

PROFESSIONAL MOUNTAIN BIKE INSTRUCTOR REFERENCE GUIDE

Level 1 & 2

PREFACE

This PMBI Course Manual contains the written theory of how we ride, demonstrate and teach mountain biking to beginner, through to intermediate and advanced riders. Whilst it contains the necessary information to learn how to ride and teach, it should only be viewed as a simple reference guide to aid the Instructor Training process - relying on it solely will not develop an effective, professional instructor. Experience, training and practice in both riding and teaching situations are essential in the development of The Instructor - learning how to actually apply the information is far more important than simply knowing the theory laid out within this manual.

It is the responsibility of each and every *Professional Mountain Bike Instructor* to constantly review, update and improve their teaching and riding methods. Mountain Biking is still a relatively new sport, with many new technologies and different disciplines. It is therefore a dynamic sport with frequent changes, developments and updates every season. Because of this and as an ambassador of Mountain Biking, a PMBI Instructor must reflect, demonstrate and further, be able to teach the latest techniques as the sport and how we teach it, continues to develop.

This PMBI Course Manual is divided into four main sections:

PART A

INTRODUCTION
RIDING THEORY
TEACHING THEORY
TEACHING TECHNIQUES

PART B: LEVEL 1 RIDING MATERIAL

PART C: LEVEL 2 RIDING MATERIAL

PART D: APPENDIX

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INTRODUCTION

THE HISTORY OF PMBI

The contents and ethos that are comprised within the *Professional Mountain Bike Instructor, or PMBI,* courses are a product from many years of mountain biking, teaching mountain biking, training mountain bike instructors how to teach and ride and even from teaching snowboarding and training snowboard instructors. The PMBI courses have evolved from a huge amount of experience in the sport as riders, racers, coaches and trainers (those who teach instructors) all over the world, including the UK, Australia, Canada and America. Whilst largely a product from the analytical, scientific, life-long biker and teacher, Paul Howard, it has involved a collective contribution from many other like-minded and qualified colleagues, friends and different people also working within the mountain bike industry.

In the early days, back in 1999, the first unofficial instructor training course evolved as part of a Mountain Bike School in North Carolina. A fleet of 40 bikes, with four full-time coaches teaching up to 7 hours per day, for five or six days per week in America, meant there was no room for sub-standard teaching and guiding practices. Safety was paramount and became the driving force behind developing a program to ensure all the coaches were looking after the students safely, whilst offering effective and consistent coaching to improve their skills and show them a good time.

As the seasons progressed, so too did the instructor training course, with the development of more specific teaching and learning principles and an updated version of the first “Three Skills of Biking”, in 2001. The following year saw a further break down of more advanced maneuvers with the clear “what/why/how” explanations being updated to include the “why2” explanation. Subsequent years and further staff training continued to develop and add to the material by which stage Whistler, the mecca for mountain biking, was knocking on the door.

It was now 2004 and increasingly obvious the mountain bike industry was changing. People were beginning to distinguish between being able to ride a bike and mountain biking; just because you could ride a bike, didn’t automatically mean you could mountain bike. Consequently, they were beginning to take lessons. In response to this many companies started, if they hadn’t been already, to offer coaching in an attempt to encourage people into the sport. The straight comparison of how lessons, coaching and instructors were trained in the ski and snowboard industry, immediately highlighted two things:

I. There was a huge difference in the quality of teaching, both in its safety and effectiveness between the snow industries and the biking industry… the bike industry was very sub-standard.
II. There was lack of professional quality, modern training to produce safe, effective and up-to-date mountain bike instructors that could deliver an excellent coaching product.

WIth a decent instructor training program already in his pocket, Paul began to develop his skills further, working and coaching the public and other instructors full-time, year round, in Whistler, in both the mountain biking and snowboarding industries. As his teaching, training, riding and analytical skills developed, so too did the program to eventually give rise to the first official PMBI course, that was held in 2006.

WHERE PMBI STANDS IN THE INDUSTRY TODAY

There is currently no official, national or internationally recognized mountain bike instructor certification or governing body, responsible for the training of mountain bike instructors. There are a few different courses available that do offer training for teaching mountain biking (there is the OTC in the UK, Whistler Bike Park Instructor Development Programs in Canada and various college-related programs) and each have their merits. The PMBI courses are a first in terms of the detailed, high level training they offer in the mechanics of bike riding and the specifics of how we teach and the processes by which people learn.

With a new course and new company presenting them, it will naturally take a little time for the “word” to spread, before the PMBI courses can gain a certain level of recognition - at least to a national extent. Initially it is the hope to have as many people participate in these courses as possible, helping the local industry improve and expand on its already strong mountain bike instruction industry.

