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FUTURES LITERACY METHODS

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Arkitektur- og designhøgskolen i Oslo
The Oslo School of Architecture and Design

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FUTURES LITERACY METHODS

The main aim of Futures Literacy Methods is to transform and convey FUEL4Design outcomes into learning processes.

Learning Future Literacies Methods concerns both the preparation of a complete Futurist Designer training course and the design of small Independent Learning Units to cross breed design studios or speculative/ theoretical courses. The Units are specifically created to cater to the needs of future literacy and geared to acquire knowledge on anticipatory practice, critical future design and future making through the dedicated tools.

This booklet presents one orientation unit (Unit 00) and ten educational content Units (Unit 01 to 11). In the first section of this booklet, there are a set of “Maps” and paths to help educators in navigating through the eleven Units. These maps are meant to be used as suggestive paths rather than prescriptive ones. The basic concept behind these units is to be independent (yet connected). Educators are free to select the suitable units to their courses, put them together and structure their pedagogical paths based on their needs as well as the context of use .

In each Unit, there is a section for the tools and devices. These are tools and devices developed or assembled during the FUEL4Design project. They play an important role in supporting and facilitating the pedagogical process. Each of these tools or devices is linked to the FUEL4Design website, where you can further read about them.

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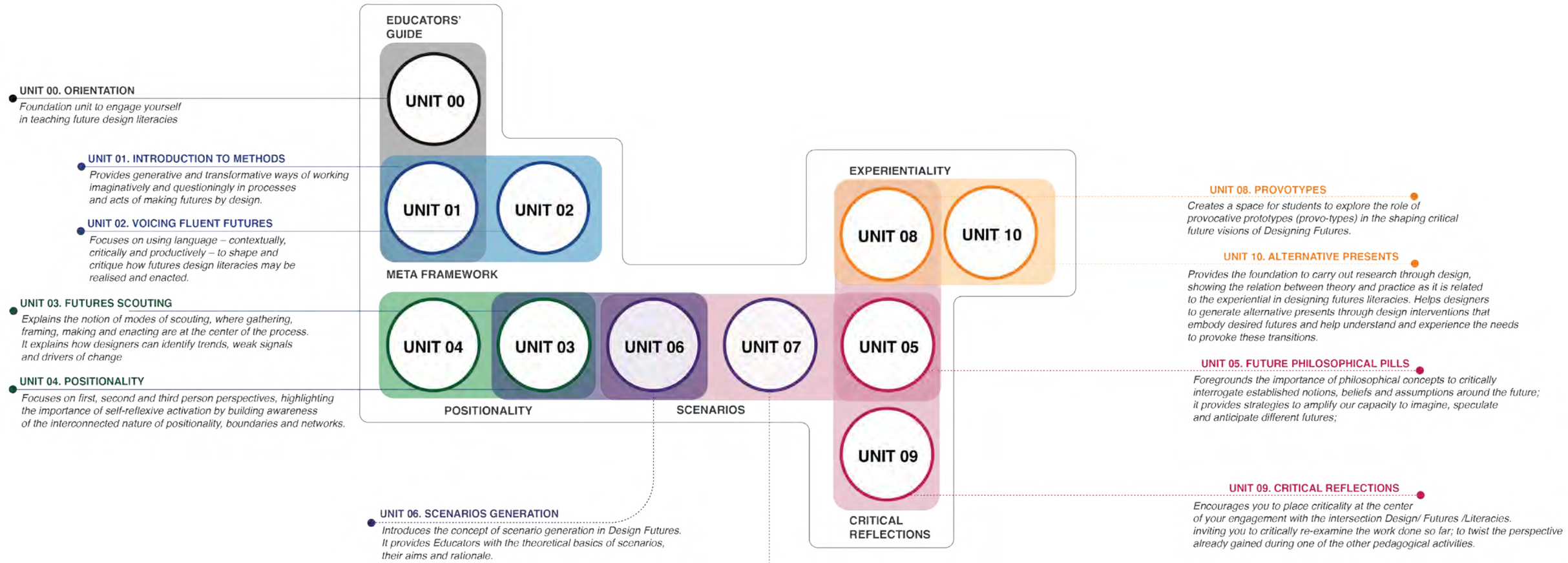
TO FUTURES LITERACIES METHODS AND METHODOLOGIES
THE ROAD-MAP
Connections and overlaps between the units



UNIT 00. ORIENTATION
Foundation unit to engage yourself in teaching future design literacies

UNIT 01. INTRODUCTION TO METHODS
Provides generative and transformative ways of working imaginatively and questioningly in processes and acts of making futures by design.

UNIT 02. VOICING FLUENT FUTURES
Focuses on using language – contextually, critically and productively – to shape and critique how futures design literacies may be realised and enacted.

UNIT 03. FUTURES SCOUTING
Explains the notion of modes of scouting, where gathering, framing, making and enacting are at the center of the process. It explains how designers can identify trends, weak signals and drivers of change

UNIT 04. POSITIONALITY
Focuses on first, second and third person perspectives, highlighting the importance of self-reflexive activation by building awareness of the interconnected nature of positionality, boundaries and networks.

UNIT 06. SCENARIOS GENERATION
Introduces the concept of scenario generation in Design Futures. It provides Educators with the theoretical basics of scenarios, their aims and rationale.

UNIT 07. SCENARIOS DEVELOPMENT
Introduces practical and speculative techniques to develop a plurality of visions through scenarios. It introduces the tools to understand how to implement, use and narrate design scenarios.

