DESCRIPTION OF THE PRODUCT

PROBLEM
The societal problem you are trying to solve (Chunking Up)

SOLUTION
Clear description of solution
Clear description of customer value (Usefulness)

DESIGN PROBLEM: PROBLEM STATEMENT

PRODUCT
Picture of final product with description

ABOUT THE CLIENT
Never use full name of client
Ask permission from client
Try to get some pictures of user interacting with the product

TEAM NAME: E1 or name your startup
TEAM MEMBERS: DOE, FOE, JOE, KOE

VISUALS

A couple of high quality visuals to catch the attention of the judges
Could be of your solution or happy customer or client

- Logos of organizations you have dealt with, UofO logo, St. Vincent's, LIFE
- Makes your presentation colourful and pleasing to the eye
- When printing tables or charts, use colour
- When printing slides, stick construction paper to the back to create a frame like this:

Blah
Blah
Blah

Doing this to every slide will give a unified look to the whole presentation. Use them to create shadows, borders and silhouettes.

genie.uOttawa.ca | engineering.uOttawa.ca

Université d'Ottawa | University of Ottawa

Suggestions for Area 2: Product Development

Product Development

- Assumptions
- Sketches
- CAD Drawings

Engineering Analysis

- Results
- Formulas
- Force Diagrams
- Data
- Trade off analysis
- Charts
- Graphs

DT PROCESS
Iterative

genie.uOttawa.ca | engineering.uOttawa.ca

Université d'Ottawa | University of Ottawa

Suggestions pour la zone 3: BOM & Market

Bill of Materials				
Item #	Item Description	Quantity	Unit Price	Amount
1	LED-lamp 6V – 4W	2	\$4.5	\$9
2	DC-motor 6V – 10W	1	\$15	\$15
3	Battery 6V – 4A	1	\$5	\$5
Total				\$29

Market for the Product

Customers, Users

genie.uOttawa.ca | engineering.uOttawa.ca