GOALS & ETHOS OF PMBI

The goals of the PMBI courses are synonymous with the ethos and include the following points:

1. To provide the mountain bike industry with safe, knowledgeable, effective mountain bike instructors that can be respected by the public, their peers and the industry itself.

2. To provide the best possible training for prospective mountain bike instructors with the latest riding and teaching techniques and theories.

3. To improve course participants’ riding and teaching skills in a safe, fun and professional setting.

4. By providing the industry with better trained, quality instructors this will translate to the public as their lessons will be more successful. This will help encourage more people into the sport whilst retaining current riders by managing their progression and so avoiding the common “sport-ending” injuries, often seen in experienced bikers.

5. The PMBI courses strive to consistently offer the best training available. In doing so, an open mind will always be kept so that any feedback, positive or negative, will always be taken into consideration to help continually develop and add to the courses, keeping them as effective and relevant as possible.

6. Whilst course content will be open to improvements and modifications, PMBI courses will maintain a consistent standard in the certification of instructors, providing uniform training from one course, to the next.

7. From all these points, the PMBI courses will continue to strive for recognition in the mountain bike industry as *the* leader in mountain bike instructor training, by establishing an officially recognized, national (Canada) governing body.

PMBI CODES OF CONDUCT

In order for the above goals to be achieved, it is essential each PMBI certified instructor conducts themselves in a manner befitting of a *Professional Mountain Bike Instructor* and as an ambassador of PMBI courses, ZEPtechniques Ltd. and to the mountain bike industry as a whole. Observing the following codes of conduct is mandatory of any PMBI certified instructor, on and off duty. The Code is set out to ensure each PMBI instructor represents the courses, goals and ethos of PMBI in a respectable way, helping build the Mountain Bike Instruction Industry into something our industry peers and the general public recognize, respect and honour. For the purposes of this list of Codes, a PMBI certified instructor will simply be referred to as a "PMBI".

CODE 1: The public expect and deserve the best possible product. Each PMBI must be able to deliver the finest coaching in terms of safety, techniques and enjoyment for their certification level, at all times.

CODE 2: To achieve code 1, a PMBI must always strive to further develop their riding and teaching skills to be the best instructor they can be. Continual self-progression is essential if a PMBI is to remain current, up-to-date and relevant as a mountain bike instructor, working in the industry today.

CODE 3: Each PMBI is in the public eye as an instructor and leader of mountain bike groups and so must act responsibly, fairly, and professionally at all times, on and off the bike. A PMBI has a responsibility to themselves, their colleagues and the public to set the best example at all times.0

CODE 4: Any PMBI who is found to be delivering sub-standard teaching in *any* aspect will immediately be required to take a re-certification course. Failure to do so in a timely manner will result in a retraction of their certification.

CODE 5: At no point can a PMBI ride, guide or teach outside of their certification level whilst working as a mountain bike instructor. Failure to do so, will result in a retraction of the certification. Each PMBI must adhere to their PMBI training at all times.

CODE 6: Upon being hired as a mountain bike instructor, a PMBI must interact with their employer in a professional, competent, timely manner at all times - representing the PMBI courses and ZEPtechniques to the best of their abilities.

CODE 7: Working within the mountain bike industry can often open many doors for "pro-deals" and/or certain types of sponsorships. At no point can a PMBI endorse any product or company without a proper use of the equipment and a genuine belief it is a product worth promoting. Endorsing products purely for personal gain, without true conviction is a misrepresentation of the ethos of PMBI and unfair and misleading to colleagues and the public.

CODE 8: Each PMBI must adhere to the *International Mountain Bike Associations* Rules Of The Trail, the Mountain Bike Responsibility Code (attached), local laws, trail/land closures and signs.

CODE 9: Each PMBI must hold a valid first-aid certificate at all times, whilst working as a mountain bike instructor. A Level 2 certified PMBI must hold a minimum 80hr first-aid certificate, such as the Wilderness First Responder Certification. Failure to do so will result in a retraction of the PMBI certification until a valid first-aid certificate is gained.

CODE 10: At no point will any PMBI be involved with any illegal or criminal activities. The of use alcohol or any prohibited substances, under any circumstances, whilst working is not permitted and failure to comply will result in a permanent retraction (loss) of their PMBI certification.

RIDING THEORY

THE SIX SKILLS OF MOUNTAIN BIKING

From many years of teaching and analyzing the techniques used within mountain bike riding, it is certain how numerous, complex and detailed the different riding skills involved, can be. For us to be able to teach a sport, we must first have a clear understanding of the techniques involved, how and why they work and how they work together to produce an able bike rider. Only then are we in a position to safely and effectively teach another person how to ride better.

