



A Practical Style-Matching Guide for Interactive Learning

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Abstract

This research paper is a pragmatic approach to provide an in-depth observation and analysis of the four modality learning styles (Visual, Auditory, Kinesthetic and Digital) and their cognitive roles in the way students receive and process information. Emphasis is given to the digital style that has not received a proper attention in previous studies, and its characteristics were mistakenly distributed among other styles, especially the auditory. The author of this manuscript used her qualified understanding and worthwhile experience to present a newly developed "learning style self-assessment questionnaire". This questionnaire proved to provide teachers with a tool and a practical guide that helped them recognize their own teaching styles, as well as the learning styles of their students and had a chance to incorporate this awareness into the design of teaching strategies and course activities that appealed to all learning styles. The present article also provides a practical guide designed to accommodate and satisfy the cognitive needs of each learning style. This paper enables educators to: (1) determine their preferred teaching style; (2) define important characteristics (preferred words and phrases, as well as classroom behaviors) for each of the four styles; (3) understand ways in which they can calibrate their individual teaching style(s) to match students' learning styles-in effect build rapport and make better connection with them, and (4) create an accelerated-learning environment that is both fulfilling and productive.

Keywords: learning styles, teaching styles, English as a Foreign Language (EFL), learning style self-Assessment questionnaire.

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Introduction

There are several different theories of learning styles and several methods for discussing and categorizing these styles (Cassidy, 2004). Each researcher or theorist defines their own labels and categories for learners. The subject of learning styles has gained some popularity in the field of teaching and many authors have written on the subject (Dunn & Dunn 1978 & 1993, Given 2000, Riding & Rayner 1998, Sims & Sims 1995, Schmeck 1988, Silver et al. 2000, Tomlinson 1999, Tileston 2000, and Vail 1992). A report on the validity of learning style practices was also published (Pashler et. al., 2009). However, by studying this classification it has been concluded that some important types have been neglected in many of these studies; besides there were no clear cut characteristics between the major learning styles; these issues will be treated properly in this article.

Statement of the Problem

The main problem this paper addresses is how to overcome the mismatch problem between the instructors' teaching style and the students' learning styles. This mismatch leads the students to be bored and

inattentive, do poorly in tests, get discouraged about the course and may conclude that they are not good learners at a certain subject. On the other hand, instructors could become overly critical of their students and begin questioning their competence as teachers.

Another problem that led to this paper lies in the fact that some important learning styles have been neglected in many of the previous studies; besides, there were no clear cut discriminating characteristics of the major learning styles.

Purpose of the Study

The present paper aims at:

- Understanding the characteristics of all learning styles, including those that are not only neglected but also mistaken and/or distributed among other styles;
- Identifying the best teaching strategies that match each learning style.
- Identifying the best assessment strategies that match each learning style.
- Paving the way for university professors as well as teachers to deliver their content to properly meet the needs of all the learning styles present among their students.

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Importance of the Study

- The present paper presents a new definition for the learning styles that will certainly resolve a commonly spread confusion regarding the equivalence between people's learning and teaching styles.
- The paper also presents a new "learning style self-Assessment questionnaire" that is designed by the author to aid educators/instructors determine their preferred teaching style.
- Unlike many others, this paper offers educators/instructors a clear step-by-step, practical, applicable and tested guide that would guarantee: (a) better students' involvement in the learning process; (b) increased students' self-esteem; and (c) better teacher-student interaction, connection and relationship; (d) build an accelerated-learning environment that is both fulfilling and productive.

Definitions

After reviewing the various definitions of 'learning style', and stemming from the author's own experience and qualification of being an internationally certified HRD consultant , the author of this paper presents her own definition of a learning style that she prefers to follow, and that is:

"A learning style is the way(s) people use to represent and process sensory information in their brain, and the way(s) they present their understanding of the learning experience to others; therefore it is an intrapersonal and interpersonal communication style."

Based on this definition, we expect our learning style to be almost identical to our communicating or teaching style. By introducing this new definition I am aiming to resolve a commonly spread confusion regarding the equivalence between people's learning and

Table I. Observed sample

No. of programs	observed participants per program	Average of training days	Training hours/day	Observation hours/program	participants	Total observation hours
20	20	4	8	32	400	1024

- b. Being a university teaching faculty, the author herself applied the presented questionnaire on 253 of her undergraduate students in Akhbar Al-Yom

teaching styles.

Methodology

Being aware of the nature of the present study, and the fact that the study will require a combination of qualitative research methods (observation, interviews) on one hand; and quantitative research method (designing a questionnaire) on the other hand; the author has adopted the pragmatic approach.

The writer in this article focuses on the NLP modality types for several reasons: (1) they are closely related to receiving, perceiving, and processing information; (2) they are well-tested and highly acceptable among researchers; and (3) they are built on the surface and deep structures of our communication. What is important for our purposes is to understand some of the basic principles underneath the labels of these types and how to use this understanding to reach and teach as many learning styles as possible.

Sample

- a. The present research was conducted on wide range of participants. As a certified international trainer, the author had the opportunity to train a huge number of university staff members. The training programs participants ranged from demonstrators to faculty and university leaderships who attended professional development training courses.. The author observed 20 training programs over a period of two years. Each program had 20 participants and lasted over a period of time that ranged between 3 to 5 days (based on the program), for 8 training hours daily. The Table 1 illustrates the details of the observed sample.

Academy, Egypt during the academic year 2012-2013. Table 2 illustrates the details of the students' sample.

