I.   **What are the different learning styles and why are they important for the optimal teaching approaches?**

In order to reach the objectives set out in the project, and to be able to provide teachers not only with a toolbox that they can apply in their everyday work, but also with guidance on which tools will be most efficient in their classroom, the first step to take is to make an evaluation of the different learning styles of the students.

As discussed above, every person is unique, and that uniqueness transcends to the way we learn as well. In order for the teacher to be able to optimally transfer the information to the class, he/she needs to be aware of the differences of the students.

According to Howard Gardner's multiple intelligence theory, there are seven learning styles. However, for the purpose of this project and the efficiency in the classroom, we recommend a focus on the four main categories, namely: **Visual, Auditory, Kinesthetic learners** and **Reading/writing learners**.

<u>What does each of these learning styles comprise of?</u>

1. Visual learners

How to recognize visual learners in your class: When a student is visually inclined, he/she is partial to seeing and observing things, including pictures, diagrams, written directions and more. They often doodle, use different colours for notes, make lists that are short and to the point, etc.

How to cater to visual learners: The use of white/black board is important when teaching this type of students. Opportunities for drawing and diagrams need to be utilized. Other visual materials such as pictures and short videos, as well as powerpoint presentations and handouts with multiple colours and distinct fonts. Be sure to give students a little time and space to absorb the information.

Tips on learning strategies that can be recommended to students:

- Utilize graphic organizers such as charts, graphs, and diagrams.

- Redraw your pages from memory.

- Replace important words with symbols or initials.

- Highlight important key terms in corresponding colours.

2. Auditory learners

How to recognize auditory learners in your class: If a student is an auditory learner, they will tend to learn better when the subject matter is reinforced by sound. They prefer listening rather than taking notes, reading out loud and even making voice notes. According to researchers, they also speak up in class more and tend to repeat questions before answering them, and in some cases can be slower in reading.

How to cater to auditory learners: This type of students thrives during discussions. Music as a background stimuli during a lecture or class can be of help, as well as recordings wherever appropriate. Also, it is recommended that during class they should be involved by being asked to repeat new concepts back to you.

Tips on learning strategies that can be recommended to students:

•   Record your summarized notes and listen to them on tape.

•   Talk it out. Have a discussion with others to expand upon your understanding of a topic.

•   Reread your notes and/or assignment out loud.

•   Explain your notes to your peers/fellow "aural" learners.

3. Kinesthetic learners

How to recognize kinesthetic learners in your class: Kinesthetic learners, also known as tactile learners, learn through experiencing or doing things. They prefer getting involved in experiments (say in chemistry or physics classes), can take advantage of building items or handling tools. They are also prone to needing movement and are good at sports.

How to cater to kinesthetic learners: These types of students have to be actively involved in class. For example, a suggested approach is to instruct students to act out a certain scene from a book or a lesson you're teaching. Having physical examples of elements of the lesson can prove to be vital. Once kinesthetic learners can physically sense what they're studying, abstract ideas and difficult concepts become easier to understand.

Tips on learning strategies that can be recommended to students:

•   Use real life examples, applications and case studies in your summary to help with abstract concepts.

•   Redo lab experiments or projects.

•   Utilize pictures and photographs that illustrate your idea.

4. Reading/writing learners

How to recognize reading/writing learners in your class: As the type title suggests, these students rely on writing and reading for learning. This suggests that they tend to express themselves better through writing, are fast and eager readers and, unlike the visual learners, they take longer notes. Usually, they need to write something down to remember it.

How to cater to reading/writing learners: This style corresponds the most to the so–called traditional education system. What can be recommended here, if the students falling within this group asks to write a paper instead of doing a presentation, or if they need more time to write things down, this should be allowed and would lead to better results. Also, including text when using diagrams or charts could be beneficial.

Tips on learning strategies that can be recommended to students:

•   Write, write and rewrite your words and notes.

