



Educating Science Teachers for All
Philippine Normal University
The National Center for Teacher Education



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ESTA

Educating Science Teachers for All



Group by Educating Science Teachers for All

Philippines ESTA Community

Public group · 114 members

Joined ▼

+ Invite



About

Discussion

Announcements

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People

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Ice Breaker

Can you fill this jar with a positive word in your mother tongue?

<please use the chat>





Ice Breaker

Can you fill this jar with a positive word in your mother tongue?

Provide a 1-word English translation





Ice Breaker

Can you fill this jar with a positive word in your mother tongue?

sigasig/enthusiasm





Ice Breaker

Can you fill this jar with a positive word in your mother tongue?

karangahan/pride
(Bikol-Albay)





Diversity in Science Classrooms

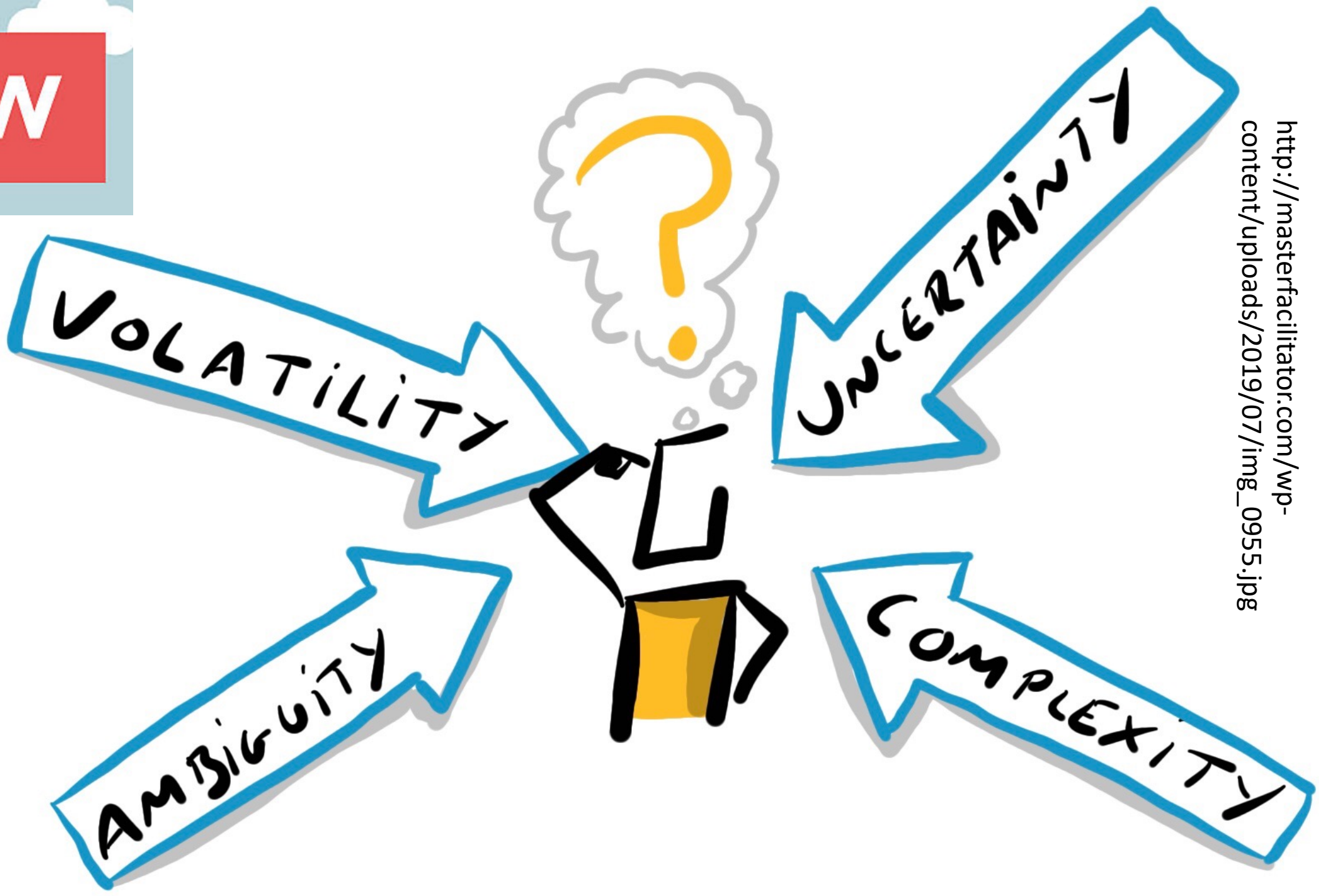
Alfons Jayson O. Pelgone
Educating Science Teachers for All
ESTA-PHIL-PNU

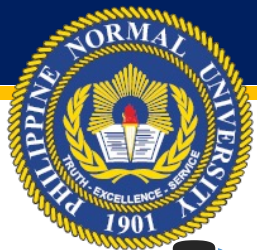


Who are in the room?

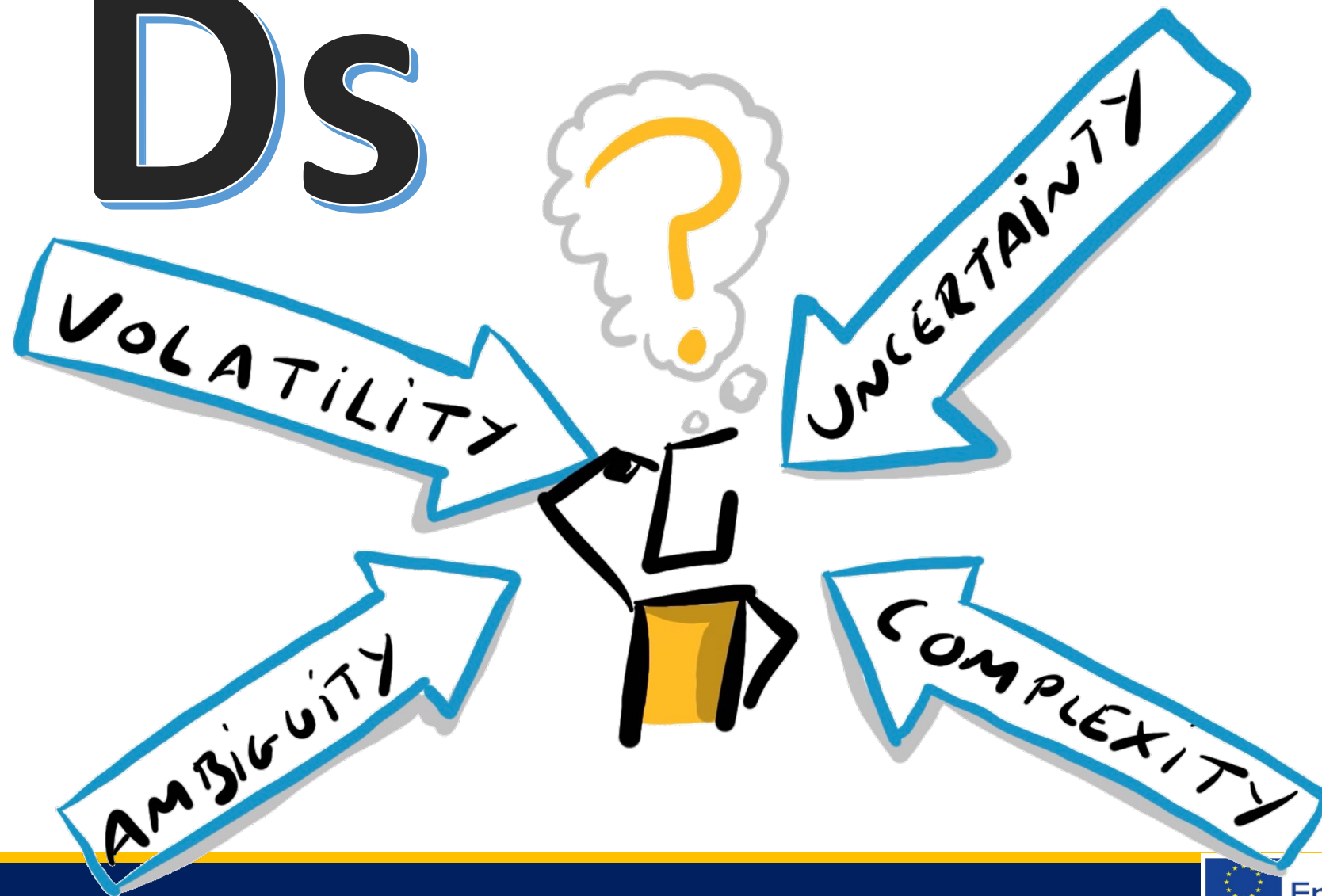
(Zoom poll)

