

### FIRST ANSWERS.....

- Taking in different perspectives
- Connecting to different perspectives
- Awareness of other viewpoints
- desire to learn
- Responsibility
- Open dialogue
- Looking from a distance to what will have to happen/ open to see the bigger picture
- Critical thinking
- a reflective engineer has learned to learn
  - > engineering content
  - > engineering process
  - > Personal (intra & inter)
- able to understand the epistemology of their profession
- Actively using peers to have a better understanding of the way to go
- Defining models and hypotheses and monitoring development
- Understand the contribution given and the broader context
- looking at oneself
- Thinking twice before announcing first answer
- Outward oriented
- An engineer who stops and thinks on a regular basis, able to pivot or redirect if needed.
- Ability to understand the social and political dimensions of an engineering problem/ context and how this (could/should) inform their work.
- Working on different levels of abstraction.
- Reflects on, in, for action in the right time
- Connect Head, heart and hands
- Ability to place themselves in the shoes of others affected by their work and compassionately engage them.
- Dealing with unease and discomfort that comes with challenging assumptions
- Being able to critically reflect on oneself and using that self-awareness to transform and become an adaptive expert.

## WHAT MAKES AN ENGINEER A REFLECTIVE ENGINEER?

### 100 DAYS OF REFLECTION Education Conversation 28-09-'21

#### EXAMPLES SHARED

Students wrote a little paragraph, relating to a specific case and what the connection is to them and their learning. Students liked it a lot. Starting point for transfer & applying knowledge to your own context. Students liked it that it is applicable and relevant to them.

#### TIPS FOR FURTHER EXPLORATION

- Have a look at HBO. Reflection in education seems to be more active there.
- readings: Schon. Reflection in action
- critique epistemology -> the question we ask differ compared to history, maybe we have to start new questions (and make new assumptions).
- Are we asking our students to do something that we are not doing as lecturers & practitioners in the field....
- Reluctant / unable / unaware? Where are we at?
- Exploring the needs

#### PARTICIPANTS' OBSERVATIONS

- a lot of the comments seem to relate to being open to surroundings -> looking around and reacting to the things that are going on.
- reflection in courses should be integrated: it is important: ethics/ action. Reflection never comes first.
- Research does not involve that much societal input as design. It does not need to be relevant in the here and now -> research should explain why things are the way they are. We as senior scientists are not that trained in reflection.
- Students say: we need some more input on how to learn, how to approach this exercise -> connects to reflection. When students ask such questions. How do we reply. Please focus on your assignments, or that interesting let's talk. Is it about reluctance, or about incompetence (not being able/having the means to reflect on that level).
- a safe environment for students to ask questions is necessary. How to facilitate such an environment..
- Provide lecturers with framework/tools/assignments -> to discuss reflection. Would that help? Coming up with the right reflective questions is a good start! Important is not to limit with the framework but actually give some direction.
- Groups can be very relevant in Reflection.
- Reflection can be an aware process. Short process of stopping and reflect.
- Conflict and contrast is an important aspect of learning about reflection.
- Descriptive reflection, dialogical reflection -> the difference deepens the insights.

#### WHY?

Students become more aware of what is happening in the world. Is that true? They are confronted with more -> and look for tools and approaches to digest. At this point reflection might be the key.