



Adapting the Compass Framework in a hybrid course on wearable technology design and futures thinking

📖 Contents

[Introduction](#)

[The WFH course activities](#)

[How the Compass Framework was mapped to the WFH learning activities](#)

[Two stars, one wish: What went well, what could be improved](#)



Introduction and welcome

- Contents
 - Introduction and welcome
 - Preparation before the course starts
 - Assessment guide
- Weekly activities
 - Week 1: Imagining Futures
 - Week 2: Wearables in the near future: Physical computing and critical fashion

Hello, BAMS students, welcome to the Wearables Futures course, and thanks for joining me on this experiment! My name is Diego Maranan and I will be facilitating this course. (Because I'm also going to be the one putting together the course materials, I will often speak directly to you in the course material.)

Course objectives

By the end of this course, I hope that you will be able to do the following:

- Describe different issues that may be present in probable, possible, and plausible futures.
- Situate your personal experiences and concerns within the context of futures thinking and speculative design practices
- Propose different creative solutions that respond to potential issues in future scenarios.



This document was authored by Diego S. Maranan, Associate Professor and Dean, Faculty of Information and Communication Studies, University of the Philippines Open University (dmaranan@upou.edu.ph). This report was prepared and submitted to the [Index Project](#) as part of the [Design to Improve Life](#) designer competency training program organized by the [Design Center of the Philippines](#). This report is also [available online](#) as a Notion template that can be duplicated as a template for reuse.

Introduction

The [Wearable Futures Hackathon](#) (WFH) is a 12-week long, hybrid learning experience was collaboratively created with and for undergraduate students at [UP Open University](#)'s undergraduate program in [Multimedia Studies](#). The course explores wearable technology, e-textiles, speculative design, and futures thinking. The course started on 2022 October 10 and will run until mid-January 2023. The course is the first of its kind at the university in terms of the following aspects:



- The course themes (i.e., physical computing, e-textiles, speculative design, and futures thinking); and
- The use of a hybrid format (80% online, 20% face to face).

I integrated the Compass Framework along with UPOU's standard principle and practices in [outcomes-based online learning design](#) and [resource-based course authoring](#).

The WFH course activities

[The full WFH course can be found on this website](#). The course features a number of learning activities, each of which was designed with associated Compass Framework actions. The activities are presented in the table in the next page.
























▼ Before class starts 1 ... +

Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa...	+ ...
 Preparation before the course starts	120 	Hands-on activities (general)	<input type="checkbox"/> 3a (Develop)	

+ New




























SUM 120

▼ Week 01 (Oct 10 - 16) 8 ... +

Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa...	+ ...
 Present, later, further out	10 	Reflection and sharing	<input type="checkbox"/> 1c (Choose)	
 Tell us about yourself	30 	Reflection and sharing	 1a (Explore)	
 Imagining different futures	30 	Watch/listen/read and discuss	 2a (Research) <input checked="" type="checkbox"/> 2b (Analyze)	
 Flashing Heart (micro:bit tutorial)	45 	Hands-on activities (wearable tec	 2a (Research) <input type="checkbox"/> 3a (Develop)	
 Imagining yourself in the future, part 1: Get acquainted with the older you	15 	Hands-on activities (general)	 2a (Research) <input checked="" type="checkbox"/> 2b (Analyze)	
 Name Tag (micro:bit tutorial)	20 	Hands-on activities (wearable tec	 2a (Research) <input type="checkbox"/> 3a (Develop)	
 Tangible interfaces, embodied interaction, and wearable computing	20 	Watch/listen/read and discuss	 1a (Explore)  2a (Research)	
SUM 221				
 Introducing Speculative Design	30 	Watch/listen/read and discuss	<input type="checkbox"/> 2a (Research)	