Table II. Students' questionnaire sample

Department	No. of questionnaires distributed	No. of valid questionnaires	Total No. of questionnaires
Journalism	135	97	253
Computer science	48	35	
Engineering	154	121	

Each student was then notified by his/her learning style. The results of the questionnaires were handed to the other teaching staff members to guide them in dealing with and teaching to the students. The author

conducted a series of seminars for the students to enlighten them with the nature of their styles and its implications as well as the importance of understanding and appreciating other styles. These seminars proved to

be of great importance especially to the final year students in all departments, who were requested to present a group graduation project. Their awareness of such facts enhanced their cooperation and helped them to overcome many communication and handling obstacles.

- c. Similar seminar was conducted to the teaching staff. The teaching staff were also asked to fill out “The Learning Style Self-Assessment Questionnaire”. Table 3 illustrates the details of the teaching staff sample.

Table III. Teaching staff questionnaire sample

Department	Journalism	Computer science	Engineering	Total
No. of staff members	10	3	6	19

Theoretical Background

There has been a breakthrough in how we communicate, connect, receive and process information. Neuro-Linguistic Programming (NLP) is now well-accepted applied psychology that deals with the science and art of communicating to ourselves and others. To this science and its founders (Richard Bandler and John Grinder) we are indebted to fully understand people's different communication and learning styles (Bandler 2008 A & B, Boyes 2008, Molden & Hutchinson 2008). As a matter of fact, we communicate in almost the same way we receive, perceive and process information (Losier, 2009). Each person has his or her own learning style, governing how he or she prefers to receive and process information. The student's learning style is closely related to his or her cognitive style, and thus can be defined as a certain specified pattern of behavior and/or performance, according to which the individual takes in new information and develops new skills, and the process by which the individual retains new information and/or new skills (Sarasin, 1999).

There are several factors that can influence a student's learning style. Four are among the most important factors. They are: Environmental, Personality related, Hereditary and Developmental. It is believed that 3/5 of one's learning style is determined by genetics. So the combination of learning styles of the parents will partially determine their children's learning style. The other 2/5 is determined by outside factors (Sarasin 1999). The environment can affect all learning styles to some degree. If the classroom is too hot or too cold, or if there is outside noise making it difficult to concentrate or hear, all learning will be affected. However, some learners may be more affected than others. Learners who strain to hear you may begin fidgeting in their seats, or may just tune out because it is too much work for them to remain focused in the presence of such environmental barriers.

A student's personality can also have some bearing on his or her preferred learning style. A normally outgoing (extraverted) student may need to engage in group activities so that they feel they had a chance to discuss the learning. A more reserved or introverted student may resist group activities and prefer to study and work independently alone. These differences must be taken into consideration when we tailor our individualized teaching strategies and classroom activities. One of the most important things to understand about learning styles is that they are

developmental in nature. The learning style 'may' change over time, based on the experiences and the level of education. This is a natural process, so people who have been out of school for some time may be surprised to find that they do not learn exactly by the same way they remember learning by before.

Why Do Learning Styles Matter?

Carolyn Mamchur (1996) notes in her book ‘Cognitive Type Theory and Learning Style’ that “we do best in our own styles.” She further goes on to say that knowing your own style will help your students in the long run because “in working from a position of strength, we become more willing to bend and yield to the needs of others”.

Determining one's own learning style can tell why that person may favor certain types of activities over others and will give a new insight as to why that person (teacher) uses particular ways of teaching. Simply, discovering our learning style and reflecting on the various ways in which we learn, then determining the methods we prefer most will help us become better teachers. Sarasin (1999) states: “a relationship between learning styles and teaching styles is a factor in the success of postsecondary students.” Students will generally have trouble to attentively receive and properly process information in ways that are uncomfortable to them and do not match their preferred learning style. As has been clearly stated by Gregorc and Butler (1984) and Wlodkowski (2008), when a teaching style does not meet the needs of a particular learning style or heavily mismatch this style, learning motivation diminishes, thereby not much learning takes place. Current research shows that it is not only teaching to one particular learning style that works, it is the combination of all of the learning styles in a single lesson that makes the learning experience truly worthwhile. Hawk and Shah (2007) in their article, “Using Learning Style Instruments to Enhance Student Learning”, stressed the fact that implementing one single approach to teaching does not work for every student. Incorporating different teaching methods based on student learning styles can also be a frustrating process sometimes, but we appear to learn best when teaching styles and technologies fit our learning styles, Al-Deeb (2016). When they do not fit, students can experience feelings of great insecurity, frustration, anger, anxiety, alienation, overcompensation, and futility (Gregorc and Butler 1984). Certainly, no one

wants their students to feel this way.

It is my belief that the teacher's ability to calibrate his/her teaching strategies to meet the students' learning styles and needs is the number one key to create rapport, build teacher-students connection and accelerate the learning process. Teaching in terms of individual learning styles has many advantages: (1) understanding a student's learning style puts the focus on the student's strengths rather than weaknesses; (2) when we teach according to our students' preferred learning styles, we are telling them that we understand that they are individuals and probably learn differently than the person(s) sitting next to them, and (3) when we calibrate our learning styles to our students' styles, we communicate better and create a fulfilling and accelerated-learning environment.

Not only do teachers have to be content experts, but also they have to share that content in many different ways that allow everyone to understand it. Thus, as educators, we can use learning styles literacy to help in planning our classes and ensure that we are reaching each major style with our planned activities. However, like all other teaching tools, knowledge of learning styles can work only if other qualities of good teaching are also prevalent (Mamchur, 1996). According to Mamchur, understanding individual learning preferences and differences is an increasingly popular and useful tool, serving teachers in four ways: First, teachers have a method to teach that is diverse and adaptive enough to meet the needs of various learning styles. Second, teachers can indicate to students that they care about the individuality and integrity of each learner. Third, because learning style is related to teaching style, teachers can better understand their own teaching styles' gifts and challenges. Johnson and Johnson (1999) stated that "teachers teach the way they were taught. Fourth, teachers can gain insight into how they work together in this particular world we call "school". In this regard, I suggest that school teachers and university professors in the Arab world be trained on learning styles literacy, the art of speed-reading these styles and on how to use this information to better connect with students having different communication and learning styles.

