

# Are Learning Styles Just a Fallacy?

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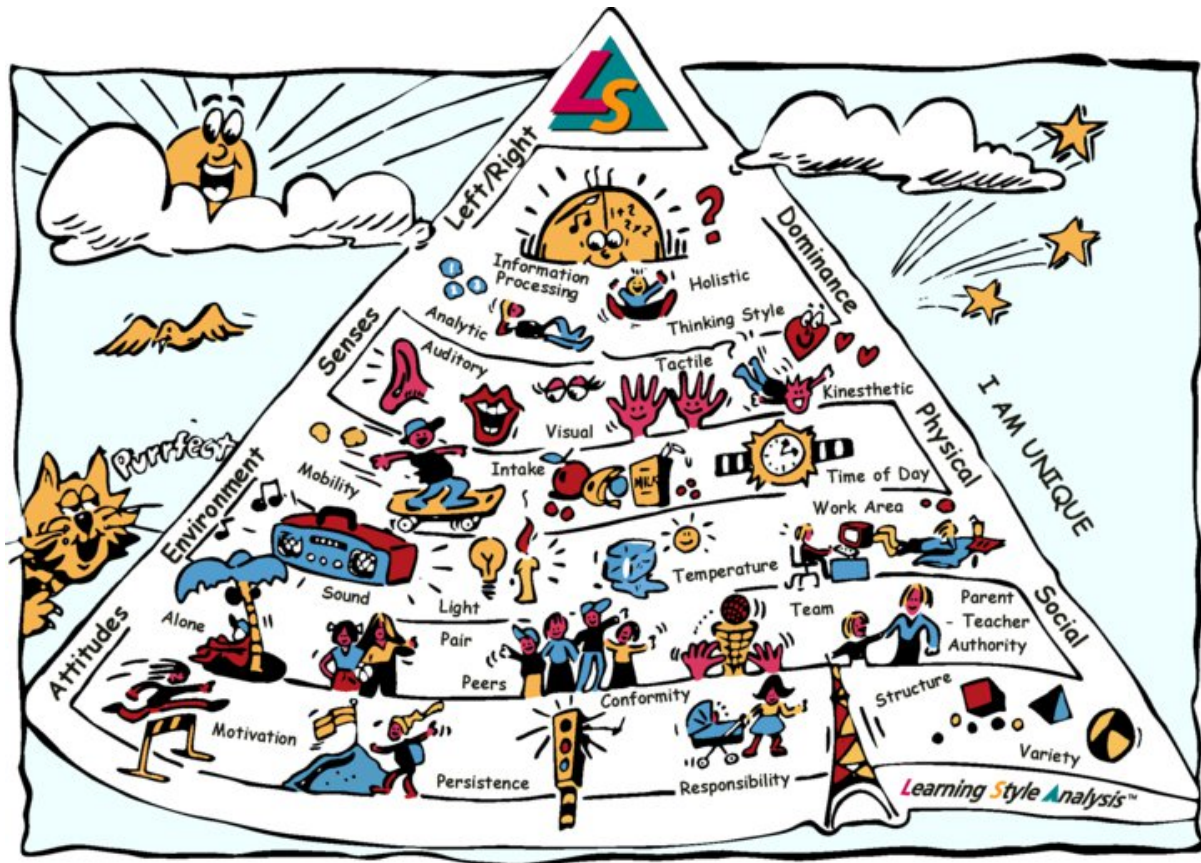
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## Introduction :

The term *learning styles* refers to the view that different individuals learn information in different ways, with most being “type” theories, as in they assign individuals into distinct groups, rather than grading them on various dimensions. There are many proposed concepts for learning styles in a large body of literature, for instance, in their review, Coffield et al. (2004) described 71 different concepts, and did not claim that this list was comprehensive of all proposed styles. Thus, it is clear that there are vast differences in the literature at the level of what learning styles an individual can possess. However, there is also disagreement as to whether learning styles even exist or, if they do, whether they are useful when practically applied.

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## **Key Papers :**

If you are wishing to have some comprehensive papers to read on this subject [this paper](#) by Pashler et al. (2008) is very good for the basis of some of the main theories, while [this paper](#) by Reynolds (1997) gives a good basis for critiques towards the main theories.

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## **Key theories :**

There are many different styles that have been proposed throughout the literature.

## **Background Theories**

Dunn and Dunn (1999) were one of the first to propose and describe learning styles, explaining that the distribution of the processes of concentration, processing, absorbing, and retaining new information is different in everyone.