•   Reword main ideas and principles to gain a deeper understanding

II.   **Guide for the use of the questionnaire**

As mentioned above, understanding that there are different types of learners and being able to distinguish between them is important and can lead to a more efficient, and also dynamic and exciting classroom experience for both teachers and students. More often than not however, students themselves are not consciously aware of what type of learner they are, or they may not have distinct enough traits for the teacher to simply notice. Also, in a classroom where only the traditional education system approaches are used, it can be even more difficult and time consuming to make that distinction. In order to support teachers in this process, a questionnaire has been developed based on multiple available ones that are grounded in research. The objectives of the questionnaire are:

- To raise teachers' awareness of the profile of the classroom in a short span of time
- To allow teachers to select the most appropriate tools and methods for them to use, based on that profile
- To raise students' awareness of their own learning style preferences
- To encourage students to expand the learning styles they use
- To help students get to know each other and foster respect for and awareness of diversity in learning styles

1. How should you present the questionnaire?
- Designate enough time for the questionnaire. Recommended time is: ……..
- Explain to the students that everyone is different and unique in how they learn.
- Share your understanding of it and clearly explain you wish to provide the most useful and efficient learning experience for them.
- Explain that they will have to fill out a short questionnaire. There are no right or wrong answers. They should answer truthfully as this would be helpful for them to utilize their strengths, as well as for you.

2. The Questionnaire is accompanied by an additional guide for evaluation of the results.

3. Evaluation of the results and next steps
- After distributing the questionnaire and going over the results, it is recommended to have a discussion, either with the class as a group, or individually. Each learning style description should be read out loud, so that all have an understanding of the content.

Allow for any arising questions to be covered during this process. The students should be made aware of their results. Parents should be made aware, so as to use them as a guide for home studies if necessary.

- It is recommended that a chart is made with the overall results, so that you have the overview of the class profile and are able to select the right approaches for your future teaching.
- Encourage the students to try other learning styles and expand the ways in which they take in new information. This can be done in an informal manner. Students can exchange among themselves their favourite and most efficient learning techniques. Remind students that tasks that do not seem quite as suited to their style preferences will help them stretch beyond their ordinary comfort zone, expanding their potential to adapt to different learning and working situations.
- If needed, the questionnaire can be distributed again, after a significant amount of time to see if there are changes in the learning styles, and/or whether students have expanded the range of learning methods they use.

Learning Style Questionnaire

Please answer all questions. Choose the answer that best describes your preference. Please select only one of the options per question. And remember, there are no right or wrong answers!

1. I remember something new by:
   a. Discussing it with someone or listening to a recording/podcast
   b. Writing it down
   c. Watching a video about it
   d. Trying it out

2. During a class, I tend to:
   a. Take as many notes as I can
   b. Watch the teacher and what he/she is presenting
   c. Move around and get involved in the class
   d. Listen to the teacher

3. When I listen to a song, I:
   a. Visualise the video
   b. Open up the lyrics
   c. Sing along as I know every word
   d. Start dancing

4. If I want to learn about a new topic that I find interesting, I:
   a. Find an article
   b. Talk to someone who knows about it

    c. Find a chart that uses maps and graphs to describe it
    d. Go to a class about it

5. When I am talking to someone, I:
    a. Listen intently to what he/she is saying
    b. Watch his/her hand gestures and face
    c. Plan what activity we can do together
    d. Try to remember his/her name and think that I need to write it down

6. When I want to find a place, and I do not have internet on my phone, I:
    a. Call someone to explain to me how to get there
    b. Find a paper map and follow that
    c. Ask for a nearby location that I know
    d. Ask someone to come with me

7. When I take notes in class, I:
    a. Do not take notes
    b. Make long notes- almost the entire lesson
    c. Prefer to listen or make recordings
    d. Take short, to the point notes. I use different colours

8. When the teacher assigns homework, I would prefer if he/she:
    a. Explains in class, in detail what the task is about
    b. Gives a written detailed explanation
    c. Provides a video or a presentation on the task
    d. Gives an example

9. When I am watching a foreign movie, I:
    a. Do not care if I do not understand everything they are saying
    b. I listen carefully, not to miss a word or the soundtrack
    c. I take a lot of breaks
    d. I read the subtitles the entire time

10. When I have a group project, I:
    a. Prefer that everyone writes their own part separately
    b. Prefer if we have long discussions and talk everything until we agree
    c. Prefer that everyone prepares and then we exchange materials
    d. Prefer that we get together and do it at the same time

11. When I study for a math test at home, I:
    a. Review graphs and illustrations
    b. Use counters or blocks to practice skills
    c. Have someone quiz me on questions
    d. Take written practice tests

12. The easiest test questions are the ones that:

a. Are read out loud to me
b. Are word problems
c. Ask me to use a tool like a ruler or a calculator
d. Include diagrams or picture examples

13. My favourite kind of project is:
    a. An art project
    b. A music project
    c. A book report
    d. A science experiment

14. I learned to ride a bike by:
    a. Watching a sibling or friend do it
    b. Listening to my parent tell me how
    c. Reading about how to ride
    d. Getting on a bike and trying it