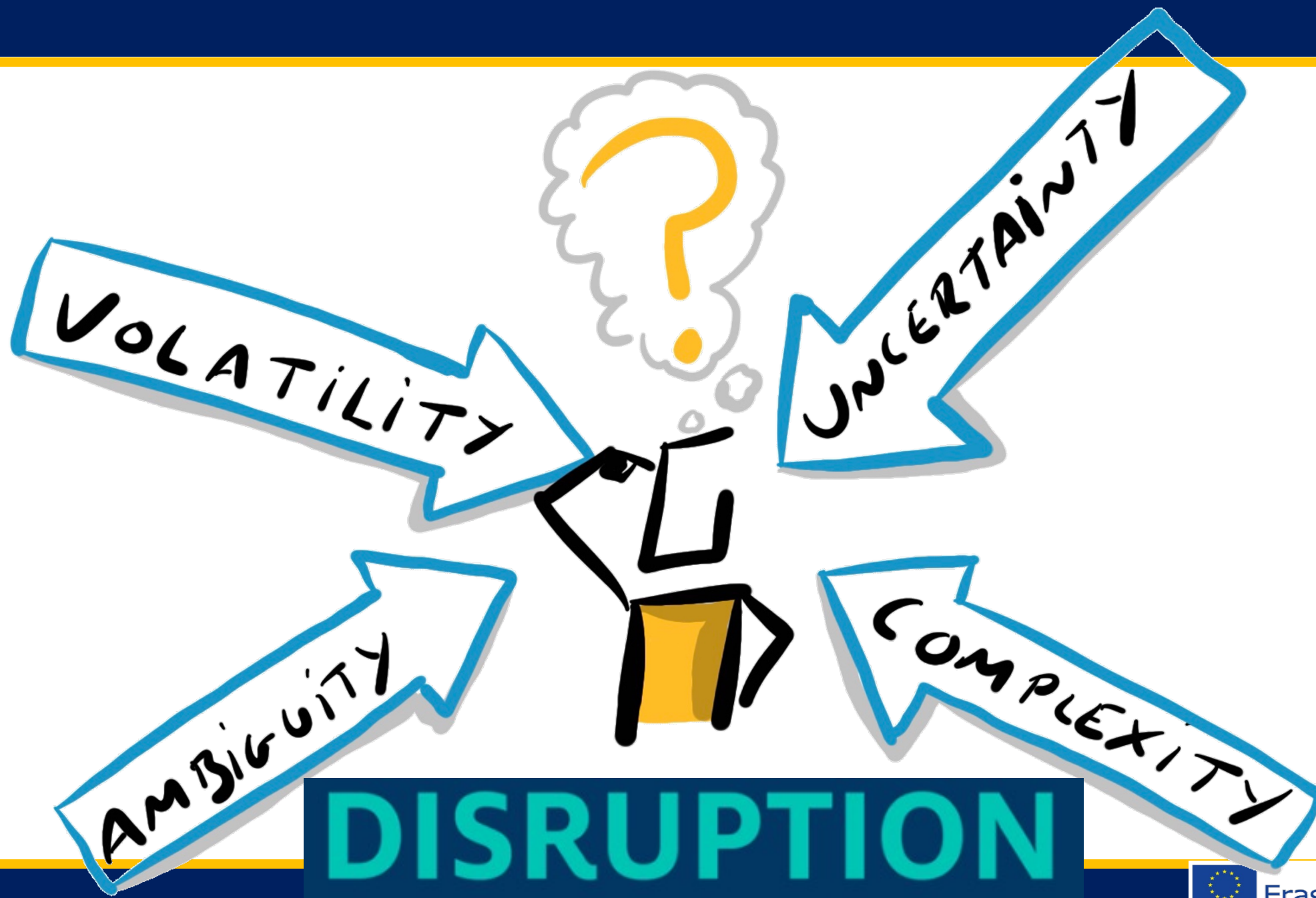
NOW





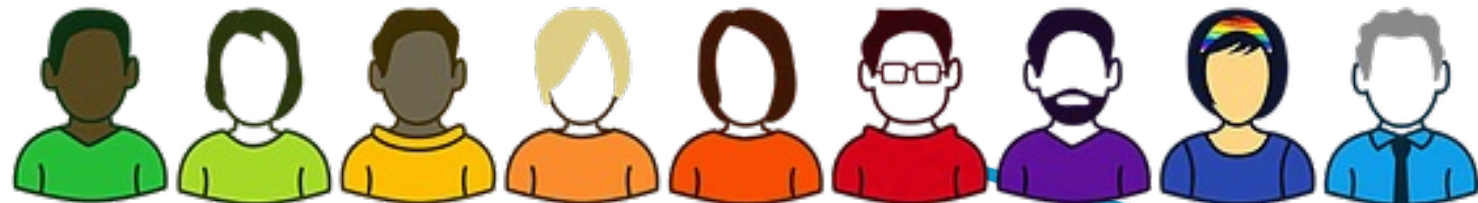
+ 2 Ds







DIVERSITY



VOLATILITY

UNCERTAINTY

SECURITY

COMPLEXITY

DISRUPTION



Diversity

in terms of age, gender, ethnicity, religion, ability, disability, sexual orientation and expression, education, affordance and national origin.



Diversity

Diversity is **inherent to the human being** and offering choices will benefit all.

(Alba Pastor, 2012)



Diversity

encompasses **acceptance** and **respect**...