The 4-NLP Learning Styles

The NLP model identifies students in one of four modalities, based on how they prefer to receive and process information. It is also important to note that although we record information using all four modalities, generally most of us have a preference for one (Bandler 2008 A & B, Losier 2009). The following sections will give the readers detailed characteristics of each style and how they can be used to better connect with students through individualized activation and instructional strategies, as well as classroom activities. Following each section, the author- based on her study, experience and observation as a university teaching staff as well as an experienced certified trainer- will provide a deeper analyzed section specifying the behavior of each style

when engaged in a learning experience.

Auditory Learners

Auditory learners are 'traditional' students. They learn best by hearing and listening, so traditional instructional techniques, such as lectures work very well for them. This is the way that many of us were taught, use in teaching and then to test. For this type of learner, methods that revolve around talking and listening work very well. Schools have traditionally tended to reward the students with auditory learning strengths. Therefore, many of the teaching strategies used in today's classrooms are appropriate for the learner who prefers to learn through the auditory mode (Sarasin 1999). It is unfortunate, however, that students acquiring this learning mode could only represent one fourth of the total number of learners in an educational setting, at least theoretically. Therefore, teaching effectiveness can be hampered by directing high quality course contents to only few students. Each type of learner has a set of descriptors that help define more about the learner. Auditory learners are:

- Detail-oriented - they can take pieces and pull them together to understand the whole concept
- Interdependent - like to talk to others and hear from them
- Achievement-oriented - like to do well on written tests, win contests
- Memory-oriented - can memorize events word for word fairly easily
- Competitive - like to be placed in situations where there is a winner/loser
- Skill-oriented - like to learn and display new skills, less interested in theory
- Idea generators – like to take part and have voice in brain-storming sessions
- They value 'fairness' and like to improve processes and things.

In looking at the auditory learner descriptors, we see a student who will do well when presented with specifics and facts and allowed to take time and process those facts into a larger concept.

The auditory style in a learning setting:

- Learns best by hearing and remembering information they hear
- Distracted easily, either by outside noises or inside music
- Tend to talk to self aloud
- Participates in class discussions and brain-storming sessions
- Tapes and then listens to lectures later
- Uses mnemonic devices to help remember things

Visual Learners

Visual learners are almost polar opposites of auditory learners. Lectures and class discussions do not work well for them as they have a difficult time following along since there are no visual clues for them

to grasp. So the way to teach visual learners should be completely different than how to teach auditory learners. Sarasin (1999) mentioned that in order to accommodate students with visual learning strengths and needs, instructors need to almost completely abandon conventional approaches and develop innovative ways to address the needs of visual learners.

Visual learners are able to work from the general to the specific. They are:

- Abstract - they like to receive clear and abstract information when learning new concepts
- Global - they see the 'big picture' before seeing its parts
- Concrete - like to 'see' things to understand them
- Active - like to be involved
- Affective - relate learning to emotions but not as much as Kinesthetic learners
- Field-sensitive - learn by looking at the world around them
- Concept-oriented - see concepts before individual facts
- They value 'Time' and are good time managers

The visual style in a learning setting:

Visual learners need time to take what they hear and make it into some sort of visual so that they can remember it. They need to be able to relate it to their environment. Visual learners also:

- Like graphics, pictures, diagrams
- Find verbal instructions difficult as their mind tends to wander during lectures
- Like to read, generally a good speller
- Doodle frequently
- Organize well
- Have good handwriting
- Notice details even though not detail-oriented

Kinesthetic Learners

Kinesthetic learners are the movers of the education world. They learn best by doing whatever it is they are learning, whether it is a computer application or a biology lab. They are tactile and use their senses to help them learn and are often discouraged from learning in their preferred method at an early age. The tactile learning style is the most neglected at the postsecondary level; their needs are rarely addressed, other than in classrooms intended for the actual doing, such as science laboratories (Sarasin, 1999).

Kinesthetic learners are:

- Dependent and independent - need to receive information and stimuli from environment and others and then be free to incorporate it into their learning as necessary
- Creative - in problem-solving approaches and in their work
- Behavioral - associate physical behaviors with learning

- Interacts in a hands-on fashion - must be physically involved
- Physical by nature - in everything that they do, when they read, their lips or fingers will move to help them retain information better
- Sensory - use all their senses (probably unpreferably) in the learning experience
- Active - in all aspects of learning
- They value 'Connection' and are good in socializing and building relationships

The kinesthetic style in a learning setting

Kinesthetic learners are often mistakenly labeled as hyper or unable to pay attention when they are learning since their need for movement often appears as if they are tuned out, when in reality they are using movement to help them retain focus. Kinesthetic learners also:

- Like to be in motion
- Fidget in seat, taps pencil or foot often
- Tend to be a poor speller
- Do not like to read
- Like to take notes
- Use hands while speaking
- Work through problems physically

Digital Learners

It is unfortunate that most authors ignore this learning style and often confuse it with the auditory style. This does not imply a very clear or absolute distinction between the two, for they are complementary in many aspects. The present research, however, selects the characteristic differences between the two types and how they specifically affect receiving and processing information. Digital learners are almost on the opposite pole of the kinesthetic learners. Digital learners are:

- Independent - like to do things solely on their own without being told what or how to do them
- Reflective – sit quietly in the back of the class and reflect deeply on the information they gather
- Logical - objective and may not be up to funny games
- Decisive - are slow, yet not hesitant, in making decisions
- Detail-oriented - like to gather facts and figures on the same subject from different sources
- Knowledgeable – value knowing but do not give information unless they are specifically asked for
- They value 'Knowing' about their future and are great strategic planners and problem solvers.