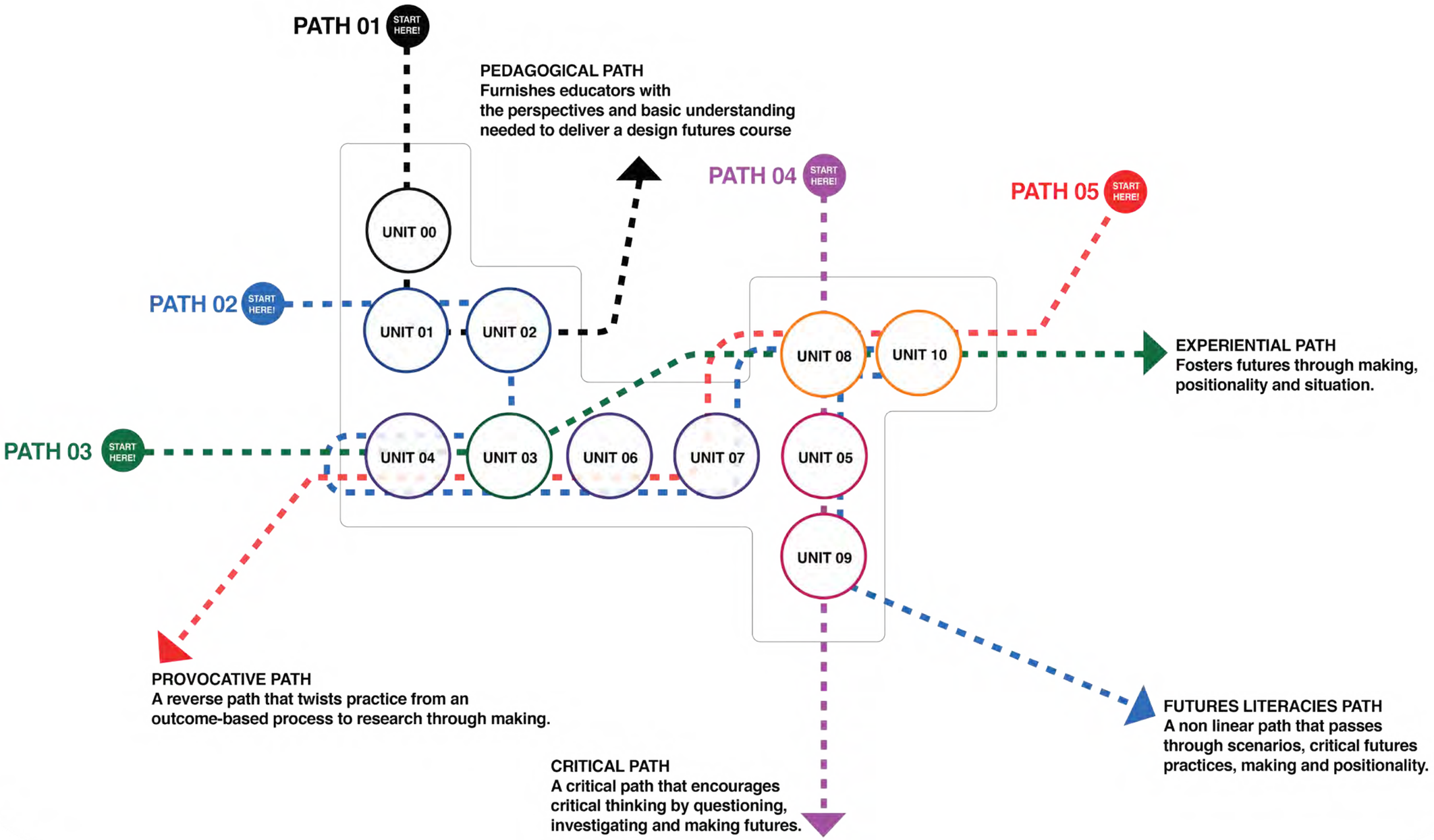
UNIT 08. PROVOTYPES
Creates a space for students to explore the role of provocative prototypes (provo-types) in the shaping critical future visions of Designing Futures.

UNIT 10. ALTERNATIVE PRESENTS
Provides the foundation to carry out research through design, showing the relation between theory and practice as it is related to the experiential in designing futures literacies. Helps designers to generate alternative presents through design interventions that embody desired futures and help understand and experience the needs to provoke these transitions.

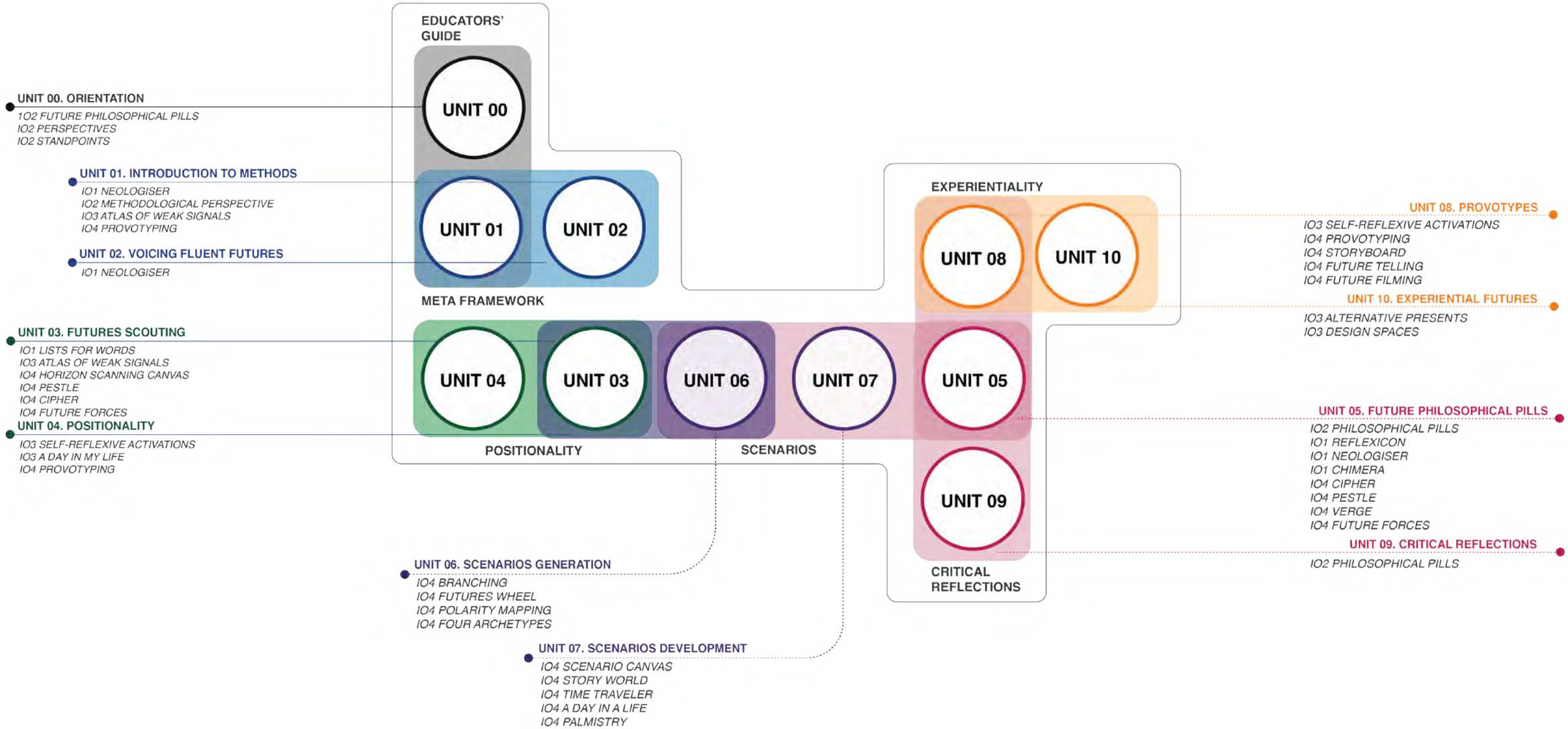
UNIT 05. FUTURE PHILOSOPHICAL PILLS
Foregrounds the importance of philosophical concepts to critically interrogate established notions, beliefs and assumptions around the future; it provides strategies to amplify our capacity to imagine, speculate and anticipate different futures;