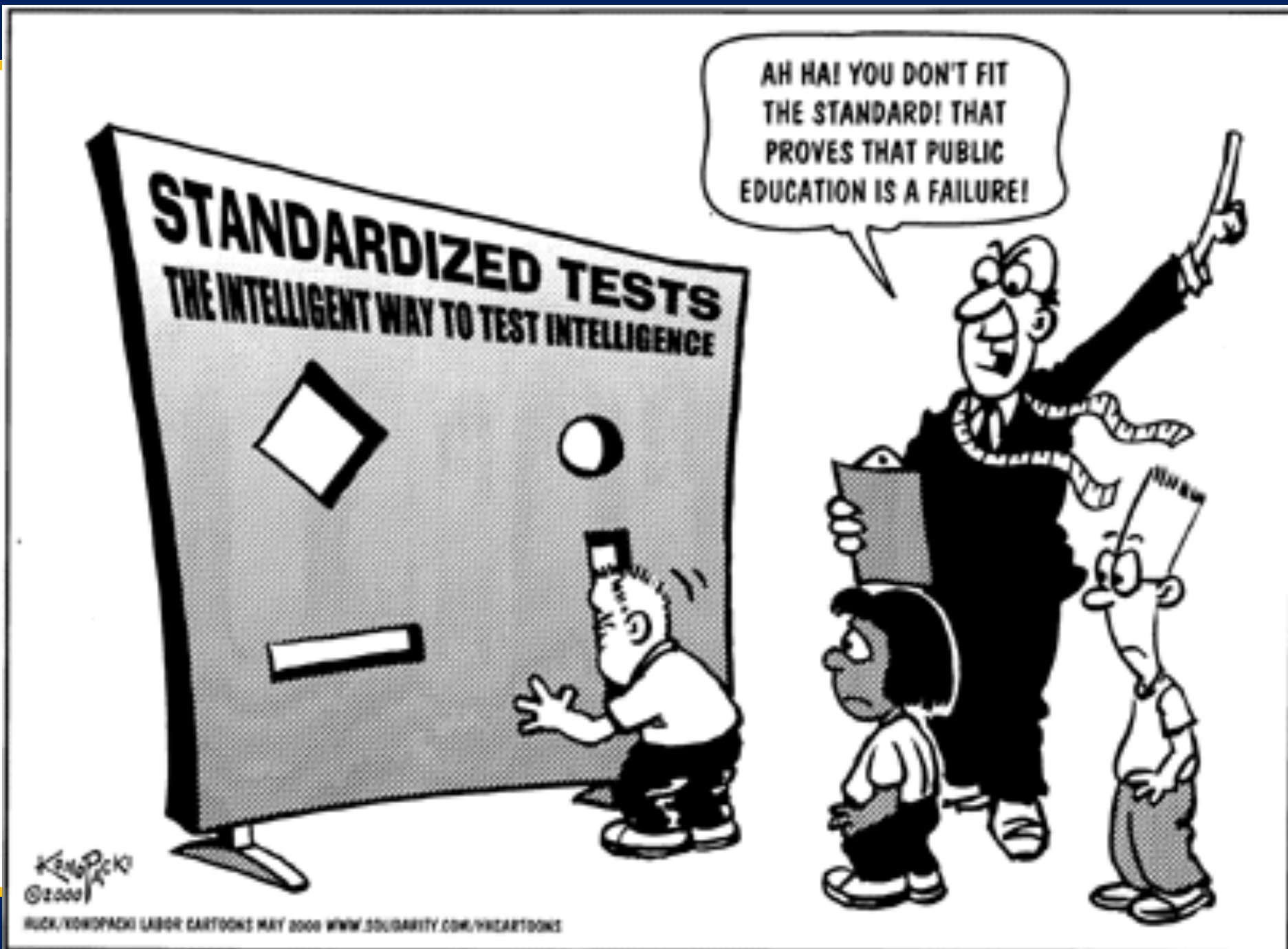
“How do we create inclusive science classrooms for diverse learners?”



“Why do we need to create inclusive science classrooms for diverse learners?”



<http://personal.psu.edu/caf5589/test.jpg>





Philippine Professional Standards for Teachers





Domain 3.

Diversity of Learners, consists the following five strands:

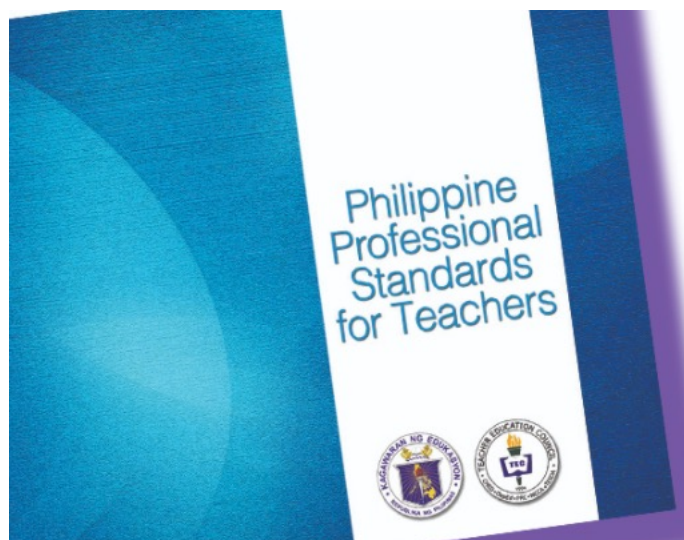
1. Learners' gender, needs, strengths, interests and experiences
2. Learners' linguistic, cultural, socio-economic and religious backgrounds
3. Learners with disabilities, giftedness and talents
4. Learners in difficult circumstances
5. Learners from indigenous groups

Philippine
Professional
Standards
for Teachers





3.2.2. Establish a learner-centered culture by using teaching strategies that respond to learners' linguistic, cultural, socio-economic and religious backgrounds



“Plan and deliver teaching strategies that are responsive to the special educational needs of learners in difficult circumstances, including: geographic isolation; chronic illness; displacement due to armed conflict, urban resettlement or disasters; child abuse and child labor practices” (PPST Indicator 3.4.2).



The **PPST** defines the characteristics of a quality teacher in the 21st Century in the Philippines, including possessing the **knowledge** and ability to “**establish learning environments that are responsive to learner diversity**”.

**This characteristic is embedded in Domain 3 of PPST.*



What to expect in a diverse science class?

- Race and Ethnicity
- Religion or belief system (or non-belief)
- Language (what they use to speak, express, and what they understand)
- Economic
- LGBTQ+
- Abilities
- others