The digital style in a learning setting

Digital learners are often labeled as the quiet thinkers. They learn from detailed information by sequencing the pieces in a logical order. Digital learners also:

- Like tough questions, issues or problems that make them think deeply

- Do not like to be interrupted while studying or solving problems or answering exams
- Memorize by steps and sequences
- Tend to be slow in answering teacher's questions, yet often come up with very good answers
- Like assignment and individual projects

Determining One's Own Learning Style

The first step toward being able to calibrate our students' learning styles is to be aware of our own style. To do so, we need to take a learning style questionnaire. The present article compiles a concrete questionnaire for determining the aforementioned 4-modality learning styles. Once you know your own learning style, as a teacher, you can read about the other three styles and be aware of similarities and differences between your style and the other three. If possible, it is useful to have students complete the same questionnaire. You can explain to them that the information generated from the questionnaire will help you building rapport and connection with them so that you will both have a more productive and fulfilling learning experience. It may be helpful to watch and listen closely, especially at the beginning of the academic year, for common words and phrases that each type (student) preferably use in their communication and use them as clues to confirm your understanding of the students learning styles and to adjust your style to theirs accordingly. The author of this article suggests recording each student's learning style next to his or her name in the roll book. You can also have a worksheet of some of the key characteristics of each style so that you can refer to it until your learning-style reading and calibrating skills become your second nature.

The following is a list of some questions wherein learning styles and learning diversity must be taken into consideration:

Lectures - is lecture the main form of communication between you and your students? Do you incorporate visual or activity periods in between short snippets of lecture or do you lecture for long periods of time?

Presentations - what kind of presentations do you give (or ask your students to give in the class)? Are role-plays acceptable or encouraged? Do you use sounds or graphics in your materials?

Hands-on demonstrations - do you demonstrate concepts, theories, and procedures and allow your students to do so?

Models and Mind-maps - do you use models and mind-maps to sum up your lesson? Do you teach students the benefit of these tools in accelerating the flow of information between the two hemispheres of their brain while making those tools or reading and looking at them?

Quizzes/tests - are they oral or written, do your students get a chance to demonstrate the concept or are they expected to remember it and write it down?

“The Learning Style Self-Assessment Questionnaire”

The author of this article designed a 20-question questionnaire that has been searched, and compiled. A panel of experts served the validation purpose of the designed questionnaire. The author had used the Arabic version of this questionnaire extensively and successfully in her teaching and training programs. However, aiming to extend the benefit internationally, the author decided to formulate an English version, see Appendix 1.

After knowing or suspecting our dominantly preferred style(s) of learning by answering the above mentioned questionnaire, it would be a good idea to confirm our style(s) by learning more about its characteristics as well as reading about those of other styles that are opposite or different from ours.

Calibrating Teaching Strategies to address the 4-Modality Learning Styles

Calibrating is the art of paying attention and responding to what you have noticed. It is about picking up on several verbal and non verbal cues that indicate your students' learning styles and then adjusting your own teaching style to match or accommodate their learning styles. The first step is to be cognizant of the existing learning styles, then to review your course and activities with a critical eye and to finally meet each type of learning need throughout the course, or in every class. You should do some observation in the first few class sessions to see if you can determine your student's learning styles as this will help you plan later activities. Another method for obtaining this information is to have your students complete the Learning Style Self-Assessment Questionnaire presented in this article. The author also suggests having short discussions with the students in a non-formal manner. An empirical approach that teachers can use to discover the learning style of a particular student(s) is to listen closely and underscore any commonly used words that reflect his/her cognitive representation of the sensory information.

In Table 4, the author provides the reader with a list of these words in relation to their corresponding styles. There are many other words that the reader can search and use as a reference guide. It is worth mentioning that regardless of the means of typology, we should never use the types and styles that we suspect or determine as stereotypes or pigeon-holes for our students. It must also be emphasized that each type or style has gifts and may face some challenges and that no one style is better than the other all the time and under every learning conditions.

Table IV. Some words that are commonly used by each learning style

Auditory	Say, Listen, Hear, Repeat, Resonate, Sound , Noise, Whisper, Quiet, Buzz
Visual	See, Look, Show, Imagine, Visualize, Illustrate, Clarify, Appear, Focus, Picture
Kinesthetic	Feel, Together, Connect, Relate, Touch, Fit, Grasp, Comfortable, Fun, Play
Digital	Perceive, Consider, Know, Detail, Process, Logical, Sequence, Think, Rational, Conceive

Often the easiest way to accomplish the calibration task is to break up your course activities into chunks, each designed to meet one or more learning style needs. Every 20-30 minutes, change activities to ensure that another type of learning style is being stimulated in the process. This also helps to ensure that your class can remain focused and on-task throughout the class period and will encourage class participation and better attendance. If your course activities are important and worthwhile to all students, they will be motivated to take an active part in them.

Another tip that can be effective in engaging your students is to use activation strategies and modality based questions that engage all the learning styles. You can use one or two techniques that address each learning style to prepare the students for the coming instruction so that they can all begin to focus in their own way. The following practical guide will be divided into four major sections, one for each learning style.

Teaching Strategies for Auditory Learners

Anything that allows you to present information in a spoken manner works for auditory learners (A-Learners), whether it is giving a lecture, a video, or audiotape. Because they start with pieces to make the whole, try to provide information in small chunks and allow these learners to put together the facts and arrive at the conceptual big picture. Be sure to relate the pieces to one another because auditory learners sometimes ramble with new ideas and need to be put on track to reach conclusions among things that they are learning, so the pieces of new information should be arranged in a way that inter-relates them.