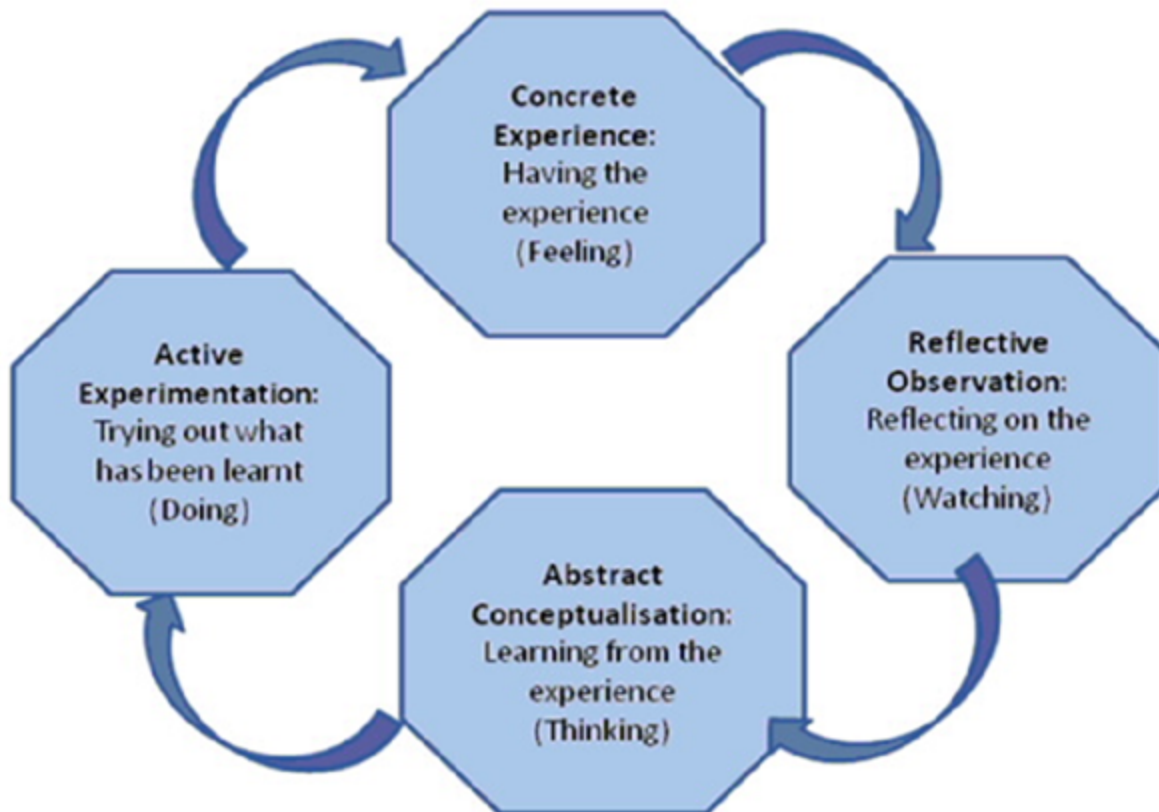
The concept of assigning individuals into distinct types emerged when Carl Jung designed the first personality test, which later developed into the Myers-Briggs Type Indicator Test (1962). This test categorises individuals into separate groups with the suggestion that this information will be helpful in making occupational decisions. However, the idea presented here that individuals can be clustered into distinct groups is controversial and received much criticism from various researchers (e.g., Druckman & Porter, 1991; Stricker & Ross, 1964). However, these criticisms did little to reduce the test's popularity, suggesting that the public have a great desire to be able to split individuals into groups in order to better identify their skills, despite the dubious effectiveness. This desire then led to similar tests for learning styles to be developed.

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## **Kolb's Experiential Learning Theory and learning styles model**

- Kolb's learning styles model which was developed in the 1970's, it is one of the first learning styles based on an explicit theory and is said to be one of the most influential (Coffield et al., 2004). The LSI (Learning Style Inventory) was devised by Kolb to test his theory of experiential learning. The LSI has improved over thirty years due to numerous critiques and it can be used as an introduction to how people learn.

- Kolb's (1984) learning theory is based on a four-stage learning cycle. The model offers both an explanation of a cycle of experiential learning that applies to all learners and a way to understand individual learning styles. For more information on Kolb's four-stage learning cycle see the following link:  
[http://www.jcu.edu.au/wiledpack/modules/fsl/JCU\\_090344.html](http://www.jcu.edu.au/wiledpack/modules/fsl/JCU_090344.html)
- Kolb and his followers see learning styles as a differential preference for learning which changes slightly from situation to situation and not as a fixed trait (Coffield et al., 2004).
- Problems about validity, reliability and the learning cycle continue with this model.