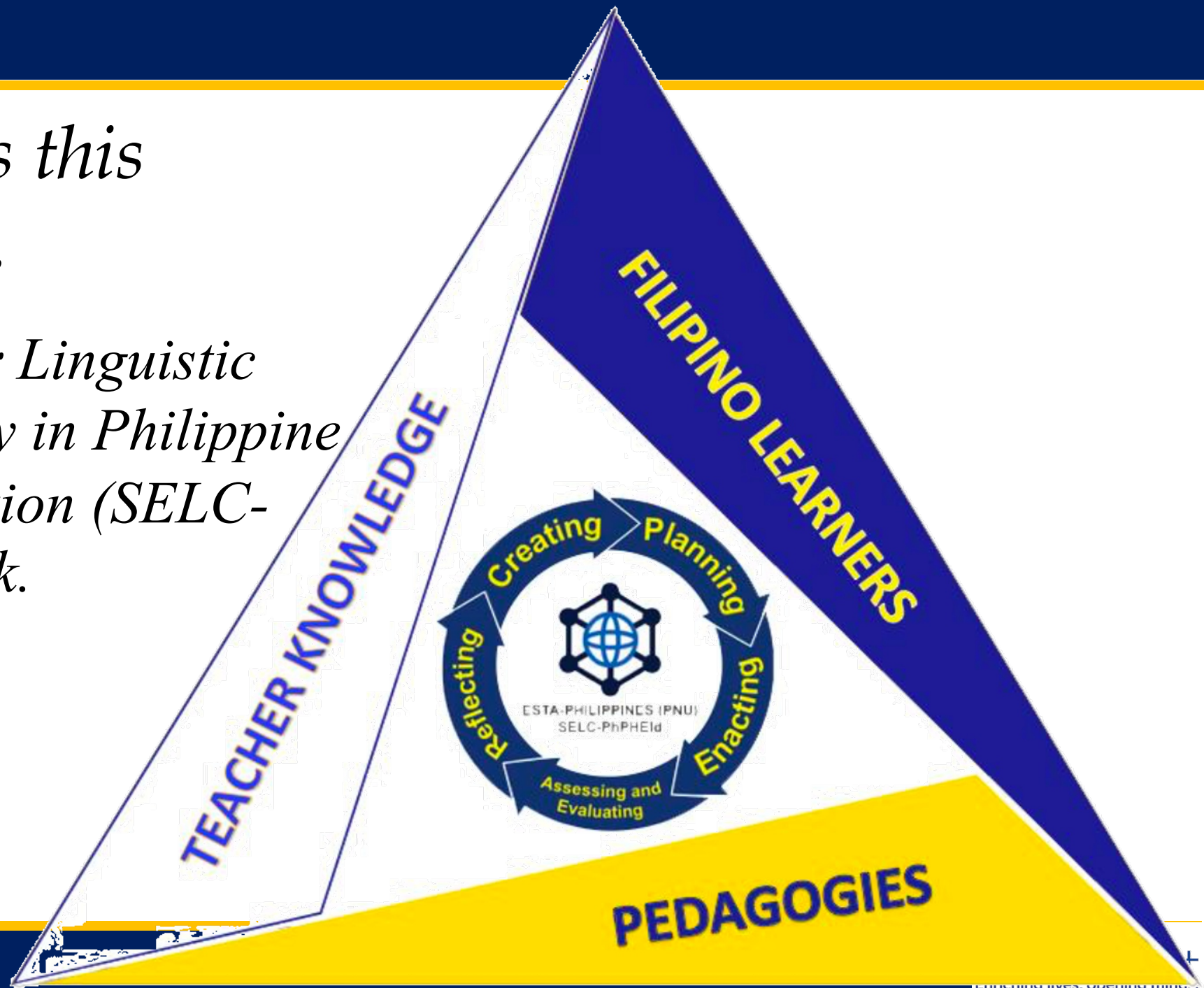


*UNESCO advocates inclusive education which means that all children – **no matter who they are** can learn together in the same school.*



*ESTA joins this
advocacy...*

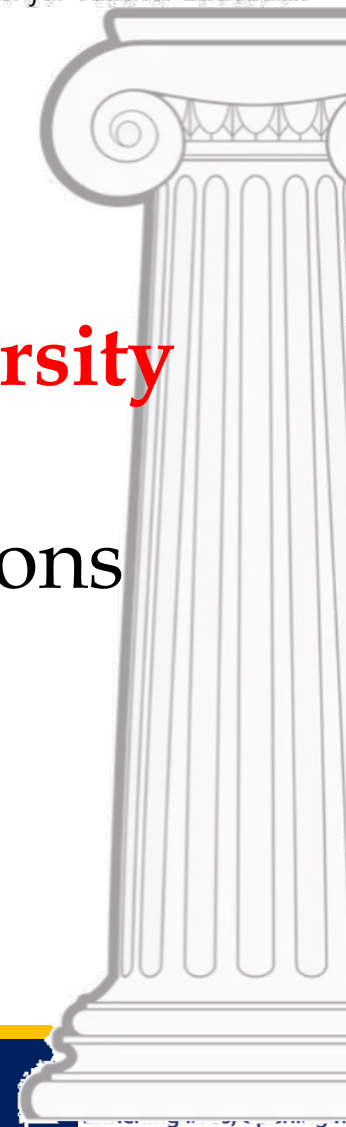
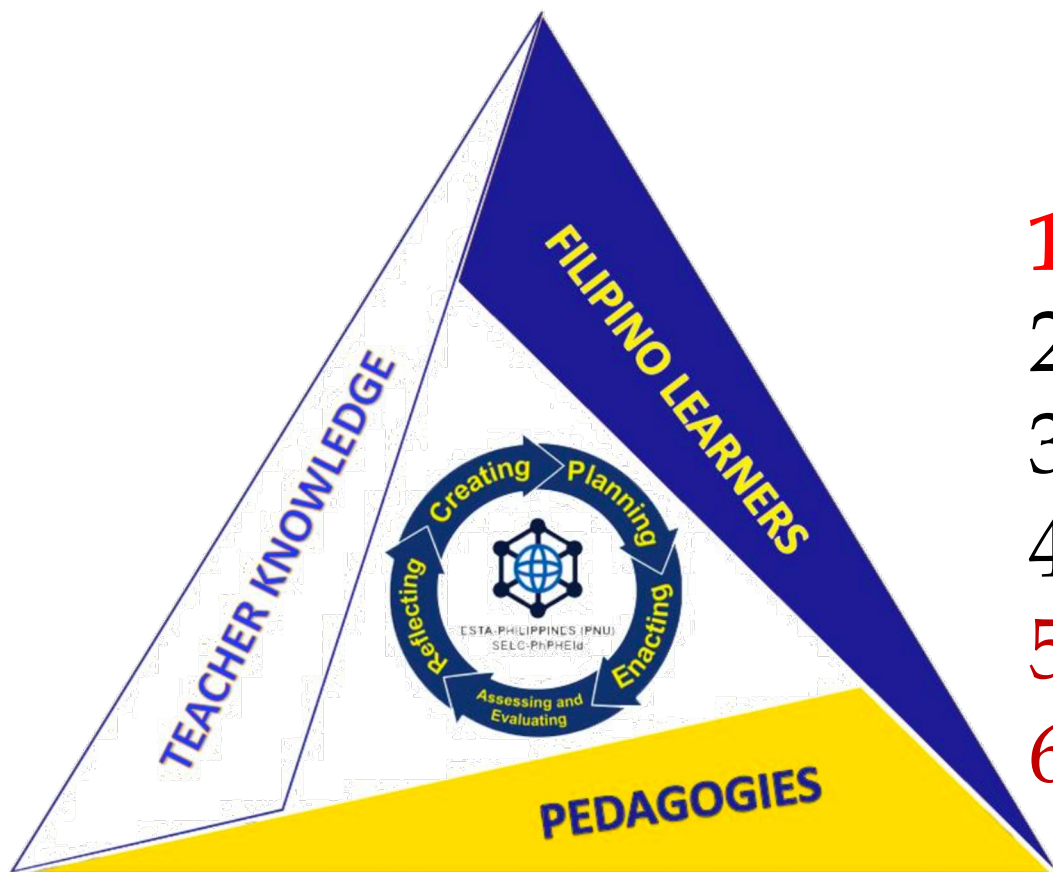
*Science Education for Linguistic
and Cultural Diversity in Philippine
Public Higher Education (SEL-
PhPHiEd) Framework.*



The Framework

Key Drivers

1. Culture and language diversity
2. ILSA results
3. Local and national evaluations
4. PPST
5. Geopolitics
6. Political economy