Activation Strategies for A-Learners

Use activation strategies to engage the students and focus their interest on what you are about to do. Some activation techniques you can use to engage the A-Learners include:

- Question what they currently know about a subject, ask where they obtained their information, ask questions that you will later answer during the lecture.
- Focus using directive questions - questions that require one answer and allows them to focus on the individual facts they prefer.
- Share verbally about the upcoming subject - ask them questions such as 'has this ever happened to you?' or 'what do you think about this?' to focus their attention on what is to come next.
- Reword directions, expectations and important points - not only of the lecture itself but of any

directions they are given for papers, assignments, or projects.

Instructional Strategies for A-Learners

Once you have got the attention of your auditory learners, you can proceed into the content portion of the class. Some techniques that work well for auditory learners are:

- Lecture - appeals to their auditory nature as well as their preference to hear things in small bits of information.
- Discussion - either between instructor and student or between students. You can also use small or large group activities with auditory learners as long as you give them a chance to talk through the issues. This will honor their brain-storming potential.
- Memory activities - such as sentence completers or drills that force them to rely on memories of lectures or readings.
- Joint work – after hearing the lecture, A-learners like to re-discuss the subject with their colleagues and have their voice heard in the subject matter. However, they are not as good in team work as the kinesthetic learners.
- Contests or learning games - appeal to their competitive nature.
- Verbal sorting - allow them to verbally categorize pieces of information-this appeals to their auditory nature as well.
- Question and answer period - where the students or you pose questions that require a specific answer. This satisfies A-learners' need to be uninterruptedly heard.

Teaching Strategies for Visual Learners

It is unfortunate that in many schools of the Arab world, visual learners (V-Learners) are not used to seeing information in their preferred modality style. Except in some specific courses (for example, the sciences, which rely on diagrams and other visual aids, and computers, which often include flowcharts and other procedural graphs). Those learners are not properly honored and we may lose their characteristic gifts and put them in stressful challenges while in school.

Activation Strategies for V-Learners

Activation strategies for visual learners are almost the opposite of those used for auditory learners, but they can be complementary without too much effort on the teacher's part. For example, if you plan to ask a series of questions to help focus and engage your auditory learners, provide your visual learners with a

handout of those questions before you begin. Allow them to take notes as you address the auditory learners. Other examples of activation strategies for visual learners include:

- Provide the big picture to students since visual learners work from the general to the specific.
- When they give answers, provide them with the opportunity to begin with the end in mind. They can later elaborate on the specifics.
- Provide as many charts and diagrams as you can for the concept.
- Write down the focusing questions you plan to ask your auditory learners and have the visual learners write their responses to you.
- Allow them to take notes whenever they want to. Their note-taking may not be in a linear, well-organized and structured fashion.
- Do a write, pair, share activity where you ask a question (or even provide a handout with the question on it), have the students write their response to it, then pair up with the person next to them and share their responses. This also appeals to the group-oriented nature of the visual learner.
- Provide them with a written agenda or schedule for the upcoming lesson so the visual learner can envision what will come next.

Instructional Strategies for V-Learners

Once the students are engaged, you can use the following techniques (in combination with the auditory, kinesthetic and digital learner techniques) to present the information:

- Use PowerPoint in presentations-the lecture that goes along with the presentation will interest the auditory and digital learners while the graphics and the slides will stimulate the visual learners.
- Use small and large groups in different settings to present and discuss new information, since visual learners tend to be moderately social and attuned to their environment. This will appeal mostly to kinesthetic learners.
- Give visual learners a chance to 'see' a concept in action, either through a demonstration, a model or a mind-map.
- Provide charts and diagrams for the concept, showing it at the end and working backwards.
- Allow some freedom in the learning event as visual learners tend to be less structured than digital learners.
- Encourage student role-playing or presentations to more fully interact with the material.
- Use technology so that students can 'see' the outcome of their assignment (such as using Computer Aided Drafting or hands-on time in a software application course).
- Encourage students to create mind-maps of the concepts rather than taking textual notes. This is often easier for students to remember later.

- Reward creativity in assignments and responses as visual learners are often open to creative methods and ideas.

Teaching Strategies for Kinesthetic Learners

Like visual learners, traditional classrooms are less welcoming places for kinesthetic learners (K-Learners). Since kinesthetic (or tactile) learners learn best by 'doing', they are rarely afforded that opportunity outside of lab environments, especially in crowded classrooms that are now common in many schools of some populated Arab countries. Instructors need to work especially hard to incorporate activities that appeal to the kinesthetic learner.

Activation strategies for K-Learners

Again, in conjunction with the activation strategies for the auditory, visual and digital learners, below are some suggestions for gaining the attention and focus of the kinesthetic learners in your class:

- Allow them time to physically interact with the objects in the lesson and then ask questions about their interaction and how they felt.
- Encourage kinesthetic learners to think in terms of resources required or used in the lesson. This satisfies their need to interact with the concrete as much as possible.
- Arrange the classroom in a more pleasing manner, like groups of tables or a circle, rather than just straight rows. Sometimes even the illusion of movement is enough to attract these learners. In this regard, we suggest animating some parts of the course-related power-point presentations.
- Provide them with the materials that you will use in the lesson to inspect and question.

Instructional strategies for K-Learners

After focusing your kinesthetic learners (as well as the auditory, visual and digital learners), you can move to the instructional strategies that appeal to them most. These strategies include:

- Provide practice time after introducing concepts, allowing for them to get a 'feel' of how it is done.
- Do not overwhelm them with many ideas and choices at once.
- Arrange for job shadowing or co-op experiences so that the kinesthetic learner can see the knowledge applied in a real world situation.
- Plan field trips to appeal to their need for movement, action and socializing.
- Encourage experiential learning whenever possible, experimenting with the outcome until they are satisfied and comfortable with it.
- Create guided 'simulations' of course material when field trips are not practical, using technology when possible.
- Demonstrate the new skill and ask them to do so.