**The four learning styles include the following characteristics:**

***Diverger (feeling and watching - CE/RO)***

- Imaginative, emotional, problem solving and sensitive
- Diverse cultural interests
- Interested in people
- Listens with an open mind
- Accepts personal feedback.
- Prefers to watch rather than do
- Gathers information and brainstorm
- Ability to see things from different perspectives
- Produces ideas
- Prefers group work learning

***Assimilator (thinking and watching - AC/RO)***

- Organises information in a logical and clear fashion
- Ideas and concepts are important
- Creates theories
- Less focus on people
- Needs clear explanations
- Prefers readings, lectures and exploring theories
- Requires time to think things through
- Logical and concise approach to learning

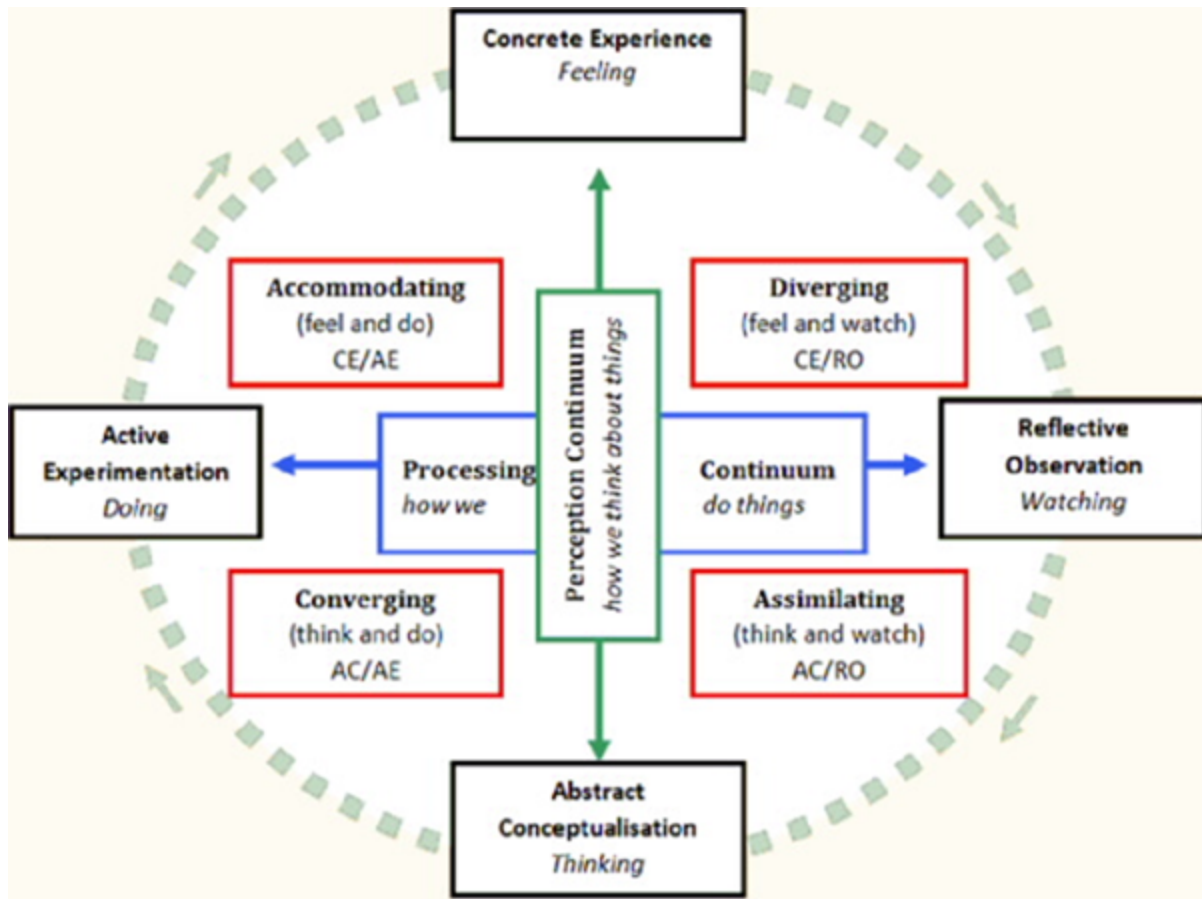
***Converger (thinking and doing - AC/AE)***

- Problem solver
- Prefers technical tasks
- Experiment with new ideas
- Looks for practical uses for problems
- Ability to use learning to find solutions to practical situations
- A tendency to dislike dealing with social or interpersonal issues.