+ New

▼ Week 02 (Oct 17 - 23) 6 ... +





























Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
 Imagining yourself in the future, part 2: Photograph a wearable object	30 	Hands-on activities (general)	<ul style="list-style-type: none">  2b (Analyze)  2a (Research)  3b (Shape)
 Island Punk	60 	Watch/listen/read and discuss	<ul style="list-style-type: none">  2a (Research)
 Dice (micro:bit tutorial)	30 	Hands-on activities (wearable tech)	<ul style="list-style-type: none">  2a (Research)  3a (Develop)
 Clap Lights (micro:bit tutorial)	30 	Hands-on activities (wearable tech)	<ul style="list-style-type: none">  2a (Research)  3a (Develop)
 The Terno Project: 2022 Resident Emerging Futurists' talk	134 	Synchronous interaction	<ul style="list-style-type: none">  1a (Explore)  2a (Research)
 Speculative design and wearable tech workshop with Ann Peeters	270 	<ul style="list-style-type: none"> Synchronous interaction Hands-on activities (general) 	<ul style="list-style-type: none">  1b (Organize)  3a (Develop)  3b (Shape)  2a (Research)  2c (Describe)

+ New

SUM 554

▼ Week 03 (Oct 24 - 30) 8 ... +







Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
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 Do the Step Counter tutorial (micro:bit)	20 	Hands-on activities (wearable tech)	 2a (Research)  3a (Develop)
 Prototype a wearable idea using the micro:bit	30 	Hands-on activities (wearable tech)	 2a (Research)
 Treasure hunt 1: Wearables and etextile swatches	90 	Treasure hunts	 1b (Organize)  2a (Research)
 Underwear in outer space	10 	Watch/listen/read and discuss	 2a (Research)
 Indigenous perspectives on space exploration	45 	Watch/listen/read and discuss	 2a (Research)
 Science fiction and the future	30 	Watch/listen/read and discuss	 2a (Research)
 The MFL workshop storyline	45 	Watch/listen/read and discuss	 1a (Explore)
 Meta-Futurism Lab workshop (1 of 2)	120 	Synchronous interaction Hands-on activities (general)	 1b (Organize)  1a (Explore)  1c (Choose)

+ New

SUM 390

▼ Week 04 (Oct 31 - Nov 6) 5 ... +




















Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
 What is deep time?	15 	Watch/listen/read and discuss	 2a (Research)
 Where do humans fit in the big story of deep time?	0 	Watch/listen/read and discuss	 2a (Research)

 Experiencing deep time through art and media	30 	Watch/listen/read and discuss	 2a (Research)  2b (Analyze)
 Using Micro:bit simulators on Tinkercad + incorporating physical components	90 	Hands-on activities (wearable tech)	 2a (Research)  3a (Develop)
 Treasure hunt 2: Replicating an existing project	45 	Treasure hunts	 1b (Organize)  2a (Research)

+ New

SUM 180

▼ Week 05 (Nov 7 - 13) 6 ... +

Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
 Becoming a Time Rebel and a Good Ancestor	82 	Watch/listen/read and discuss	 2a (Research)
 The evolved continuation of the MFL workshop storyline	2 	Watch/listen/read and discuss	 3c (Test)  2b (Analyze)  3b (Shape)  3a (Develop)
 Meta-Futurism Lab Workshop (2 of 2)	120 	Synchronous interaction	 1b (Organize)
 Utopia, Dystopia, and Heterotopia	20 	Watch/listen/read and discuss	 3b (Shape)
 Imagining yourself in the future, part 3: PAGTANAW 2050 forecast	90 	Watch/listen/read and discuss	 3b (Shape)  2b (Analyze)

Replication project check-in

5

Hands-on activities (wearable tech)

3a (Develop)