UNIT 09. CRITICAL REFLECTIONS
Encourages you to place criticality at the center of your engagement with the intersection Design/ Futures /Literacies. inviting you to critically re-examine the work done so far; to twist the perspective already gained during one of the other pedagogical activities.

EDUCATORS' GUIDE
TO FUTURES LITERACIES METHODS AND METHODOLOGIES
THE PATHS
Suggested pedagogical paths through the units



EDUCATORS' GUIDE
TO FUTURES LITERACIES METHODS AND METHODOLOGIES
TOOLS AND DEVICES



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FUTURES LITERACY METHODS

UNIT 00
ORIENTATION

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DESCRIPTION

This unit provides the foundation for educators to engage in teaching future design literacies. It enables you to deconstruct your prior learning. It challenges you to re-evaluate your teaching practice with a view to reframe the intersection future - design - literacies.

The subject of this Unit is Teaching- This is about understanding how to create a learning environment where to teach future literacies by actively re-imagining the practices of teaching. What is crucial, therefore, is how to unlearn.
The content is centred on facilitating 'change makers' (i.e., your students) to develop the ability to navigate their way through uncertainty and complexity in their future-building practice. Through reflecting on your positionality and its influence on your actions, you will be invited to identify spaces for inclusive interventions with the potential to transform peer / student experience.

The Unit is underpinned by the principles of collegiality and active participation. You will share your own knowledge and experience with the group, and give and receive feedback through presentations, discussion, micro-teaching and peer observation in an atmosphere of mutual support and solidarity. This is a space to foster self-criticality in relation to your teaching practice.
This Unit suggests a series of teaching tools and learning activities which are framed through a collaborative, participatory, reflective, hybrid and transdisciplinary ethos.

AIMS

The Unit will enable you:

• To support you to critically relate educational theory and practice (pedagogical knowledge) to your own disciplinary knowledge (e.g., design studies, future studies, engineering, art, and any other domain you are working with). The aim is to foster an ongoing reflection on how your field of expertise is taught and learned, and to view this process as dynamic and situated. For instance, by learning strategies on how to work with, and facilitate, learners' journey, group work and community building.

• To continually enhance your teaching practice in a way that responds to the complex and evolving contexts of institution, policy, and society. For instance, by examining the drive around decolonization, and other urgent matters emerging in society, by affirming education as a social purpose, which means reflecting on the future of design education, not on the future of educators only.

• To interrogate and demystify your current academic research language and practice so to be aware of gatekeeping mechanisms, and how they impinge on inclusivity and diversity. For instance, by looking at different modes of knowledge-production, hierarchies, and communication; challenging the status quo and developing awareness of alternatives (e.g., journals vs. zines).

COMPETENCIES

The core competence of the Unit is to refine ways of working together to engage with uncertainty in a creative, critical and open manner. Specifically, by engaging with this unit you will acquire and demonstrate the following competencies:

• Reflecting on your attitudes to, and experiences of, learning and teaching to develop ethical awareness of your current position, practices, and contexts.
• Learning how to be empathic, to be an active listener and enabling others.

• Demystifying academic research, its purpose, and philosophical underpinnings, and how to decentering research canons, questioning histories and disciplinary silos

• Developing meaningful relationships with the community of educators, professionals, researchers with each other, and with other species (paying attention to the role of the nonhuman)

• Responding responsibly and ethically to complex situations arising within teaching and learning situations

• Understanding, embracing, and modelling the ethos of the unit. In other words, being prepared to embody the collegial, participatory and hybrid spirit of the unit, which intends to nurture self- reflection, openness, and practices of care tailored to whichever situation you find yourself in.

DEPTH OF DETAIL

This Unit is a pre-requisite for educators before engaging with the rest of the material provided in Units 1-10. The purpose is twofold and concerns these two levels:

• **Level 1:** To provide a solid pedagogical platform ahead of engaging with the units 1-10. This unit will highlight and suggest practices in relation to ways of teaching with particular attention to groups dynamics, inclusivity, diversity, fairness and representation. It will also assist with making an informed choice among the units 1-10 through a selection of the pathways that best respond to your requirements, interests, and needs. It will introduce key terms (glossary) that you will encounter throughout.