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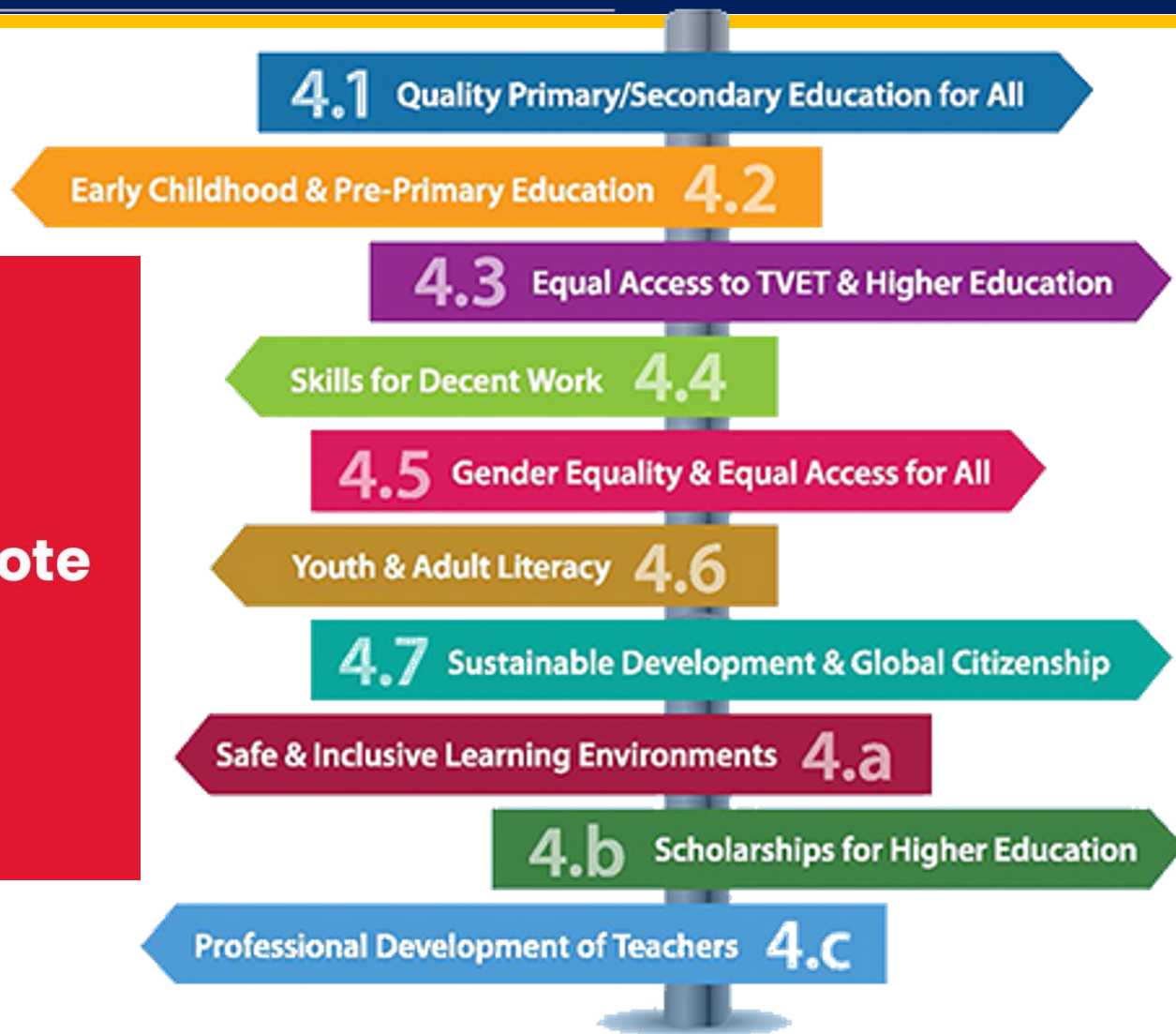
Inclusive education or simply just inclusion is a movement and an advocacy that supports the right of all children or learners to quality education.

<https://www.unicef.org/education/inclusive-education>





Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



Flexible Pathways for Learning



Erasmus+
Enriching lives, opening minds.

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- These learners come from any background, gender, cultural context, ethnicity, religion, capacities, abilities or disabilities and affordances.
- This idea is basically anchored on the right of everyone to education.





Dimensions of Diversity

The “Dimensions of Diversity” wheel shows the complexity of the diversity filters through which all of us process stimuli and information.

That in turn leads to the assumptions that we make (usually about the behaviors of other people), which ultimately drive our own behaviors, which in turn have an impact on others.



Dimensions of Diversity

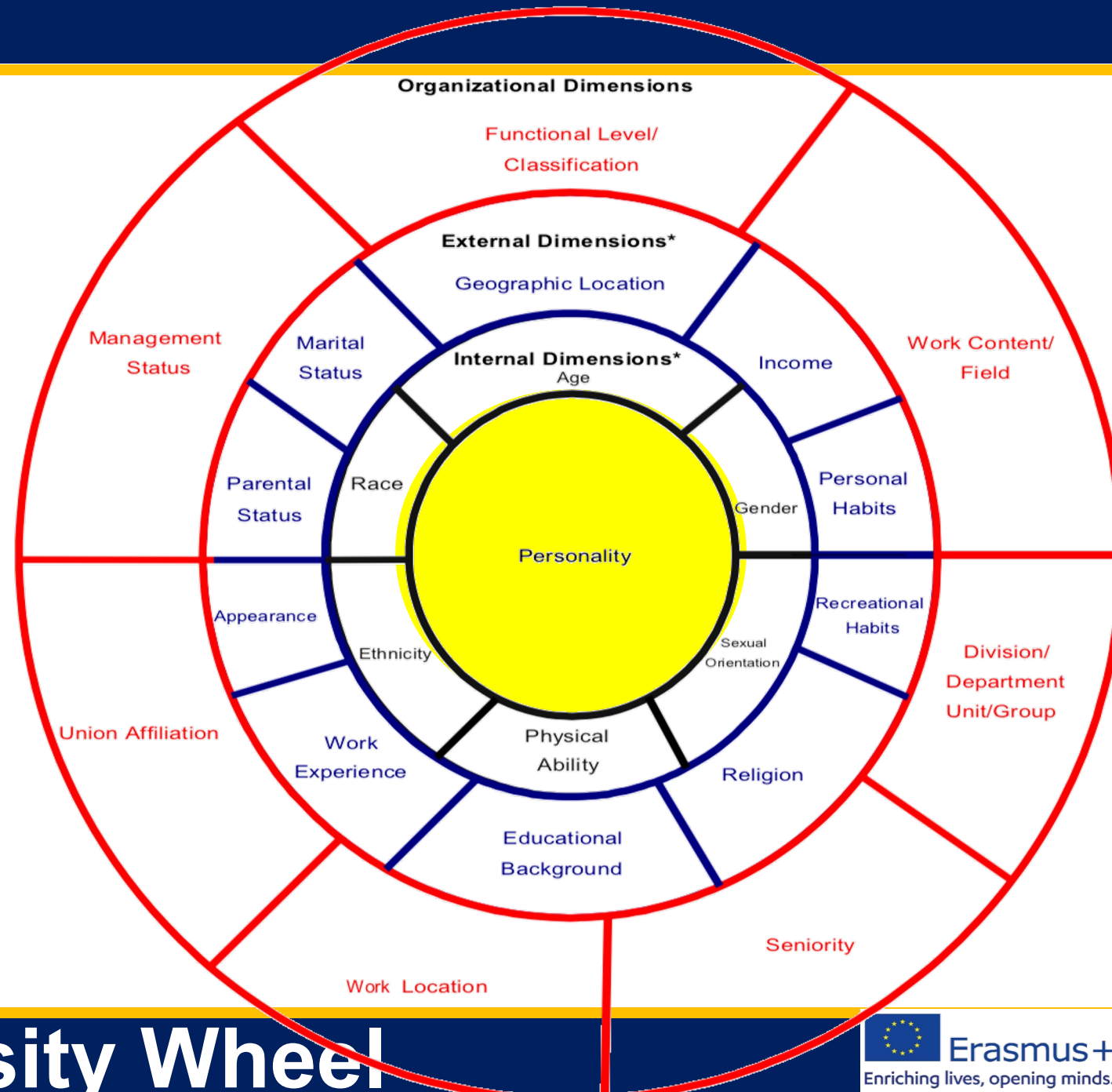
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The Four Layers Model