+ New

SUM 319




















Week 06 (Nov 14 - 20) 5 ... +

Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa...	+ ...
👥 <u>F2F meeting at Bukas Space</u>	15	Synchronous interaction	<ul style="list-style-type: none"> 📌 4c (Produce) ◆ 3c (Test) 	
👋 <u>Rapid-fire exercise: Designing wearable tech for 2050</u> 💬 1	45	<ul style="list-style-type: none"> Hands-on activities (general) Hands-on activities (wearable tech) Synchronous interaction 	<ul style="list-style-type: none"> □ 3a (Develop) ■ 3b (Shape) 	
👋 <u>Drop-in sessions @ Bukas space</u>		Synchronous interaction	<ul style="list-style-type: none"> □ 3a (Develop) ■ 3b (Shape) 🗪 1b (Organize) 🔍 2a (Research) ▪▪ 2c (Describe) 	
📺 <u>Introducing Speculative Design (part 2): Probable, Possible, Plausible, and Preferable Futures</u>	90	Watch/listen/read and discuss	<ul style="list-style-type: none"> 🔍 2a (Research) ▪ 1c (Choose) 	
👋 <u>Learn about the final project requirements and register your final project proposals</u>	60	Hands-on activities (general)	<ul style="list-style-type: none"> ◆ 4a (Collect) ■ 3b (Shape) ▪▪ 2c (Describe) 	

+ New




SUM 210



▼ Week 07 (Nov 21 - 27) 3 ... +

Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
 <u>Using Micro:bit simulators on Tinkercad + incorporating physical components</u>	90 	Hands-on activities (wearable tec	 <u>2a (Research)</u>  <u>3a (Develop)</u>
 <u>Drop-in sessions @ Bukas space</u>		Synchronous interaction	 <u>3a (Develop)</u>  <u>3b (Shape)</u>  <u>1b (Organize)</u>  <u>2a (Research)</u>  <u>2c (Describe)</u>
 <u>Present your proposal for your final project (Bukas/Zoom)</u>	90 	Synchronous interaction	 <u>4b (Communicate)</u>  <u>3c (Test)</u>  <u>3b (Shape)</u>  <u>3a (Develop)</u>  <u>1b (Organize)</u>  <u>1c (Choose)</u>  <u>2c (Describe)</u>
+ New			

SUM 180

▼ Week 08 (Nov 28 - Dec 2) 3 ... +


Aa Name	# Minute...	☰ Activity Type	↗ Corresponding Compa... + ...
 <u>Communicating speculative design ideas (1): Curious Rituals</u>	20 	Watch/listen/read and discuss	 <u>4b (Communicate)</u>

 Communicating speculative design ideas (2): Circumventive Organs  1

15


Watch/listen/read and discuss

 4b (Communicate)

 Treasure hunt 3: Good practices in presenting and communicating ideas

20

 Treasure hunts

 1b (Organize)

 2a (Research)





















+ New

















SUM 55

How the Compass Framework was mapped to the WFH learning activities

The table on the next page describes how each Compass action is mapped to specific portions the curriculum design process as well as the corresponding WFH course learning activities.



Aa Actions	☰ Description	☰ Notes	➤ [wfh] Activities
 <u>1a (Explore)</u>	How will I (as the instructor) plan to screen the topic they are working with (futures thinking and wearable tech)?	I used the SEADS Stuff database, experience accumulated from previous training programs, and the Bukas Lab library database as a way to look at potential topics to cover.	<ul style="list-style-type: none">  Tell us about yourself  Tangible interfaces, embodied interaction, and wearable computing  The Terno Project: 2022 Resident Emerging Futurists' talk  The MFL workshop storyline  Meta-Futurism Lab workshop (1 of 2)
 <u>1b (Organize)</u>	How will the student get an overview of their discoveries?	Students were given opportunities both to freely structure the discoveries they will make (e.g., through Miro boards) as well as prestructured notes (via published Airtable galleries and tables). These overviews were also shared with other students to provide a course-level overview.	<ul style="list-style-type: none">  Treasure hunt 3: Good practices in presenting and communicating ideas  Treasure hunt 1: Wearables and etextile swatches  Treasure hunt 2: Replicating an existing project  Speculative design and wearable tech workshop with Ann Peeters  Meta-Futurism Lab workshop (1 of 2)  Meta-Futurism Lab Workshop (2 of 2)  Drop-in sessions @ Bukas space  Present your proposal for your final project (Bukas/Zoom)
 <u>1c (Choose)</u>	How will the students sort and choose the knowledge relevant to the theme of futures and wearables?	Students will be given structured questionnaires with both open-ended questions and as well closed-ended questions but which are dynamically-generated, by the students themselves.	<ul style="list-style-type: none">  Present, later, further out  Introducing Speculative Design (part 2): Probable, Possible, Plausible, and Preferable Futures  Present your proposal for your final project (Bukas/Zoom)  Meta-Futurism Lab workshop (1 of 2)