Teaching Strategies for Digital Learners

Anything that allows you to present information in a logically sequential manner work for digital learners (D-Learners), whether it is you giving a lecture or a video or audiotape. Like for auditory learners, try to provide information in small chunks and allow these learners to put together the facts and arrive at the 'big picture' concept on their own. D-learners may need longer time than A-learners to arrive at the big picture. However, they usually come up with a well-integrated picture. Be sure to relate the pieces to one another because digital learners need to understand natural relationships among things that they are learning, so the pieces of new information should be arranged in a way that inter-relates them. Because they are very detail-oriented, allow them time to assimilate the information and always show trust and confidence in their ability. Trust is an important value for any learner, yet some learners are very much dependent on this value, and D-Learners appear to be the first to consider when students are granted this value.

Activation Strategies for D-learners

Use activation strategies to engage the students and focus their interest on what you are about to do. Some activation techniques you can use to engage the digital learner include:

- List the goals and objectives of the learning event or the activities to help them understand what you have planned for the class period.
- Question what they currently know about a subject, give them time to think and formulate their answers. Contrary to A-learners, you better not ask questions about future learning.
- Give them open questions - questions that require more than one answer and allow them to think on all the facts they prefer.
- Share the teaching schedule and the lesson plan with them.
- Ask them questions such as 'do you understand?' or 'can you make sense of this?' or 'can you elaborate with more details on your answer?' to focus their attention on the meaning and bulk of their knowledge.
- Honor their need for sequencing received information and allow them extra time to proceed logically from one step to another.
- Direct them to give a list of the important points they understand or know about the subject matter. The same instruction applies to term-papers, assignments, or projects.

Instructional Strategies for D-Learners

Once you have got the attention of your digital learners, you can proceed into the content portion of the class. Some techniques that work well for D-learners are:

- Lecture - similar to auditory learners, digital learners like a well-organized and logically ordered information delivery. A well-organized presentation

appeals to their digital nature as well as their preference to hear things in a sequential and logical manner.

- Discussion - digital learners prefer to work independently and their participation in group discussion may be minimal.
- Homework and individual projects - give them a chance to gather information and structure meanings.
- Individual work after hearing the lecture or concepts presented - they will listen to a running commentary within their heads. This running commentary allows them to progress successfully through the steps of a specific task or activity.
- Logical sorting - allow them to logically categorize pieces of information-this appeals to their logical-analytical nature as well.

Questions used with the 4-Modality learning styles

Exemplary Questions That Engage A-Learners

- What 'ideas' do you have about this subject?
- Does what I have explained 'resonate' with you?
- How can you 'improve' upon this 'idea'?
- Any 'what if' type questions

Exemplary Questions That Engage V-Learners

- Can you 'see' yourself doing this in the 'future'?
- Does this 'look' like the 'picture' you had in mind?
- Are you 'clear' about your direction in managing your report?
- What do you 'see' as your next step(s)?

Exemplary Questions That Engage K-Learners

- What can we 'do together' to keep 'moving' forward?
- Which answer 'feels' better to you: A or B?
- How can I best 'support' you to make you 'comfortable' in my class?
- Does this notion 'fit' in?

Exemplary Questions That Engage D-Learners

- What do you 'think' of this 'plan'?
- What is your preferred 'sequence' for implementing this project?
- Does this direction 'make sense' to you?
- What else do you need to 'know' about this subject?
- Can you 'logically analyze' and 'solve' this problem?

Assessing the 4-Modality Learning styles

Assessing A-Learners

Auditory learners do very well with traditional testing, as it tends to be objective based, with matching, multiple choice, and fill-in-the-blank types of questions. Other methods that work well for auditory learners are: oral tests, presentations, multiple choice tests, and writing essays or term-papers

Assessing V-Learners

As you would expect, visual learners do not tend to do as well on objective based tests as auditory and digital learners do since visual learners are more used to thinking globally than other types of learners. Assessment techniques that work for visual learners include: Case studies where they are required to solve 'real-world' problems, projects, group tests, essay or short answer questions on tests, and presentations or demonstrations of concepts.

Assessing K-Learners

Assessing kinesthetic learners is somewhat similar to assessing visual learners. Since both styles of learners are creative and prefer open-ended responses rather than one right answer, you can use some of the same techniques for both types of learners. They include: demonstration of a concept or skill, presentation, role-playing and teamwork projects, simulation created by student- either alone or in groups- and short-answer questions on tests

Assessing D-Learners

Similar to auditory learners, digital learners do very well with traditional testing, as it tends to be objective based, with matching, multiple choice, and fill-in-the-blank types of questions. Other methods that work well for D-learners are: presentations, independent research projects, open questions that ask for sequencing, sorting or processing information

General Tips for Dealing with the 4-Modality Learning Styles

General Tips for Dealing with A-Learners

- Paraphrase what students say to allow them to hear what they have said to you. This also gives you the chance to correct any misperceptions and guide the student where you want them to go.
- Be precise and orderly when presenting information and say instructions and directions several times, in different ways, if possible.
- Be prepared to listen to repeatedly rephrased and perhaps rambled answers from A-learners, as they like to talk and be heard.
- In order to keep A-learners on track without too much rambling, acknowledge that you heard what they had to say, or else they will repeat themselves. Also remind them that it is okay to have many projects-but this is the one you are focusing on now.
- Longer tasks cause A-learners to drift, lose focus and move on to something else. So always listen to them carefully and redirect their attention when needed.

General Tips for Dealing with V-Learners

- Allow them time to form their 'mental picture' of a concept before asking them to do something with it.