***Accommodator (feeling and doing - CE/AE)***

- "Hands-on" learner
- Target driven
- Uses intuition rather than logic
- Practical approach
- Likes new challenges
- Relies on experience and others for information and problem solving

- Team worker

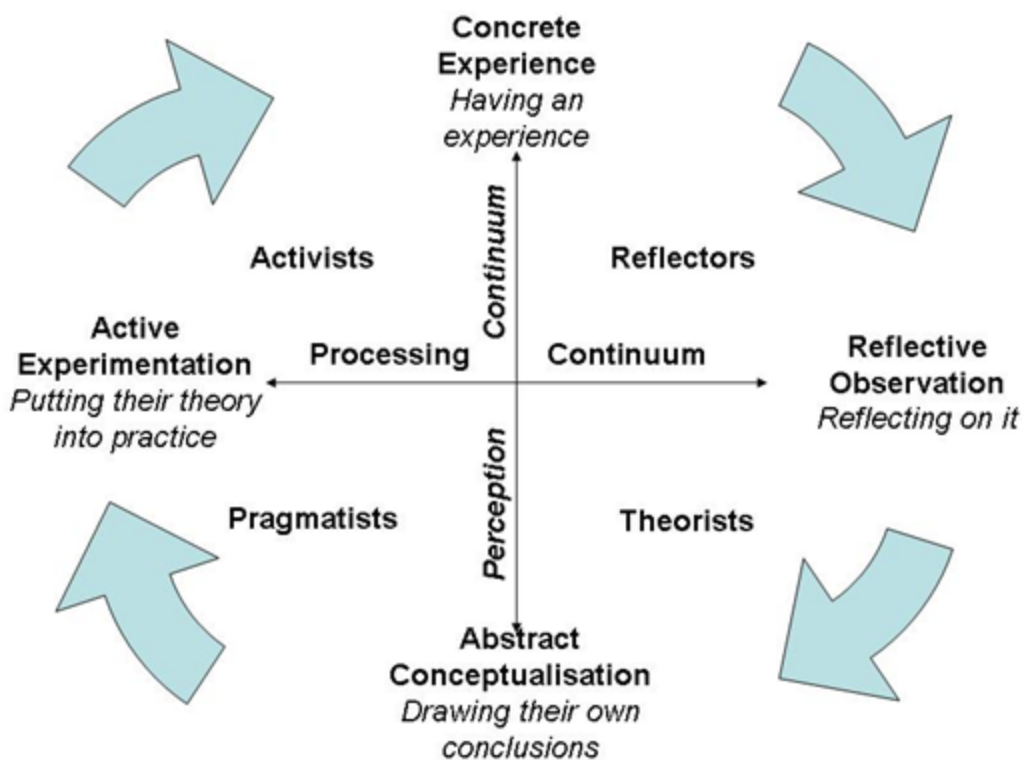


## Honey and Mumford's Learning Styles and Questionnaire (LSQ)

- As the LSI by Kolb was found to have low face validity with managers, Honey and Mumford invented the Learning Styles Questionnaire (LSQ) in 1982 to assess individual differences in learning preferences. Honey and Mumford gave people a questionnaire to probe general behavioural tendencies instead of asking people directly how they learn, which Kolb's LSI does.

The links with Kolb's work remain strong, and Honey and Mumford's four learning styles are connected to a revised version of Kolb's experiential learning cycle. Honey and Mumford's aim is that learners should become proficient in all four stages of the learning cycle.

***For a detailed review of Honey and Mumford's Learning Styles see a review paper by Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). Learning styles and pedagogy in post-16 learning: A systematic and critical review.***



**The four learning styles by Honey and Mumford include the following characteristics:**

***Activists***

- Optimistic and welcomes change
- Preference for experiencing things hands-on
- Flexible and open-minded
- Ready to take action
- Likes new situations

***Reflectors***

- Good at listening and dealing with information
- Slow to form conclusions
- Preference for reviewing experiences and mulls data over
- Careful, thoughtful, thorough and methodical

***Theorists***

- Preference for drawing conclusions
- Logical, objective and rational thinkers
- Asks probing questions
- Disciplined in their approach
- Looks at the 'big picture'



## **Pragmatists**

- Preference for planning the next steps
- Prefers to test things out in practice rather than theory based
- Practical, down to earth, business-like and realistic
- Technique-oriented

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## **Allinson and Hayes' Cognitive Style Index (CSI)**

The term 'cognitive style', was used by Allport (1937), and has been described as a person's typical or habitual mode of problem solving, thinking, perceiving and remembering (Riding et al., 1991).