1. *Personality*
2. *Internal dimensions*
3. *External dimensions*
4. *Organizational dimensions*

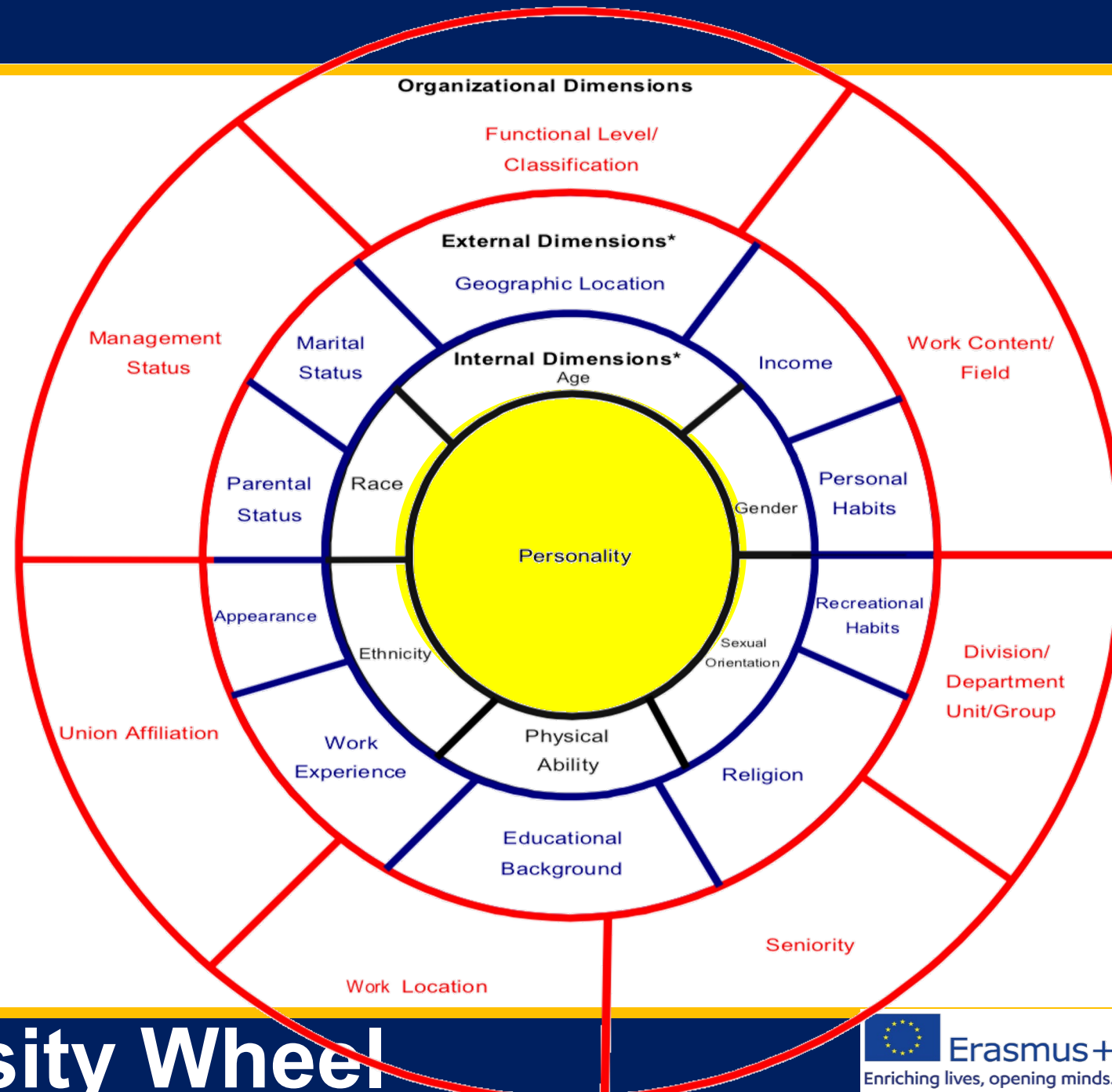




The Four Layers Model

1. Personality

- This includes an individual's likes and dislikes, values, and beliefs.
- Personality is shaped early in life and is both influenced by, and influences, the other three layers throughout one's lifetime and career choices.