• **Level 2 (meta-level):** To inspire educators to apply the learning gained through this unit to your own practice. The meta-level concerns how your way of teaching will change as you keep on engaging with the material and will impact on how your way of using the FUEL4Design material with your students. It fosters self-reflection and self-evaluation and is predicated on an ethos of education as transformative experience for educators and students alike. You, me, everyone: we are learning all the time.

EXPECTED LEARNING OUTCOMES

A. Knowledge and understanding	Articulate your positionality as educator and researcher, in relation to disciplinary practices, research philosophy and ethics.
B. Cognitive Skills	Explore new ways of knowing and sharing knowledge made possible through decentring research and design practice
C. Practical Skills	Identify a focused design topic/exercise/activity that has value for you as an educator/designer, demonstrating how this connects to relevant fields of future study
D. Generic Skills	Critically evaluate institutional, national, and global perspectives of equality and diversity, and their relevance to your academic practice context.
E. Collaborative Skills	Develop and enact hightened ways of working and being together through lived experience so to produce new knowledge

ACTIVITY

Individual task

To assist educators in the process of engaging with the levels indicated above, these tasks are recommended:
• a ‘positionality’ statement to reflect on who you are as an educator/designer, not only in relation to your disciplinary practices but also in considering research avenues that address the contexts in which you work and the individuals you work with.
• a 30-minute learning activity that activates discussion around a theme or issue emerging from your own research (e.g. workshop, seminar, other activity etc.) directed toward a mixed group of 5-8 students.

Group task

Working in collaboration with a small peer group (2-5 or more) to develop a document inclusive of code of conduct / set of principles/ core values informing your teaching practice within a diverse environment. This could be a manifesto-type document, a flow-chart, a diagram etc. and the outcome of a mutually enriching process of discussion, negotiation and collaborative engagement (co-design).

Self and Peer-to-Peer evaluation

It is recommended that educators do self-evaluation throughout this unit. Self-evaluation can be a reflection journal, a series of blog entries or a mini-portfolio of notes and insights. Its purpose is to document your response to teaching practice as it evolves, and your responses to literature and other sources on teaching and learning.
Whenever possible, include Peer-to-Peer evaluation where colleagues come together to share experiences and reflection in a supportive and critically constructive environment.
Ongoing evaluation whether self or peer-to-peer will encourage skills such as risk-taking, independent enquiry, effective negotiation skills, as well as critical and civic engagement.

TOOLS AND DEVICES

Tools and devices appropriate to this Unit are those that encourage educators to reflect on their positionality, to critical appraise their learning and to experiment with ways of exercising agency, even in a ‘risky’ or disruptive mode. For instance, the Perspectives and Standpoints (from the Prompts cards in IO2) assist with questioning the nature of the future you envision, the knowledge it produces, the values and politics attached to it etc. (Perspectives). Also, they assist with reflecting on what can (or cannot) be achieved through the position you express (Standpoints).

Equally relevant here are tools that enable you to question your own learning and experiment with unlearning activities, for instance the Neologiser prompts you to work with imaginative words, each envisioning a different futurescape, with potentially

innovative and alternative roles to cast a new light on the space of future-making

Perspectives

- Ontological Perspective
- Epistemological Perspective
- Methodological Perspective
- Axiological Perspective
- Political Perspective
- Technological Perspective

Standpoints

- Declarative
- Disruptive/ Re-framing
- Reformative
- Rejective

CASES AND EXPERIENCES

In this unit you might want to use the following methods, test them out and embed them in your teaching practice. Feel free to adapt them to your own teaching style. They can be used online and IRL.

• Silent brainstorming: working in silence is a powerful pedagogical technique that affords sustained reflection. It is ideal for intense idea-generation and pattern and vision-building; by diluting the clamour of dominant voices in a group dynamic, it empowers all participants equally

• Vision-building: using image research to collectively populate a board (or a wall if IRL) illustrating a specific future vision (e.g. around a year/theme), usually best initiated in silence. Participants add keywords and comments on each other’s images.

• I DO ARRT (adapted from KaosPilot*): a guided way of setting the scene when facilitating a group. The acronym stands for Intention, Desired Outcome, Agenda, Rules & Roles and Time. Participants co-design the items, making assumptions explicit and building a common culture where everyone feels represented.

**a creative leadership and educational accreditation HERE*
In more detail: how to apply IDOARRT and Micro-teaching

1.IDOARRT
The purpose of IDOARRT is to aid you in co-designing your roadmap across the 1-10 Units in IO5.

It is a tool you can use to set and define your boundaries and scope in relation to IO5. It is predicated on a group working together, thus it requires negotiation and communication skills, and teamworking.

CASES AND EXPERIENCES

As said above, IDOARRT is a way of setting the scene. The acronym stands for Intention, Desired Outcome, Agenda, Rules & Roles and Time. Participants are invited to co-design each item, making their own assumptions explicit and striving to build a common culture where everyone feels represented and heard. Principles:

- Intention: why are we here?

- Desired Outcome: what will we leave with?

-Agenda: Build your own roadmap according to your own trajectory, needs, and requirements, goals, the gaps you are identifying (but you may not be certain of as yet)

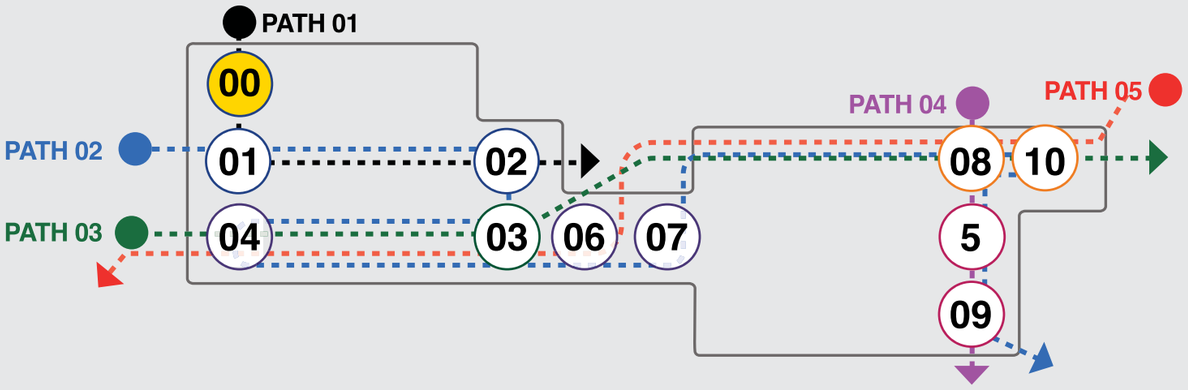
- Roles and Rules: who are we? Who are you?