- Encourage group and peer-to-peer learning where appropriate so that visual learners can see a learning experience in action.
- Provide everything in writing, from assignments to lecture notes.
- Draw or graph your lectures whenever possible.
- Be aware of the visual learner's mode of learning, particularly when it appears as if the student is not paying attention, for visual learners may go downtime to their subconscious seeking to connect the pieces into a holistic sum.
- Be concise, clear and get to the point(s) quickly, for V-learners process information much faster than other learners.

General Tips for Dealing with K-Learners

- Movement is important in dealing with kinesthetic learners, so they will often appear 'fidgety', when in reality they are focused and concentrating.
- Ask them to come in front of the class to give an answer or to practice what they have learnt.
- These students crave participation in the lesson and require it in order to learn the concept.
- K-learners will probably want to do their homework and projects with someone else. Encourage them to find a good partner who can work with them-not only for them.
- Give them time to incorporate what they have just learned into a skill or technique that they can 'do' to help charge their memory and cement their learning.

General Tips for Dealing with D-Learners

- Be sure to give plenty of time for these learners to understand the topics without interrupting them with frequent questions.
- When answering a question or reaching a conclusion, they need to proceed logically from one fact to another; so it may take them a little longer to answer a question or reach a conclusion.
- When in group discussion, D-learners may have better answers but do not share them unless specifically asked. So ask them explicitly if you think that they have different answers.
- Be orderly when presenting information and refer to a logical plot or an ordered list or schedule if possible.
- Be prepared to explore topics in greater detail, as these learners will often ask for more information before they begin a task.
- D-learners love order, processes and structure, so encourage them to come up with a step-by-step plan that works for them.
- When you ask D-learners to do something, you may explain to them 'why' but do not tell them

'how' to do it. Just give them sufficient time and prove to them that you 'trust' them by not constantly checking on them.

- D-learners can appear aloof or distant because they are focused in a different way or busy reflecting on what they learn.

Concluding Remarks

Regarding your teaching style as an important factor contributing to students' willingness and ability to learn, the author would like to highlight the following remarks:

1. Communication, casual or formal, is a means for a purpose. Regardless of this purpose, any positive outcome will depend on the degree of rapport and connection between the communicating parties. Learning is a communication process that requires both positive rapport and strong connection. In order to achieve rapport and connection with students, teachers must understand that students generally learn in different ways. Therefore, teachers should calibrate their teaching styles to match the students' learning styles for the purpose of achieving accelerating learning.
2. You know you are calibrating and matching your students' learning styles and making good connection with them when they answer your questions easily and quickly. The simplest way to reach a state of accelerated learning is to use words and phrases that your students can easily relate to (see Table 4 for a quick reference of some of these words).
3. Students will sometimes disengage from learning activity if it does not suit their needs, or does not appeal to their learning styles.
4. The practical way to calibrate your style to accommodate students' styles is to design your course so that all students are invited to learn; not to discourage them because they cannot learn in the way that you prefer to teach. This is a difficult issue to overcome as most of us teach in the way that we prefer to learn.
5. If you insist to teach in ways typical to your preferred learning style, three out of four students are likely to misinterpret your saying, thinking and feeling. In effect, rapport with them will be broken and resistance among them will be arisen.
6. It is not necessary for you to use all the strategies or incorporate each of the activities listed above in a short period of time. It is important, however, that you consider all of the above information when planning your course activities and that you take the four learning styles into account.
7. As a teacher or instructor, it is your responsibility to plan your course so that all learning styles are accommodated, but it is also natural to have some activities that appeal more to one student than the other from the same learning style. In this respect, we certainly believe that each student is a unique

learner who is likely to share similar, but not identical, characteristics with other students, even those who belong to his/her learning style.

8. You will notice that some activities are appropriate for more than one learning style and these are ideal ways to reduce your planning time. This is particularly true for neighboring learning styles, not the opposite ones. The present article proposes that V-Style is opposite to A-Style and K-Style is opposite to D-Style. This proposition requires further investigation.
9. Be aware of overusing one or two teaching methodologies, as students will tend to become bored and disengage from the learning activity.
10. You must also take assessment issues into account when designing your courses. If you teach in a manner that appeals to all the four learning styles (auditory, visual, kinesthetic and digital), your assessments must match that as well. It does not do any good to present your material and conduct your class activities for all styles if you revert to testing for only auditory learners, alienating the other three styles. As university professor, I have experienced that exams and interviews are mostly designed to match A-type learners and alienate other types.
11. The teaching style (the overall activation and instructional strategies, methods and activities) is certainly among a few key factors that significantly affect students' ability and willingness to learn. Other factors include: (i) personality conflicts with the teacher or other students in the class; (ii) student motivation; (iii) attendance; (vi) understanding. As a university professor/school teacher, you have control over some of the above factors and this is where you should focus your time, effort and energy. You can certainly work to eliminate or prevent personality conflicts between yourself and students or between students. There are known models of resolving conflicts and teachers should be aware of them and their timely and proper use. You can reduce the friction by conferencing with the student to determine the source of the problem, if it is with you. If the problem is with another student, a joint conference might be in order, or you can simply assign these students to different groups for the duration of the semester.
12. Students control their attendance and internal motivation, but teachers still have some effect on these issues. If the classroom environment is a safe, comfortable place to learn, where ideas are openly discussed and respectfully acknowledged, students will be more motivated to engage in the class. When designing your course, plan to make your activities interesting and effective and reward your students for coming with participation points. You have a more direct effect on students' understanding and it is within your scope of duties to refer students to the school principal or director

or the academic counselor for further tutoring, if necessary.