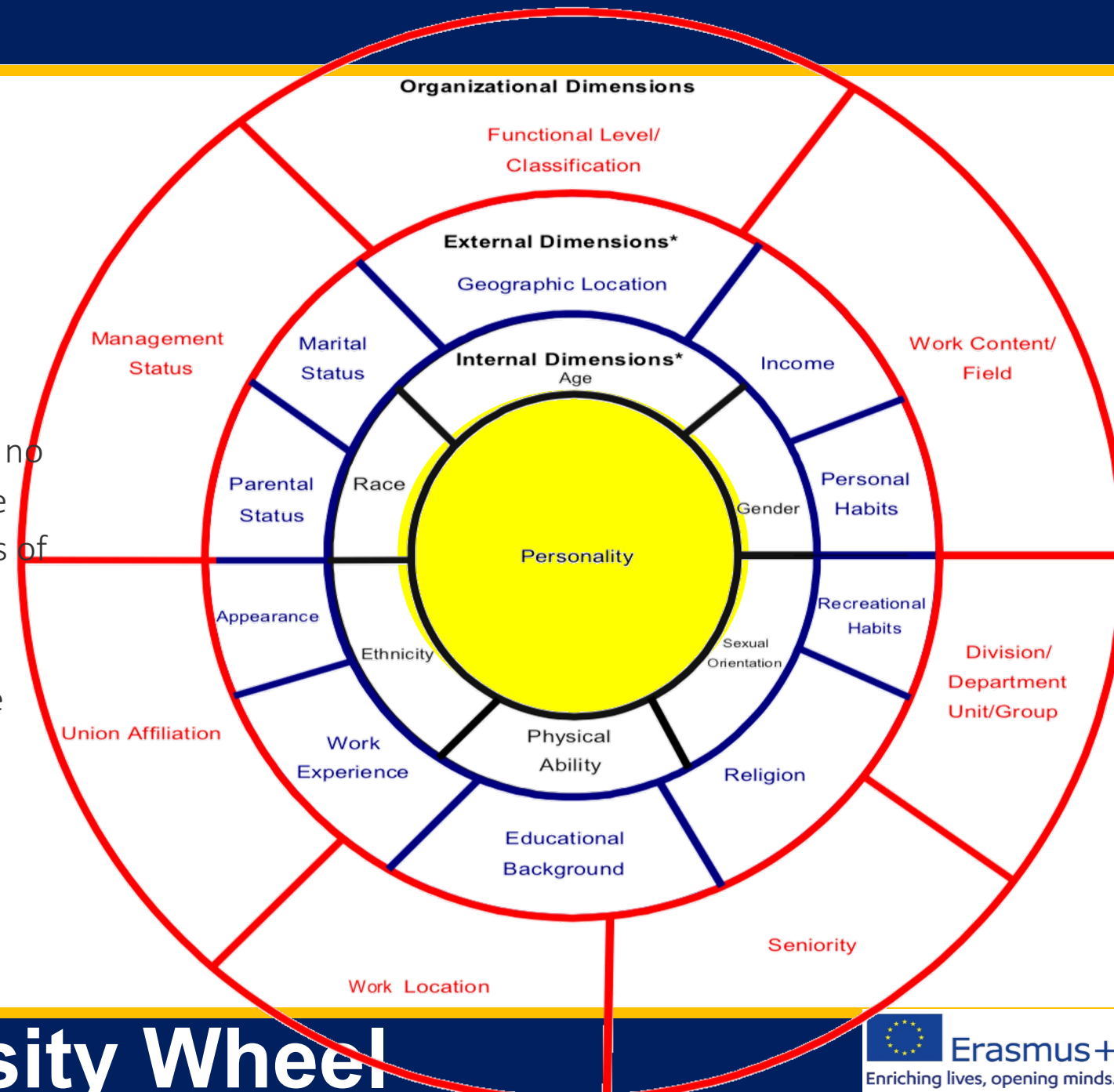




The Four Layers Model

2. Internal dimensions

- These include aspects of diversity over which we have no control (though "physical ability" can change over time due to choices we make to be active or not, or in cases of illness or accidents).
- This dimension is the layer in which many divisions between and among people exist and which forms the core of many diversity efforts.
- These include the first things we see in other people, such as race or gender and on which we make many assumptions and base judgments.

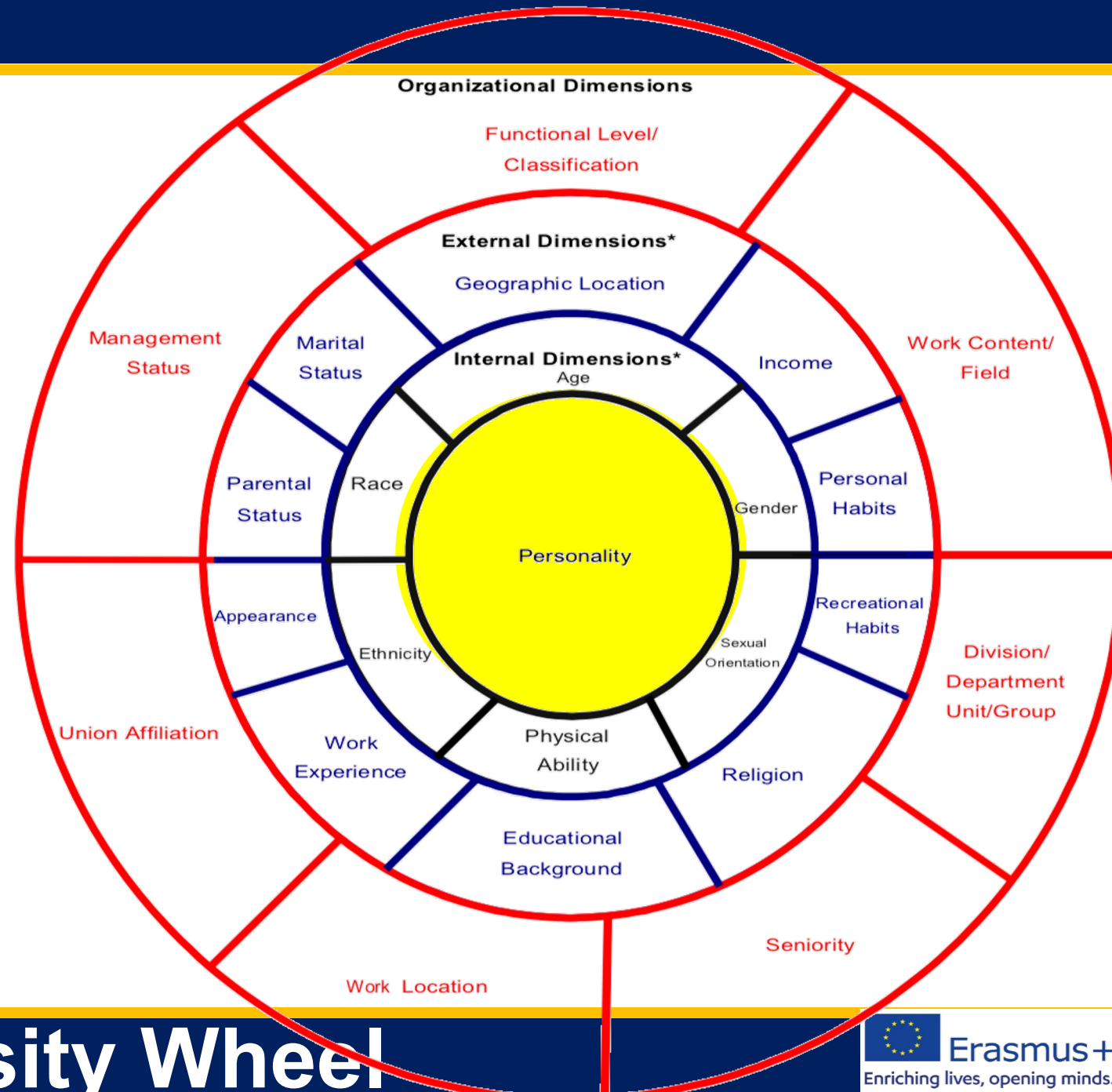




The Four Layers Model

3. External dimensions

- These include aspects of our lives which we have some control over, which might change over time, and which usually form the basis for decisions on careers and work styles.
- This layer often determines, in part, with whom we develop friendships and what we do for work. This layer also tells us much about whom we like to be with.