- Time: what is the timeframe you want/can allocate to their learning to ? Eg 2 hours? 2 days?

2. Micro-teaching
Prepare a 30-min learning activity of your choice (i.e. workshop, seminar or intervention) directed towards a mixed-student cohort that

activates discussion around an emerging themes or issue in relation to design and futures. The purpose of this session is both to highlight your existing practice in relation to design futures and to foster reflection on your teaching. Draw on your existing knowledge and your specialism. What are the aims of the session? How are you engaging your students? What do you want them to achieve? How are you going to self-evaluate?

ROADMAP AND CONNECTIONS



The yellow color indicates the position of the current Unit.

UNIT CONTENT

This unit is called Orientation because it intends to assist you with navigating the complex terrains of future-making throughout the IO5 set of units, by enabling you to find your own mode (of teaching, working, learning, unlearning) . What this Unit does not wish to do is to provide you with a map: in this sense orientation is about you developing your own compass, rather than following a given blueprint. It is your journey of discovery, and is about developing agency, rather than been given all the answers. This also is in line with the meta-level of this project which asks what are futures made of?

Key features of the orientation process:

Building Community: The unit could start with a 3-day induction workshop to build an online cohort dynamic; to share and exchange cultural values; to communicate design tales and backgrounds; to introduce the unit/course ethos and provide key induction sessions. Peer learning is embedded into the course, allowing for the creating of a multidisciplinary community of practice that capitalises on diverse disciplinary, professional, and practice-based ways of knowing.

Testing Tools: Tutors are encouraged to run a pilot of the tools that they will be applying in the different units. A way of doing this is to engage in a Micro-teaching workshop. (Micro-teaching concerns leading a short activity with a peer group as if they were your students). The workshop takes place with tutors working with each other in order to become familiar with the chosen material, adapting it to their own situations and getting ready to implement it (for instance a micro-teaching capsule using the Pills or the Lexicon for a short session). This is a way to enhance your pedagogic ideas, experience, and expertise in collaboration with other members of the programme/course community; moreover, it actively encourages participants to evolve traditional design research and practice approaches by surfacing deep knowledge of creative and professional practice and amalgamating it into their research.

Positioning Yourself: Opening with an introduction to varied ontological and epistemological approaches to constructing knowledge, we will explore together how as researchers and practitioners we situate ourselves in the pursuit and communication of knowledge. By reflecting on your positionality, mapping your positionality, and sharing it with others you create conditions to develop sensitivity and evaluate the impact of your teaching.

Transdisciplinary practices: Educators are encouraged to think and act transversally to unsettle both verticality and horizontality, and the hierarchies these might conceal. They are encouraged to explore the value of transdisciplinary in breaking boundaries and questioning existing disciplinary silos. Investigating and playing with a range of methodologies drawn from diverse disciplinary fields will enable you to develop an experiential understanding of your own knowledge production. Acknowledging expertise in the classroom and voicing the voiceless surfaces issues of how to stay with divergence and engage in bridge-building rather than pushing for consensus.

Educators will be invited to critique research traditions and practices, considering decolonial imperatives and consider what it means to decentre academic research and practice traditions in the 21st century.

UNIT 00 - ORIENTATION

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FUTURES LITERACY METHODS

UNIT 09
CRITICAL REFLECTIONS

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DESCRIPTION

This Unit encourages you to place criticality at the centre of your engagement in the intersections Design/ Futures /Literacies. The Unit should be read in conjunction with Unit 00 – Orientation as these two Units bookmark the series of IO5 Units: Unit 00 sets the scene and Unit 09 invites you to critically re-examine the work done so far. This is to twist the perspective already gained during one of the other units (eg. Unit 07- Scenario Making; Unit 08 – Provo-typing); it is also to challenge the trajectory taken and the assumptions behind it so that the final design propositions are re-invigorated and critically galvanized.

By working in this way you'll operate transversally, that is, cultivating relations so to establish further relations. Put differently, this Unit facilitates and supports personal reflection and, therefore, builds self-awareness relating to the strengths of students as active learners. One reflects on practice to expand it further.

Criticality is necessary to unpack and decode existing discourses, to propose meaningful alternatives, and to develop discerning capacities. To be discerning or discriminating is the capacity to make informed distinctions. The etymology of critical is from the Greek root krinein ("to separate, to decide"), thus kritikos ("able to make judgments"). Being 'critical' means to intentionally adopt a stance of 'detached evaluation' so to create enough distance between you and what you are investigating (project, brief, reading etc.) so that you can appraise it, review it and question it further.

This space is necessary to think about, consider and engage with, your own thinking, reflect on how your position may change because of your learning, and articulate meaningful ways to enact this learning in your practice. Note that while the word critical has connotations of "censurer" or "faultfinder", however being critical does not mean being negative, or being in disagreement.

AIMS

The aim of Unit 09 is to activate criticality by mastering and enacting critical activities to be applied to the work done in the other Units. Unit 09 suggests practical applications using a range of de-familiarization techniques that encourage you to create the space needed to enhance sense-making skills by 'doing criticality in action'. De-familiarization works by moving your awareness out of what you know and plunging your attention into a different realm.