Allinson and Hayes' found problems with existing ways of measuring cognitive style. After identifying the two factors of 'action' and 'analysis' from Honey and Mumford's LSQ they produced an easy-to-use instrument with a three-point rating scale, in order to measure a single dimension with intuition at one extreme and analysis at the other. The CSI (Cognitive Style Index) was designed for use in adult organisational contexts and as a research tool (Coffield et al., 2004). Allinson and Hayes see intuition-analysis as the most fundamental dimension of cognitive style.

Allinson and Hayes based their 38 items of the CSI on the following belief:

***“Intuition, characteristic of right-brain orientation, refers to immediate judgment based on feeling and the adoption of a global perspective. Analysis, characteristic of left-brain orientation, refers to judgment based on mental reasoning and a focus on detail”.***

· Their model is based on Mintzberg (1976) who believes that right-brained intuition is linked with the need of managers to make quick decisions on the basis of 'soft' information, while left-brained analysis is seen as the kind of rational information processing that makes for good planning (Coffield et al., 2004).

- Allinson and Hayes also accept Tennant's definition of cognitive style as 'an individual's characteristic and consistent approach to organizing and processing information' (Coffield et al., 2004).
- Allinson and Hayes believe that cognitive style can be shaped by culture, altered by experience and overridden for particular purposes (Coffield et al., 2004).

**For a detailed review of Allinson and Hayes Cognitive Style see a review paper by Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). Learning styles and pedagogy in post-16 learning: A systematic and critical review.**

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## Gaps between theory and empirical results :

Learning styles have been critiqued for almost as long as they have been suggested, with vast amounts of literature contesting many of the different theories. As there are so many different theories that have been suggested over the years, there are also many researchers who have attempted to clarify the differences between the theories and identify the validity of each, and why there is such divergence between them all.

For instance, Ferrel (1983) tested four learning style theories, including Kolb's Learning Styles Theory. In her results she found that not one of the four measures she tested worked the way they were intended to, as in they did not measure the aspects of students' learning styles that they claimed to. Further, each of the four different styles did not measure any of the same aspects of learning as the others, adding suspicion to the validity of each and which is the "correct" measure. Kolb's LSI was also put under scrutiny from Geller (1979) who suggested that it failed to distinguish between learning styles of individuals or even large groups. This suggestion was also professed by Geiger et al (1992), with the further advice for caution in using the LSI and in any interpretations pulled from the categories in the measure. The test-retest reliability of the LSI has also been found lacking by various studies (e.g. Sims et al, 1986; Freedman and Stumpf, 1980).

Honey and Mumford's Learning Style Questionnaire has also been put under review. For example, the LSQ was compared to the LSI by Allinson and Hayes (1988), with the results suggesting that the LSQ has more validity than the LSI as it measures observable behaviour instead of the psychological basis as in the LSI; so the LSQ was suggested as being "more

capable of actually measure something". There are far less studies aiming to test the validity of the LSQ, and so it may seem more promising in terms of empirical results, but this may just be due to less researchers attempting to scrutinise it.

While Alinson and Haye's Cognitive Style Index (CSI) does not have vast amounts of criticism there are some researchers that posit that a better theory would be complex rather than unitary as initially proposed (e.g. Hodgkinson and Sadler-Smith, 2003). However, Hayes et al. (2003) refuted the claims of this critique, stating that the evidence of the challenge was not robust enough to dispute the validity of the CSI.

It is fair to say that if one is looking for a perfect learning style measurement then there is going to be disappointment. However, there is some evidence from various settings that the use of learning styles can have positive practical applications; as discussed below.