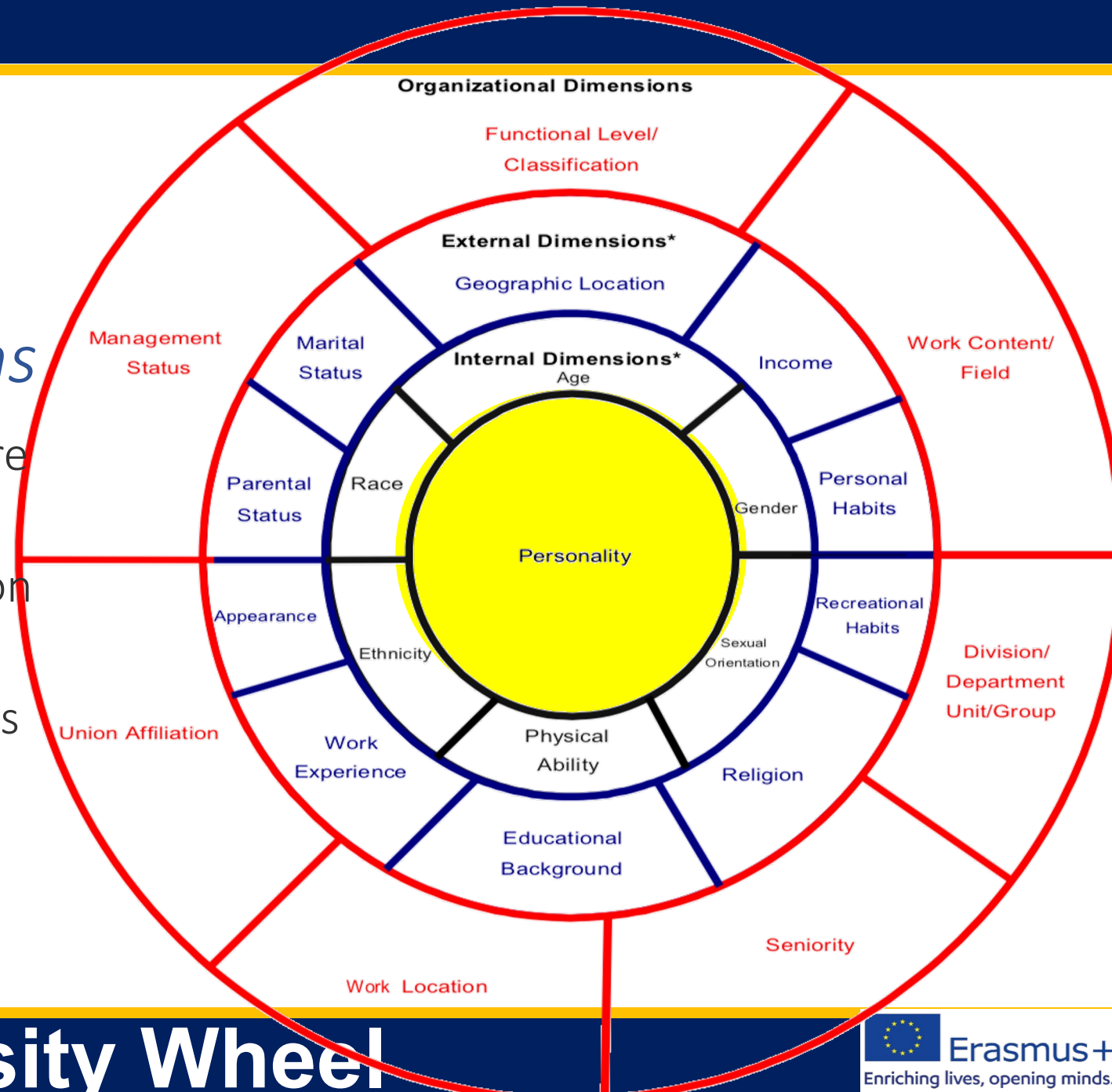




The Four Layers Model

4. Organizational dimensions

- This layer concerns the aspects of culture found in a work setting. While much attention of diversity efforts is focused on the internal dimensions, issues of preferential treatment and opportunities for development or promotion are impacted by the aspects of this layer.





Heterogeneity in Class: Walkthrough

1. Teacher-participants will identify specific roles that represent diversity in class
 - a. Student with disability
 - b. Student with no gadget
 - c. Student with low internet connectivity
 - d. Student belonging to an IP group
 - e. An average student
 - f. A gifted student
 - g. Student with low cognition
 - h. A teacher



Heterogeneity in Class: Walkthrough

2. The teacher will identify a topic for a 15-minute lesson.
3. The teacher engages her/his students in the discussion of the lesson.



<https://www.gettingsmart.com/wp-content/uploads/2017/04/Teacher-using-app-on-a-tablet-with-students-feature-image.jpg>



Heterogeneity in Class: Walkthrough

4. After the 15-minute lesson, each group will meet to discuss their group's responses to the following:

a. Sensitization to Heterogeneity and Diversity

- i. Which dimension of heterogeneity and diversity did you notice in the exercise?
- ii. How did you perceive the heterogeneity and diversity?
- iii. How did you learn from your role and experience the lesson?
- iv. How was your role influenced by other students?
- v. How did heterogeneity impact or influence the lessons?
- vi. How did you feel in the game? Did your feelings and impressions change during the lesson?



Heterogeneity in Class: Walkthrough

- b. Learning about diagnostic tools
 - i. How can teachers perceive/recognize the different dimensions of the diversity wheel while teaching science courses?
- c. Learning about dealing with heterogeneity and diversity
 - i. How can I use different dimensions of heterogeneity in one experiment/lesson?
 - ii. Are all the teaching units suitable for dealing with different heterogeneity dimensions?
 - iii. What were the most important things you learned about heterogeneity and diversity that you can use in your science lessons?



Homework 1: Classroom Diversity

How diverse are your learners in terms of gender, ethnicity, affordance, need and ability?

Create a short survey and profile your students.

The following may be included in the survey:

1. age
2. sex and/or gender
3. type of elementary or high school graduated from
4. extra-curricular activities they participate in (e.g., music, academic clubs, dance, sports)
5. ethnicity
6. religious affiliation (or other belief system)
7. family monthly income or occupation of parents
8. MT and languages fluently spoken
9. special needs or abilities
10. would they consider going to STEM courses in the future

Adopted from SciEd 701 Module, Pelgone (2021)



Homework 2: Inclusion Practices

How do we make or keep our classroom inclusive?

In this task you would need to review some inclusive teaching or inclusion checklists from references.

Collaboratively develop your *inclusion checklist* that may help guide teachers in making their SCIENCE classrooms to be more inclusive or to address the diversity which you have recognized.

Adopted from SciEd 701 Module, Pelgone (2021)



Note to teachers

1. Get to know them. Express interest in diversity.
2. Communicate with them
3. Acknowledge and respect them
4. Practice cultural sensitivity
5. Incorporate diversity in the lesson plan and IMs
6. Allow for flexibility and choice
7. Maintain high expectations and keep the standards

FILIPINO LEARNER

Diagnosing the Learner

Based on your survey, describe the target audience for this lesson; what types of learning styles will you need to be mindful of?

Class/Learner's Demographic Profile

Year Level: _____

Ethnicity: (please write the percentage of students belonging to specific Ethnic groups)

Course/Discipline: _____

Language(s): (please write the percentage of the specific languages where students can speak proficiently)

Number of Students: _____

Gender: (please write the percentage of the gender of the students including LGBTQIA+)

Other forms of Heterogeneity (e.g., Technical Capability, economic status, race, disability, others with special needs)

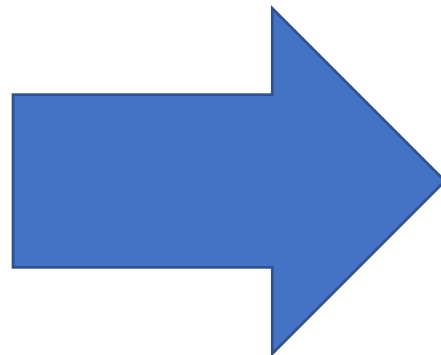
Misconception/Course Topic Impression

**clipped from the ESTA Lesson Exemplar Template*



What ESTA believes...

Understanding and
Recognizing
**Classroom
Diversity**



**Effective TL
Experiences in
Science**

- ESTA-PH-PNU Team



“Every group we are a part of such as our classrooms are in fact diverse. No class is completely homogenous as each learner is unique. Since our learners have various backgrounds, needs and abilities, the way they are educated should be sensitive to these differences. Let us advocate that ‘no one size fits all’ in education and that everyone is welcome in our science classrooms. Science is for everyone and we should make sure that this is upheld starting in our classrooms.”

From SciEd 701 Module, Pelgone (2021)



Salamat po mula sa amin!

Educating Science Teachers for All
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