 2a (Research)	How will the students gain new knowledge?	Students were given a combination of set reading/viewing material and “treasure hunts” in which they were going to identify.	<ul style="list-style-type: none">  Imagining different futures  Flashing Heart (micro:bit tutorial)  Imagining yourself in the future, part 1: Get acquainted with the older you  Name Tag (micro:bit tutorial)  Tangible interfaces, embodied interaction, and wearable computing
Calculate ▾			
			<ul style="list-style-type: none">  The Terno Project: 2022 Resident Emerging Futurists' talk  Do the Step Counter tutorial (micro:bit)  Prototype a wearable idea using the micro:bit 17 more...
 2b (Analyze)	How will the students analyze the new knowledge?	Guide questions were provided alongside all activities to help students focus on relevant considerations, process information, and integrate it with the capstone project requirements. These questions include authentic assessment activities that relate conceptual knowledge with their lived experiences and personal concerns.	<ul style="list-style-type: none">  Imagining different futures  Imagining yourself in the future, part 1: Get acquainted with the older you  The evolved continuation of the MFL workshop storyline  Experiencing deep time through art and media  Imagining yourself in the future, part 3: PAGTANAW 2050 forecast  Imagining yourself in the future, part 2: Photograph a wearable object

<ul style="list-style-type: none"> ▪▪ 2c (Describe) 	<p>Which criteria should the students focus on when they describe the challenge/brief?</p>	<p>I provided the criteria that students should focus on for their final projects that are centered around scenario types (utopic/dystopic/heterotopic), time spans (near future, medium-term futures, and long-term futures), themes (inspired on Pagtanaw 2050 forecast by the Philippine government), body parts, base wearable type (e.g., necklace, socks, shirt), and user type.</p>	<ul style="list-style-type: none"> 👤 Learn about the final project requirements and register your final project proposals 👤 Drop-in sessions @ Bukas space 👥 Present your proposal for your final project (Bukas/Zoom) 👥 Speculative design and wearable tech workshop with Ann Peeters
<ul style="list-style-type: none"> □ 3a (Develop) 	<p>What are the students going to test?</p>	<p>Students will create increasingly more complex physical computing prototypes based on existing published tutorials for the micro:bit microcontroller. Students will also propose proofs-of-concept, sketches, and prototype descriptions.</p>	<ul style="list-style-type: none"> 🔌 Flashing Heart (micro:bit tutorial) 🔌 Name Tag (micro:bit tutorial) 🔌 Dice (micro:bit tutorial) 🔌 Clap Lights (micro:bit tutorial) 🔌 Do the Step Counter tutorial (micro:bit) 🔌 Using Micro:bit simulators on Tinkercad + incorporating physical components 👤 Rapid-fire exercise: Designing wearable tech for 2050 👤 Preparation before the course starts 👤 Drop-in sessions @ Bukas space 👥 Present your proposal for your final project (Bukas/Zoom) 3 more...

■ 3b (Shape)

Which criteria should the students use when creating solutions?

I set some of the summative assessment criteria students should keep in mind when creating their prototypes, namely:

* **Art- and futures-thinking:** To what extent does the project expand our notion of what is plausible in the future? To what extent does the project embody a creative way of anticipating or shaping futures?