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## Further Critique:

### **Money making and commercialisation**

As previously described, there are many different learning styles that have been suggested in the literature. These different styles often are accompanied by different tests which can be applied to students in order to determine which style is best suited to them as an individual. These tests therefore lead to the theory of learning styles having a large commercial basis, as educators are now being advised to accommodate students by tailoring instructions to their individual learning styles, and so many tests to determine students' individual learning styles are being sold to schools and higher education facilities. Some examples of basic versions of these tests can be found below. These tests can be sold at varying prices, for example at [www.learningstyles.net](http://www.learningstyles.net) 4 different tests are sold at \$5 per student, some training programs for educators can cost \$1225 per triaine (International Learning Styles Network, 2008), and the Kolb inventory has been sold previously at \$100 per 10 booklet (Pashler et al. 2008); thus it is obvious that the selling of these tests can be a lucrative business.

This commercialism is a clear cause for concern when investigating the effectiveness of learning styles, as those claiming that learning styles are crucial for teaching are also the ones who have a lot to gain. Therefore, it is vital to ascertain if the use of learning styles benefit learners as much as is claimed, and not just the business who are profiting from them. Specifically, the way to prove if learning styles are effective is to show that students benefit academically from having teaching tailored to their learning styles.

While the effectiveness of learning styles is under scrutiny, there is no disputing the fact that students do have learning preferences. For instance, Massa and Mayer (2006) carried out a study which examined this through setting up various measures to assess individuals' preferences for receiving instructions one of two ways; either verbally or visually. Results from these measures found significant correlation to the participants' self reported preferences, showing that tests can be effective at least in demonstrating personal

preferences, although it may be just as effective to ask the individual which way they think would work best for them. Furthermore, this study also on to find no significant results that tailoring instructions to the individuals' preferences had any effect on how well they carried out they completed the task.

Thus, it is clear that while individuals can have a definite preference for learning styles, learning through the preferred style may not result in any increase in learning effectiveness; so buying a test solely for the purpose of identifying preferences may not be in the students' or teachers' best interests.

### **Identifying learning styles and subsequent issues with identification**

There are two main ways of identifying students' learning styles, collaborative and automatic. A collaborative approach involves the student giving feedback, for example, in a learning style questionnaire. An automatic approach builds on behaviours and actions of the learner to build a model and analyses data from a specific time span rather than data gathered at one specific point of time to identify individual learning styles. In a standard learning environment, such as the classroom, teachers can see from pupils work and behaviour which type of learning style they prefer or are more inclined towards. However, in a distance learning environment such as online learning, it is more difficult for teachers and tutors to identify a particular learning style in individuals. It is therefore more helpful to use an automatic approach in distance learning to build information in order to come to a conclusion regarding an individual's learning style. Issues that may arise from identification of learning styles are inaccurate self-report in the collaborative approach, it is also time consuming for the student to self-report rather than focus on their learning. The automatic approach is probably more accurate because it does not rely on self-report which as mentioned can be inaccurate and it also gathers data at various times and not just on one occasion.

### **'Pigeon-holing'**

It has been noted that teachers and educators should avoid trying to categories or confine individuals to one learning style. The aim of most learning theories are to help learners develop and build their skills and capacities to learn well in both preferred and non-preferred environments and modes of learning styles. Instructors should consider also that age, educational level and motivation influence each student's learning, as well as learning styles, and that actually, these styles may change across a range of situations as well as throughout time.

Most able learners are therefore those with 'plastic' learning styles who can adapt their ability to learn to the prevailing materials and circumstances. In other words, by encouraging people to move out of their preferred learning style and challenge themselves, instructors can give students the possibility of developing new learning strategies.

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## Practical Applications :

### *In the Classroom*



It is a well-accepted and supported notion that throughout each level of education, students have various different learning styles and course design preferences specific to them. At the centre of the application of this theory to practical everyday educational situations is the debate as to whether instruction or delivery style of teachers should be intentionally matched or differentiated from the learning style of the students in question, in order to enhance their learning experience.

Understanding and appreciating a given individual's teaching style involves a considerable deal of self-reflection and introspection, and should be a key component in a well-maintained teaching portfolio. For many educators, multi-style teaching is their inherent approach to learning. Felder (1993) has identified that a teaching paradigm which addresses and accommodates multiple dimensions of learning styles should be modelled as best practice, as such an approach builds self-efficacy within the learners involved. Instructing in a way that encompasses various learning styles as opposed to one single style gives the teacher the chance to reach a greater extent of a given class, while also challenging all students to expand their own range of learning styles and aptitudes at a slower pace within a supportive environment. The ultimate goal therefore from teaching should be to instill within students the skills to recognise and react to various styles, so that learning is maximised regardless of what the environment is (Robotham, 1995). This is an essential skill for any independent learner, and therefore something teachers should look to develop within their students in order to prepare them for future learning success and independence.