Recommendations

1. This article recommends that educational systems in the Arab world honor the fact that learning styles literacy and awareness enable educators to establish the sought match between the students' different learning styles and their teaching strategies and methodologies. This recommendation will serve in creating a productive and fulfilling learning environment wherein diversity is valued.
2. The author of this paper strongly recommend that ministries of higher education in the Arab world should introduce the topic of learning styles –theory and practice- to the courses offered in any institution granting teaching degrees.
3. As for the teachers who are already enrolled in the educational system, the research recommends that the ministries of Education and Higher Education in the Arab world should support in-service training programs based on the practical guide offered in the present paper.
4. It is also recommended that the departments of educations in the Arab world should extend the previous suggested training to reach teachers' supervisors in schools.
5. Teachers' supervisors should emphasize the importance of preparing a good lesson plan wherein teaching methods are specifically designed for students according to their styles.
6. A coaching mechanism should be provided to new teachers wherein seasoned teachers can transfer their learning styles knowledge and calibrating skills to new generations of teachers.
7. It is generally and highly recommended that teachers use the model presented in this manuscript to enrich their *communicating* process with students, build *emotional rapport* and strengthen the *connection* with them for an ultimate goal of accelerated *learning*.

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Appendix 1

The Learning Style Self-Assessment Questionnaire

Please read each question or statement and circle the most appropriate answer. Some will be difficult to answer, but try to respond according to how you would react most often.

1. You usually remember more from a class lecture when:

- a. You do not take notes but listen very closely
- b. You sit near the front of the room and watch the speaker
- c. You take notes (whether or not you look at them again)
- d. You sit in the back of the room and think of what is said

2. You usually solve problems by:

- a. Talking to yourself or a friend
- b. Using an organized, systematic approach with lists, schedules, etc.
- c. Walking, pacing, or some other physical activity
- d. Collecting as much factual information as possible

3. You remember phone numbers (when you can't write them down) by:

- a. Repeating the numbers orally
- b. Seeing or visualizing the numbers in your mind
- c. Writing the numbers with your finger on a table or wall
- d. Sequencing the numbers in categories

4. You find it easiest to learn something new by:

- a. Listening to someone explain how to do it
- b. Watching a demonstration of how to do it
- c. Trying to do it yourself
- d. Making sense of how it is sequentially done

5. You remember most clearly from a movie:

- a. What the characters said, background noises and music
- b. The setting, scenery, and costumes
- c. The feelings you experienced during the movie
- d. The plot of the movie in its logical order

6. When you go to the grocery store, you:

- a. Silently or orally repeat the grocery list
- b. Walk up and down the aisles to see what you need
- c. Usually remember what you need from the list you wrote down and left at home
- d. Have a handy grocery list with likely prioritized items

7. You are trying to remember an event and so you:

- a. Hear in your mind what was said or the noises that occurred
- b. Try to see it happen in your mind
- c. Feel the way you emotionally reacted to it
- d. Recall and connect the start and end of the event

8. You learn a foreign language best by:

- a. Listening to records or tapes
- b. Writing and using workbooks
- c. Attending a class in which you interact, read and write
- d. Knowing the exact meaning and roots of the words

9. You are confused about the correct spelling of a word and so you:

- a. Sound it out

- b. Try to see the word in your mind
- c. Write the word several ways and choose the one that feels right
- d. Relate it to its root or search it in the dictionary

10. You enjoy reading most when you can read:

- a. Dialogue between characters
- b. Descriptive passages that allow you to create mental pictures
- c. Stories with a lot of action in the beginning (because you have a hard time sitting still)
- d. Things are put in logical order and meaningful sense

11. You usually remember people you have met by their:

- a. Names (you forget faces)
- b. Faces (you forget names)
- c. Mannerisms, motions, rapport etc.
- d. Inspiration and intellectuality

12. You are distracted or disturbed most by:

- a. Noises
- b. People
- c. Environment (temperature, comfort of furniture, etc.)
- d. Illogical or irrational thoughts and dialogues

13. You usually dress:

- a. Fairly well (but clothes are not very important to you)
- b. Neatly (in a particular style)
- c. Comfortably (so you can move easily)
- d. Properly and professionally

14. You cannot read or cannot do anything physical and you choose to:

- a. Talk with a friend over the phone
- b. Watch TV or look out a window
- c. Move slightly in your chair or bed
- d. Think quietly and reflectively

15. You find it easy and natural to:

- a. Tell where a new idea fits in
- b. Plan and organize future events
- c. Follow the direction of tried-and-true methods
- d. Receive inner inspiration

16. When working on a school project, you are likely to:

- a. Want to improve the process with your ideas
- b. Want to be part of the vision and planning process
- c. Want to be part of the team and build good relationships
- d. Want to be highly cautious with new information, new concepts and even new people

17. When someone is asking you a question, you tend to:

- a. Listen carefully; then ask questions to ensure that you understood
- b. Answer quickly describing your answer in pictures
- c. Wait until you feel comfortable and then answer
- d. Prefer time to think it over and choose your answer extra-carefully

18. You make important decisions based on:

- a. How the idea sounds to you
- b. How the idea looks to you
- c. Your gut feelings and comfort level
- d. Precise review and study of the issues

19. During a discussion or class disagreement, you are most likely to be influenced by:

- a. The volume and tone of the other person's voice
- b. Whether or not you can see the other person's point of view
- c. Whether or not the other person is sensitive to your feelings
- d. The logic and rationale of the other person's opinion

20. When communicating with others, what is important to you is:

- a. Being heard and listened to
- b. Exchanging and sharing perspectives with them
- c. Sharing your feelings and experiences
- d. Knowing that the meaning of your words are properly acknowledged

Scoring

1. Count the total number of responses for each letter and write them below:

- a. _____ Auditory (learn best by hearing)
- b. _____ Visual (learn best by watching)
- c. _____ Kinesthetic (learn best by touching, doing, moving)
- d. _____ Digital (learn best by working things out in their mind)

2. Notice if one modality is significantly higher or lower, or if any two modalities are close in number.

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