* **Implementation:** How well did you execute the final prototype? To what extent does the final prototype approach the ideal version of the technology? How do the visual and other sensory aspects of the project create a compelling experience for the user or the audience?

* **Relevance and poetics:** If the prototype is a work of critical or speculative design, how well is it contextualized with respect to the issue you have identified? If it is meant as a functional design, to what extent does it address the needs or desires of your intended typical user with respect to the issue you have identified?

Additional relevant criteria will emerge over the course of the prototyping phase (i.e., during the last 50% of the course, which lasts 6 weeks). So far, these additional criteria include: **feasibility** (how likely is it that the students can generate a compelling

👉 [Rapid-fire exercise: Designing wearable tech for 2050](#)

👥 [Present your proposal for your final project \(Bukas/Zoom\)](#)

👉 [Learn about the final project requirements and register your final project proposals](#)

👉 [Drop-in sessions @ Bukas space](#)









▶ [The evolved continuation of the MFL workshop storyline](#)

▶ [Utopia, Dystopia, and Heterotopia](#)

▶ [Imagining yourself in the future, part 3: PAGTANAW 2050 forecast](#)

👉 [Imagining yourself in the future, part 2: Photograph a wearable object](#)

👥 [Speculative design and wearable tech workshop with Ann Peeters](#)

		proof-of-concept), cost (how expensive are the raw materials and production requirements), and complexity relative to group size (if students are working in teams, there is a higher expectation of the overall impact of the work).	
◆ <u>3c (Test)</u>	How do the students test our solutions?	Students will present ideas in a series of crits, in which they will receive both instructor- and peer-driven feedback.	<ul style="list-style-type: none">  F2F meeting at Bukas Space  Present your proposal for your final project (Bukas/Zoom)  The evolved continuation of the MFL workshop storyline
📁 <u>4a (Collect)</u>	How do the students get an overview of the process?	Students have been instructed to keep textual and visual documentation of their creative process. They need to keep track of ideas (discarded or otherwise) in the form of initial sketches, conversations, meetings, and material prototypes. Students can also use the overviews generated from other phases (e.g., the <i>Organize</i> , <i>Choose</i> , and <i>Research</i> activities).	<ul style="list-style-type: none">  Learn about the final project requirements and register your final project proposals
 <u>4b (Communicate)</u>	How do the students communicate the process & the solution?	I provided students with preset templates. However, students are encouraged to come up with innovative and compelling means of presenting their process and solution. They have been given some inspiration on how to present their ideas as well.	<ul style="list-style-type: none">  Communicating speculative design ideas (1): Curious Rituals  Communicating speculative design ideas (2): Circumventive Organs  Present your proposal for your final project (Bukas/Zoom)



4c (Produce)

How do the students plan and produce material for communication and the implementation of this solution?




This is a gap in the process so far. There were initial plans to present student works in the form of an exhibit, but the organization for this has stalled. This will need to be set up.



F2F meeting at Bukas Space

Two stars, one wish: What went well, what could be improved

★ In writing this report, I realized that the Compass could be flexibly applied and modified based on who the actor is. For instance, *“How will I (as the instructor) plan to screen the topic they are working with?”* generates a different set of thinking than *“How will the students plan to screen the topic they are working with?”*

★ When using the Compass Framework to analyze what kind of design thinking process is being mobilized, I realized a gap in my curricular and learning design process. Specifically, I realized that there was a slight gap in  3c (Test) and more major gaps in  4b (Communicate), and  4c (Produce) activities. I have since then started planning learning activities to address this gap. I have come realize that the Compass Framework might be an interesting way to audit existing courses or course design documents as a way to anticipate learning outcome gaps.

🍄 I wish I could have introduced the students to the Compass Framework earlier and highlighted it more explicitly. However, I plan to incorporate the Compass into a courses specifically aimed at design thinking and creative solution generation that we are planning at UPOU.