The analysis of a sport must therefore come first, before we can teach it. By dividing the sport of mountain biking into six main skill components, we can break down the wealth of information and perceived subjectivity of riding techniques into clear, distinct, sequential segments of information. These six skills are further grouped into three skill categories:

1. Body Position & Balance

2. Gears & Braking
3. Line Selection
4. Direction Control
5. Pressure Control
6. *Timing & Co-ordination

BIO - MECHANICAL:
the physics of body movements

MECHANICAL:
bike operation

TACTICAL:
the tactics, or strategies, available to a rider

Mountain bike riding is simply a blend of these six skills (components of riding) working together to give smooth, controlled riding. The three skill categories simply highlight the different *types* of skills that are part of mountain bike riding. Most of the skills are bio-mechanical as a rider needs to use specific body movements in specific ways to control and manipulate the bike. Much like skiing and snowboarding (which are entirely bio-mechanical sports), much of the learning process for biking thus involves learning the necessary body movements to ride effectively. However unlike skiing, a bike is quite a complicated, mechanical object that requires specific operations of it's controls. The gears and brakes are thus the primary functions of this mechanical skill. Mountain biking is also unique in the environment in which it is performed. The tactical skill of line selection simply highlights the specific, distinct choices available to a rider as they negotiate the many varied obstacles, trails and lines as they ride.

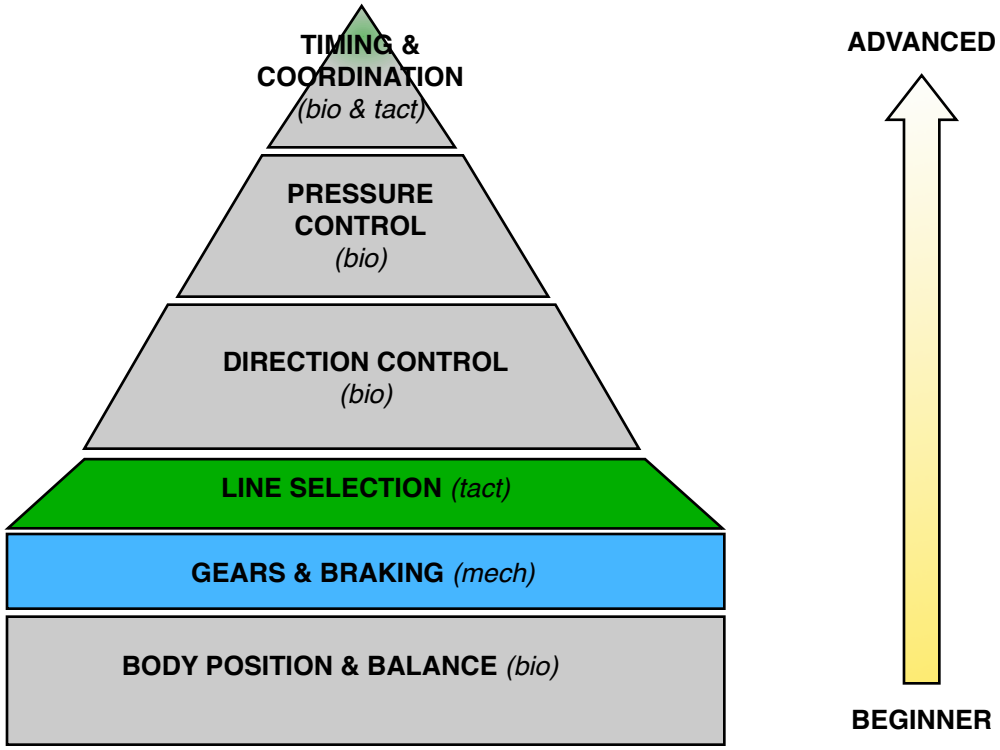
Mechanical: This skill involves learning the operation of the mechanical parts of the bike (gears and brakes) to ride efficiently and in control.

Bio-mechanical: These skills involve learning the necessary body movements (bio-mechanics) to produce specific results on the bike, according to the demands of the trail and/or rider; e.g. leaning back to unweight the front wheel.

Tactical: These skills involve learning how to choose the best strategy (line choice or timing) to maximize bike control and desired outcome, according to the demands of the trail and/or rider. **Timing can be both a tactical and bio-mechanical skill.*

SIX SKILL PYRAMID

By dividing the sport of mountain biking into six main skills, we can break down the wealth of information and perceived subjectivity of riding techniques into clear, distinct, sequential segments of information. This *Six Skill System* therefore maximizes our ability to analyze the sport of mountain biking, whilst providing the best possible format - a logical, natural progression - from which to teach it.