15. In group projects I am the person who:
    a. Gathers the needed supplies
    b. Talks more than everyone else
    c. Takes the notes
    d. Draws the pictures or charts

16. When trying to remember someone's telephone number, I:
    a. Hear it once and remember it
    b. Need to write it down
    c. Start using my hands to duplicate the digits
    d. Have to visualise it in my head

17. When I read a book:
    a. It helps to use my finger as a pointer when reading to keep my place
    b. I am fast and I cannot stop until I finish the chapter
    c. I imagine what all the characters look like
    d. I listen to audiobooks

18. When I think about what I did yesterday, I am most likely to recollect:
    a. A picture
    b. A sound
    c. The person I was with and what I/we did
    d. Words to describe what happened

19. When I want to relax, I:
    a. Read a book or an article
    b. Go outside and do activities
    c. Watch a movie or play a video game

    d. Listen to music

20. When I am learning a new multiplayer game, I tend to:
    a. Go right ahead and try to play
    b. Ask for an explanation
    c. Read the instructions and rules first
    d. Watch others play around and then I join

EVALUATING THE LEARNING STYLE QUESTIONNAIRE

For teachers' use only

In the Table below, you will find the corresponding learning style for each question's answer. Mark the selected answers by the student and sum up. The prevailing one is their dominant learning style. There are cases where two learning styles have equal or close scores - that suggests that the student has a wider range of learning techniques.

Visual: V

Auditory: A

Kinesthetic: K

Reading: R

Question	Answer A	Answer B	Answer C	Answer D	Selected
1.	A	R	V	K	
2.	R	V	K	A	
3.	V	R	A	K	
4.	R	A	V	K	
5.	A	V	K	R	
6.	A	R	V	K	
7.	K	R	A	V	
8.	A	R	V	K	
9.	V	A	K	R	
10.	R	A	V	K	
11.	V	K	A	R	
12.	A	R	K	V	
13.	V	A	R	K	

14.	V	A	R	K	
15.	K	A	R	V	
16.	A	R	K	V	
17.	K	R	V	A	
18.	V	A	K	R	
19.	R	K	V	A	
20.	K	A	R	V	

Total distribution:

V:……………….

A:……………….

R:……………….

K:……………….

Learning type:……………………………………………………………………………….

The following table summarizes the main observable characteristics indicative of the four learning styles. It provides an informal means of assessing the preferred or dominant approach to learning. Please note that this is not an exhaustive list and other characteristics may also be manifested.

MODALITY	VISUAL	AUDITORY	KINESTHETIC (Hands-on)	Reading/Writing
PREFERRED LEARNING STYLE	Learns by seeing or watching demonstrations.	Learns through verbal instructions from self or others.	Learns by doing and through direct involvement.	Learns by writing down or reading.
SPELLING	Recognizes words by sight; relies on configurations of words.	Uses a phonics approach; has auditory word skills.	Often is a poor speller.	Good speller; often has to write the word in order to be sure of the spelling.
READING	Likes description; sometimes stops reading; may rely on	Enjoys dialogue and plays; avoids lengthy descriptions;	Prefers stories where action occurs early; fidgets while reading; not	Enjoys reading long texts with complex structures and lots of facts.

	imagery; intense concentration.	unaware of illustrations; moves lips or sub-vocalizes.	an avid reader.	Memorises and understands information like that.
HANDWRITING	Tends to be good, particularly when young; spacing and size are good; appearance is important, takes colour coded notes.	Has more difficulty learning in initial stages; tends to write lightly.	Good initially, but deteriorates when space becomes smaller; pushes harder on the writing instrument.	Tends to be good and neat.
MEMORY	Remember faces, but forgets names; writes things down.	Remembers names, but forgets faces; remembers by auditory repetition.	Remembers best what was done, but not what was seen or talked about.	Good, especially facts that have been read/written.

For methods and approaches to be used for each type of learner, please refer to the GRT Learning style guide and the Project materials' database. Most classrooms will be highly mixed, so the optimal approach is to mix the approaches and track the results.

References and additional resources

Malvik, C. (2020), 4 Types of Learning Styles: How to Accommodate a Diverse Group of Students, as seen at: https://www.rasmussen.edu/degrees/education/blog/types-of-learning-styles/

Learning Styles: All Students Are Created Equally (and Differently.), as seen at: https://teach.com/what/teachers-know/learning-styles/

The "learning styles" questionnaire has been compiled in part with resources from https://kids.lovetoknow.com/wiki/Learning_Style_Test_for_Children