Some techniques to enhance criticality are to:

- Re-visit
- Re-imagine
- Reverse
- Twist
- Swap: working in small groups students to swap their work with each other
- Decode + Recode
- Make it happen (act as an activist)

UNIT 09 - CRITICAL REFLECTIONS

COMPETENCIES

- Critical thinking
- De-familiarization
- Research skills: capacity to find sources, contribute to the advancement of knowledge
- Media and visual literacy
- Discourse analysis
- Self-reflection

DEPTH OF DETAIL

LEVEL 01 – BACHELOR

Critical thinking might be difficult to develop in autonomy at this stage. It would be suitable to propose a cross-critical activity between different students and/or groups proposing to shift roles and topic between two different stages of activities.

LEVEL 02 – MASTERS

At this level student must develop self-critical analysis and – maybe starting from a Philo pill – subvert their previous vision / reasoning/ project re-coding values from another perspective embracing others' points of view..

LEVEL 03 – PhD

At the highest level the critical thinking should grow and mature. A possible way to challenge this task would be to propose different authors' reading and introduce/ discuss their critical perspective in comparison or relating it to a specific project.

EXPECTED LEARNING OUTCOMES

A. Knowledge and understanding	Become familiar and conversant with criticality, sense-making, creating space for reflection as well as with sourcing appropriate content
B. Cognitive Skills	Develop an advanced level of critical thinking and reflection, and apply methodologies from multiple disciplines and practices
C. Practical Skills	Understand complex and unexpected challenges in order to establish processes/strategies to apply to practices
D. Generic Skills	Learn how to embody these skills continuously and adaptively in your own practice
E. Collaborative Skills	Develop and evidence effective communication and negotiation within highly diverse teams

ACTIVITY

Activity A |

Description: Like Unit 00- Orientation, this Unit recommends that participants gather their reflection by keeping a reflection journal, a series of blog entries or a mini-portfolio or diary of notes and insights throughout. The purpose of these activities is to document your response to work done to date, and track the development of your critical skills and of your ability to reflect, e.g. go back and look again at what you have already done, observe it and analyse it through different eyes, try to explain it differently or to other different audiences, reference it through a different set of theories or models. Importantly, no reflection is fully concluded unless it also allows you to reflect on your own trajectory as practitioner, and your futures.
Aim of activity: stimulate criticality so to re-energize your practice both in terms of outputs and in terms of collaboration (see Learning Outcomes above)

Method: discourse and visual analysis, peer-to peer discussion and assessment, critical review by facilitated group discussion.

Example: Critical 'warm-up' exercise / workshop (based on media and visual literacy)

• Source and examine a selection of advertising campaigns of technology products in various decades; unpack and interrogate the future narratives informing roles, contexts and social expectations.

• Ask students already working on brief/ project to locate a series of adverts for the product typologies they are designing, in various decades. Then, ask them to reflect and position their work in relation to the narratives presented in the selected adverts. Is their work aligned/matching existent narratives or disruptive? How?

• Students are tasked with the production of adverts for fictional products or experiences (use examples of social critique campaigns)
• Peer to peer activities: students working in different groups: ask one groups to make a commercial for each other work

Example: Pills to use for activity:

CAPACITIES Cluster :

POSSIBLE/PROBABLE/PLAUSIBLE/ PREFERABLE - Types of reality that: might happen [possible]/is likely to happen [probable]/could happen [plausible]/you wish to happen [preferable]

TRAJECTORIES Cluster:

TRANS-EVERYTHING - Use a diagonal to go beyond the vertical and the horizontal. Find connections across planes and dimensions.

UNIT 09 - CRITICAL REFLECTIONS

TOOLS AND DEVICES

1) See Philosophical Pills below in general but consider that:
- The Pills from the deck belonging to this categories Crisis, Trajectories, Stewardships are easily usable for each depth of detail.

- Strategy and Charts are more devoted to a higher level of complexity.

2) To deepen a week critical basic research and/or horizon scanning also the PESTL, VERGE and Future Forces might be suitable

CASES AND EXPERIENCES

PhD Futures Thinkathon 2020

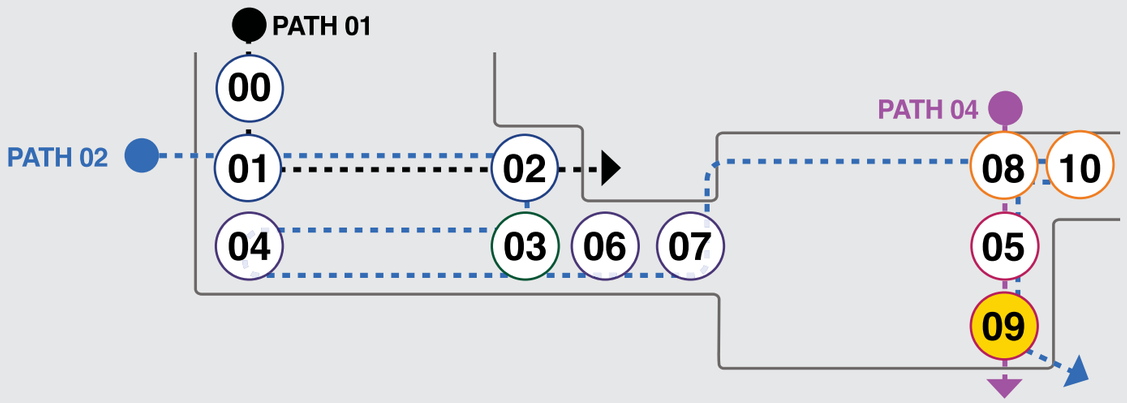
The aim of this intensive workshop was to introduce contributing partner institutions' PhD Design students to the current development and research in futures literacies; to connect them to research methods and content of futures literacies; and to train them in applying futures literacy methods and content in the PhD research practice.

Due to the COVID-19 emergency, the workshop was conducted in a digital mode using platforms suitable for teams working remotely: "Microsoft Teams" and "Miro: An Online Visual Collaboration Platform for Teamwork". The workshop was managed by Politecnico di Milano FUEL4Design research team. The platforms, canvases and tools used during the presentation had been prepared beforehand in order to ensure a smooth process and time saving in the three days' intensive workshop. It's worth noting that the digital mode of the workshop provided many opportunities and opened up new spaces of creativity that enhanced the cooperation and collaboration between the participants during the days together.