This approach to learning styles within education therefore suitably fits in with the real day-to-day situations faced by educators within the United Kingdom. As class sizes continue to increase at all levels of education, so do the types and numbers of distinct student learning styles, and so for anyone instructor to deliver in such a way that each of these is accommodated is unrealistic. Many researchers have suggested that the answer therefore is

for students to adapt their learning style to coincide appropriately with a given instructional style. This therefore allows the instructors to dictate the methods used in the classroom and allows more opportunity to teach from their strengths, with little reference to any external factors. However, there are a number of potential problems which may arise from educators employing such an approach. Firstly, all of the responsibility for aligning teaching and learning is placed on the student themselves, and this may reinforce a 'do nothing' approach among teaching faculty members (De Vita, 2001). In addition, if information is presented which is misaligned with the student's learning style, they will spend more time manipulating the information, to a form which they can comfortably work with, than actually comprehending it or applying it in learning. Nevertheless, this teaching style/learning style mismatch might challenge students to adjust, grow intellectually and learn in more integrated ways than previously. Much care should be taken though in using such an integrated approach, as it is often difficult to identify when a learner is capable of adjusting information to suit their needs, particularly when there are gaps which already exist in their knowledge or when they are a novice to the topic being taught.

Despite a considerable amount of support which suggests that teaching and learning styles should be mismatched in order to challenge and accommodate more students, there is notable research which suggests that failing to appropriately match an instruction and learning style can have dire consequences. Reid (1987) found that when a teacher and student had a mismatch of learning/delivery styles, there was considerable failure in the learning process and a great deal of frustration and de-motivation for the learner's involved. Peacock (2001) identified similar effects in an investigation of the styles of teachers and learners of a second language. 72% of students were found to be frustrated by a mismatch in teaching and learning styles, and 81% of teachers agreed that a mismatch could be extremely detrimental in the learning process, highlighting that both educators and students alike are aware of the potential downfalls of failing to accommodate learner's styles. It has also been widely acknowledged that matching student learning styles to instructor teaching style can hugely improve the overall quality of the student experience and learning success (Bristow et al, 2014). Novice learners in particular will be more likely to be successful when their classrooms and courses, whether by intentional design or by chance, are tailored to suit their particular learning style. Ford and Chen (2002) found that students introduced to creating web pages using HTML performed significantly better when the instructional manuals were matched to their particular cognitive learning style, than if there was an intentional mismatch.

Thus it is evident that identifying and accommodating learning styles can be hugely influential in the learning process of students within educational environments, although there needs to be a great deal of consideration of what will best benefit the learners – should instructors match their delivery style to suit the specific needs of particular students, or employ an approach which reaches the maximum number of learners possible and challenges each of them to step outside their comfort zone and develop alternative learning styles?

### ***Within Sports***

The learning process involved in developing and improving specific skills within sports performance has a number of key similarities to learning information in a classroom. Sports Coach UK (2005) stated that sports coaching “develops people through improving their performance”, and in order to effectively improve upon a skill, an individual must learn. They must acquire knowledge, understanding, attitudes and skills from study, instruction or experience, resulting in a permanent change in their behaviour – just the same way they would learn in an academic environment. Similarly to the classroom then, sports participants have a particular way in which they prefer to receive and process information during the learning stages of developing a skill, although many have little knowledge about what their own learning style is. Developing a clear understanding of how to use athletes learning preferences to enhance teaching and coaching methods is essential for any sports coach or physical education teacher (Dunn, 2009). Being able to adjust how you coach in order to suit the individual needs of an athlete really is the hallmark of great coaching.

Critically, coaches must also identify and understand their own learning style due to the fact that it will affect how they structure and create learning opportunities for their athletes within sessions. Most instructors (coaches and teachers) will use a framework which suits their own learning style, and so having an awareness and understanding of their own style and tendencies will allow coaches to make conscious choices about how to maximise the learning opportunities given to athletes, in the quest to achieve performance improvement. Danish et al (2007) reiterate this, suggesting that in order for coaches to be successful, they must not only be technically sound but also skilled communicators. Thus, understanding and applying various learning styles and methods will greatly aid coaches in their overall communication with athletes.

According to Dunn et al (1987), there are five major variables which impact upon an individual’s learning styles which are determined by any individual’s needs. These variables are: the immediate environment, psychological needs, physiological needs, sociological needs and emotionality. Owens and Stewart (2006) suggest that within the coaching environment, another hugely important factor is perceptual mode – i.e. learning style. Disappointingly however, it has been highlighted that coaches often hold inaccurate perceptions of the type, timing and quality of instruction and communication that they provide their athletes with (Solomon and Becker, 2004) and therefore this critical element of learning style is overlooked by many.

It has also been proposed that teaching and learning in an athletic setting presents distinct challenges that are often absent from the traditional classroom environment (Dunn, 2009). As discussed above in the section on learning styles within education, there is evidence to suggest that both matching and mismatching learner and teacher styles can be beneficial to the learning process. However, within sports this is not the case.

In a classroom, students have a considerable length of time to process information presented to them in different ways, and thus have adequate time and resources to adapt to information presented outside their primary learning preference. In sport, however, athletes are required to make split second decisions in a highly time-constrained environment, and so the flexibility in time to adapt to information which may not suit their own individual learning preferences is lost. In sport, delayed responses between a coach (teacher) and athlete (student/learner) can

have disappointing and potentially dangerous consequences including missed opportunities, accidents, or injuries. Thus, the time sensitive nature of sport calls for a common language of instructions and responses between coaches and athletes, meaning a match is required in terms of learning and instructional style. Coaches who understand their athlete's preference for receiving information therefore are much more able to enhance their ability to deliver and achieve desired results in their coaching. This is evident in particular levels of sport, as Dunn (2008) highlighted that as athletes rise in the ranks of elite performance, the differences between athlete's learning preferences and the learning preference/delivery style of the coach diminishes.

Dunn (2009) offers five key stages in aligning athlete and coach learning preferences in order to effectively improve performance and develop skills:

- 1) Assess coaches' and athletes' learning preferences (e.g. using the VARK questionnaire)
- 2) Reflect on the relative success of current coaching methods
- 3) Develop diverse coaching methods for individual learning preferences
- 4) Match coaching methods with individual athlete's learning preferences
- 5) Assess the relative success of the new methods on the athletes performance

It has also been suggested that addressing the issue of athlete and coach learning style discrepancies may be particularly beneficial during certain stages of an athlete's development. During adolescence many athletes stop participating within their sport, and it is thought that this could be due to the gap between instruction and performance becoming simply too great (Burnett, 2006). Presenting information in a preferential way for the athlete therefore is particularly crucial during this high-dropout stage, in order to encourage continued participation.

Learning styles therefore are hugely important in effective communication between a coach and athlete, and particular effort should be made in order to match these as much as possible due to the tight time-constraints and quick decisions which must be made during the learning process. Lyle (2002) has shown how national governing bodies of sport are paying increasing attention to the education of coaches at all levels of performance and development, and so it seems wise for these governing bodies to include education on the effectiveness of understanding and applying athlete learning preferences within their coaching.

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**For all of those non-sceptics out there:**

***A VIDEO;*** <https://youtu.be/6TXuWzcowU> - copy and paste this link to see a video that believes Learning styles really do exist!



## What's your learning style?

**What's Your Learning Style?**

 <p><b>Visual</b></p> <p>Visual learners usually retain more information when they can see something that graphically depicts what they are trying to learn. Visual learners should study using visual aids whenever possible. Flash cards, pictures, drawings—anything that will give you a visual memory.</p>	 <p><b>Auditory</b></p> <p>Auditory learners will retain more information when they hear something. For auditory learners, the best way to learn is to listen...over and over. Use a tape recorder. Read out loud. Have a friend quiz you orally.</p>	 <p><b>Tactile</b></p> <p>Tactile learners will retain more information when they use the "hands-on" approach—like labs and demonstrations.</p>
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**A couple of quick questionnaires to find out your basic learning style:.**

<http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml>

<https://www.engr.ncsu.edu/learningstyles/ilsweb.html>

<http://www.ldpride.net/learning-style-test.html>

**Tips for getting the most out of your learning style!**

(see [http://www.ldpride.net/learning\\_style\\_work.html](http://www.ldpride.net/learning_style_work.html) for info on Visual learners, Auditory learners and Tactile/kinesthetic learners and other practical tips)

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## Conclusion

In summary, while the idea of learning styles is supported by a vast amount of literature and has the basis of being extremely useful in the area of teaching, there are also many who critique the effectiveness of the theories. While being able to accurately identify individuals'

learning styles and thus adjust teaching to most benefit them would be extremely valuable, there is insufficient evidence that this is effective enough to justify the time and money that must be devoted in order to fully implement the theories.

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