Canvases were designed to allow participants to brainstorm freely as well as including a design space which was a blank a space for each team to gather ideas, visual material and rough concepts, before adding them to the canvas as a final output. Each phase had its own canvases that were used to systematically allow participants to organize their thoughts and to capitalize on the diagramming capabilities of the canvases. These diagramming capabilities were on offer to foster creativity in brainstorming and to open up a space for discussion. The canvases were made in the form of templates that participants filled out with brainstorming items and discussion results.

HERE

ROADMAP AND CONNECTIONS



The yellow color indicates the position of the current Unit.

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What does it take to become a critical thinker in relation to designing futures?

As humanity has entered an era of systemic issues, challenges and instabilities, it is clear that a plurality of diverse perspectives is required to address what the planet is facing, not necessarily to provide solutions, but to frame problems differently. The capacity to ask novel, relevant, penetrating, and difficult questions is key to future-building. We need to develop the capacity to ask questions that challenge current operating assumptions, that are able to surface cause-and-effect relationships not immediately apparent, that open up spaces of understanding, empathy and learning.

The capacity to ask questions is essential if we seek to amplify the generation of different types of imaginable futures. Without questioning, criticality, and persistent interrogation, the future you envision will very likely be a repetition of what has already happened. To create futures that genuinely strive to diverge from the known, we must cultivate critical thinking. Further, this thinking needs to be connected to processes and practices of designing and analysing design for shaping meaningful and sustainable shared futures.

In Teaching Critical Thinking (2010) educator and activist bell hooks writes that critical thinking is about asking questions around the who, what, when, where, and how of things – very much like a curious child would do – and then use the knowledge generated to determine “what matters most”. This is where the relevance of critical thinking to future-building becomes clear. To say that critical thinking is essential to the process of figuring out what matters most means to acknowledge critical thinking’s role in paying attention to where our efforts (as designers, practitioners, theorists, change-makers, future-builders, citizens, activists, learners...) should be directed. In this sense, then, critical thinking cannot be disjointed from a reflection on how our own position (as designers, practitioners etc...) informs our understanding of ‘what matters most’. It becomes an indispensable tool to approach designing futures as a gesture imbued with care, stewardship and empathy. Designing futures is an ethic-political project attitude. However, it is more than this because criticality is also realized in designing and engaging with designs (artifacts, processes etc). It is performative an enacted, that is

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socio-technically, culturally and in terms of activity, participation and change.

It’s important to specify that the need to develop a critical perspective in design learning, and in design future learning in particular, derives from the awareness that design can no longer be considered only a practice dealing with the “artificial world”. It is also about specific knowledge that embeds skills, values and critical capacity applied through the techniques of the artificial. Already in 1999, Susan Roth stated that design studies ought to consider objects and processes from a critical theory perspective and through a multi-perspective inquiry: “The distinction between project oriented design research and the scholarly area of design studies reflects the extension of design from a form-giving activity to an interdisciplinary process dealing with complex systems and solutions.” (Roth 1999: 19). The dichotomy, often traced back to the terms “technique” and “culture”, which historically has positioned design at a crossroads of disciplines where it assumes a role of mediation or direction, is currently incomplete as well as unresolved. Further, in a context increasingly determined by a more-than-human agency, it also asks us to interrogate the techno-deterministic narratives that inform the project. Depending on the focus of the project, design can act as a technical discipline that draws tangible elements (form, function and materiality of the product) or it can act on a cultural level by designing intangible elements (such as meaning and value).

The transdisciplinary approach as well as the mutuality between disciplines can have repercussions both in the theoretical-critical sphere and in the applicational-experimental one. The cooperation between design and human and social sciences can be described, on the one hand, through a comparison of cognitive and epistemological models and, on the other, through a comparison of analytical and generative tools.

In this sense the critical thinking for design futures can take into account different approaches:

• Engage with a multiplicity of perspectives, and think in terms of participatory practices involving student in reading design realities according to different filters (social, political. philosophical...etc)
• Interrogate today’s new mythologies (efficiency, growth, speed, just in time (JIT), last mile, carbon offsetting/carbon footprint)
• Articulate critique of speculative and critical design (SCD); source examples that traverse the confines of the gallery space and engage sensorially/experience e.g. Superflux
• Articulate critique of the ‘user’ and the blueprint of ‘user-centred-design’. Who/what is the (invisible) ‘used’ in these formats? Think about the wider community and shift from user to citizen, positions stakeholders within an ecology of the human and the nonhuman, and within wider systemic networks (that go beyond the narrow confines of the user as universal entity)
• Engage in dynamic, individual and shared critical acts of collaborative working and knowing how to: with diverse materials, via ‘sculpting’ artifacts and processes, through inputs and responses from stakeholders and participants and by way of feedback and insights generated in use, by users and as usage.

Which are the motivations to engage in a critical design future practice?

The growing complexity of our contemporary ecosystems are positioning Design at the front end of future inquiry: risk, innovation, critique, and cultural expression are crucial for projected experience, engagement, and critique. The capacity to achieve critical thinking skills may be connected to Piaget’s concrete and formal operations since stages of cognitive development are linked to intellectual potential and environmental experiences (Ornstein & Hunkins, 2004). In

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particular, in the Design field Critical Design may be endorsed in a framework of

reflective practice where “Reflective practice is understood as the process of learning through and from experience towards gaining new insights of self and/or practice. This often involves examining assumptions of everyday practice. It also tends to involve the individual practitioner in being self-aware and critically evaluating their own responses to practice situations. The point is to recapture practice experiences and mull them over critically in order to gain new understandings and so improve future practice (italics added). This is understood as part of the process of life-long learning (Finlay, 2008).”

Despite the fact that teachers, psychologists and philosophers differ in their beliefs as to whether critical thinking skills can or cannot be taught, it is clear that through experience and the pedagogies of Experiential Learning that we may prompt, prime and activate critical thinking when reasoning on the activity itself, and activate meta-learning reflections. Sternberg (1990), Ennis (1989), and Lipman (1988) state that critical thinking skills are not a fixed entity but a form of reasoning that everybody can be trained to enact.

Such enactments may occur within and between different domains of Design and related design inquiring framings, concepts, methods and analysis (Celi, Morrison; 2017). These span human–computer interaction as well as service design, systems-oriented design, and product (not only industrial design) as it realigns its practices and interpretation to increasingly account for digital fabrication. Here too Design is motivated to take up, explore, select, reappoint and reconfigure design artifacts and processes of making and use from a suite of methods of making and thinking critically about them as schema and as processes of enactment. This extends to Design’s relations to interaction and the growth of socially mediated communication and Design’s role on social innovation and

pressing societal and sustainability issues. Futures Studies is in needs of further attention to how it conducts its prospective acts of making both from and as Design, but also how qualitative research methods make be further understood through attention to processes of mergence and becoming in human-nonhuman contexts and dynamics, relating to potentials in new materialist and post-qualitative views.

How is criticality on design and pedagogy linked and enacted?

Design futures literacies may be usefully approached as intersections and mixes of ways of making, analysing, teaching and learning. Through use aach of these activities travels with sets of predominant and emergent practices and configurations that have come into being and circulation. The shaping of Design through the implementation design tools and techniques together with the application of research methodologies and methods needs special attention as it increasingly taken on matters of working with futures. This implies attention to how we think critically about modes and means of designing in an anticipatory sense and for alternate present and short- and long-term futures. It also points to parsing approaches to knowing from the field of Education. Here we need to access and re-position aspects of both learning theory and methods and design pedagogies that have not always explicitly been oriented towards futures fields, challenges, conditions, processes and potentials.

With the future as the ‘object’ of our making (designing, researching, communicating) and our design positioned pedagogies (materialities, experiential, participative etc.) and critical thinking and performativity in

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education (critical pedagogy, experiential learning, learning lives), we need to recalibrate and reorient the hows of making, learning, analysing and communicating it all.

This matters whether individually, together and in distributed, locative and emergent systems in which technologies themselves increasingly impact on a world in which human and non human actors (biological and computational) are in co-existence, if not always equally, Attention is still needed to cognitive and metacognitive aspects of critical thinking, dispositions and practices: (1) interpretation, (2) analysis, (3) evaluation, (4) inference, (5) explanation and (6) self-regulation (Facione, 1990). Sternberg (1990) provides general guidelines for developing or selecting a program/curriculum that will foster critical thinking. He recommends that instructors focus on strengthening students’ intellectual functioning in meta-components, performance components, and knowledge-acquisition strategies. This ties in with recent educational thinking into contexts of learners’ motivated knowing out of school (Erstad et al., 2016), through and as popular/cultural expression and as connect to meaning making about pace, interest, culture and contact (e.g. McLaren 2016 on re-considerations of critical pedagogy).

Our design specific futures means (methods and pedagogies) this may be even more a matter of making via design materials, in the interplay of processes and artifacts, participants and systems, interactionally and performatively. Here we can connect to design tools and techniques, such as provotypes, criticality in action and activism, DIY hacker aesthetics, or speculative fabulations, to mention a few. In our acts of making critically we may also need to return to ‘designerly’ futures ways of reflecting in an on action (Schön, 1987) that are extended more deliberatively and experimentially into temporal and spatial future dimensions, such as re-imagining, reversing or twisting, switching or juxtaposing, that are acts of de/re-coding.

We can no longer perform modernist trajectories toward the next new; our methods and pedagogies are undergoing a time of flux and experimentation. They are already connected to de-growth, re-use of finite resources and their fairer sharing and circulation – these too need to be more fully enacted pedagogically as critical designerly futures methods in themselves. What are the mediational production logics reproduced in Instagram? How are MIRO Boards being co-created to reflect, stretch or even upend our previous pedagogic practices? In what ways do and might Slack teams work differently in the pandemic as our classrooms adapt and alter? How are our creative methods being challenged by the changing nature of AI inflected work and its design elements, production mechanisms, management and distribution? Our critical methodologies and methods need design critique and design pedagogies that are also future critical yet imaginative and generative of alternatives, possibilities and the outlandish.

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LIST OF TOOLS AND DEVICES

IO1 LISTS FOR WORDS
IO1 FRAMES FOR FUTURES
IO1 FUTURES DESIGN LITERACIES MATRIX
IO1 WORD-O MAP
IO1 NEXUS
IO1 SEMANTIC CATEGORIES
IO1 BALLUSION
IO1 REFLEXICON
IO1 FUTURES DESIGN DISCOURSE MOVES
IO1 CHIMERA
IO1 NEOLOGISER
IO1 UNMAKER

IO2 AFFECTIVE MODES
IO2 PERSPECTIVES
IO2 STANDPOINTS
IO2 PILLS (STEWARDSHIPS)
IO2 PILLS (CAPACITIES)
IO2 PILLS (BELIEFS)
IO2 PILLS (CHARTS)
IO2 PILLS (CRISES)
IO2 PILLS (STORIES)
IO2 PILLS (STRATEGIES)
IO2 PILLS (TRAJECTORIES)
IO2 PILLS (UNKOWNS)
IO2 PILLS (VISIONS)

IO3 ATLAS OF WEAK SIGNALS
IO3 ALTERNATIVE PRESENTS
IO3 SELF-REFLEXIVE ACTIVATIONS
IO3 1PP DESIGN INTERVENTIONS
IO3 DESIGN SPACES

IO4 HORIZON SCANNING CANVAS
IO4 CIPHER
IO4 PESTLE
IO4 VERGE
IO4 FUTURE FORCES
IO4 FPP CANVAS
IO4 BRANCHING
IO4 FUTURES WHEEL
IO4 POLARITY MAPPING
IO4 4 ARCHETYPES
IO4 SCENARIO CANVAS
IO4 A DAY IN A LIFE
IO4 STORYWORLD
IO4 TIME TRAVELER
IO4 PALMISTRY
IO4 PROVOTYPING
IO4 STORYBOARD
IO4 FUTURE TELLING
IO4 FUTURE FILMING

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