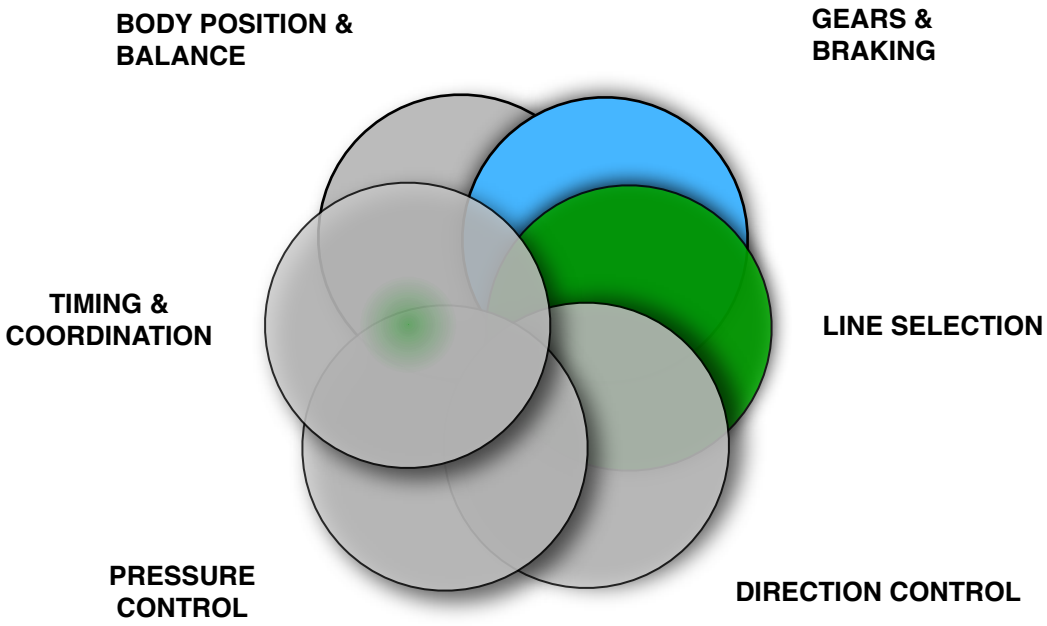
Mountain bike riding is simply a blend of these six skills working independently and/or together to control and manipulate the bike to give smooth, consistent riding. **You'll notice a majority of the skills involved with riding are bio-mechanical.**

As illustrated by the "Six Skill Pyramid", each skill builds on the former. **The fundamental skills are *Body Position & Balance* and *Gears & Braking,* and provide the solid base from which the rest of the skills can develop.** These two skills are the "stable base" to riding off-road, so must be learnt before any of the other skills.

The skills therefore build on each other as the riding ability increases; a beginner rider will largely focus on the more basic skills of gears & braking and riding position, whilst an expert rider will be working on the more advanced skills, like Direction Control and Pressure Control, for example. A beginner rider is learning these skills for the first time while an advanced or expert rider already has each skill in their riding and is simply working to solidify and refine them.

SIX SKILL SPHERES

It is very important to note that these skills do not just sit on top of each other in completely separate blocks; the skills of biking are simply not that “rigid” and separated. Whilst the skills do progress from one to another, they also overlap to provide us with not only a structured, progressive way of thinking about riding techniques (and therefore also teaching) but also a flexible one, as shown with the “Six Skill Spheres”, below.



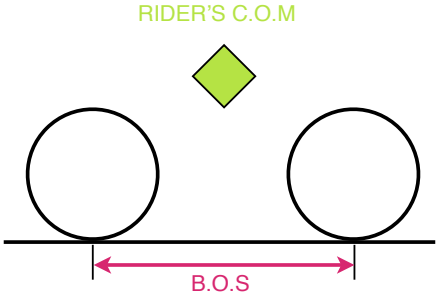
To fully appreciate and properly analyze the techniques involved within mountain biking, we must therefore understand that not only do the skills build on each other as students improve (offering them a logical teaching progression), but they also overlap and work together to produce an effective, dynamic bike rider.

For example, a large part of Direction Control and being able to corner the bike, depends largely on having a correct body position, braking at the right time without skidding, selecting the correct line through the corner… and so on. Remember, all the skills are happening all the time when a person is riding a bike. Just because we identify and organize them into different skills and categories does not mean they are completely separate entities; while a rider can think about, apply and use these skills independently, they are all necessary for a rider to control and manipulate the bike.

Imagine a race car… we can break it down into many different components like the engine, wheels, suspension, chassis, exhaust etc. All are needed for the car to work, but you can isolate one component, improve (develop) it, and the whole car will be quicker. It’s the same with the skills of riding… if you take one away, you can’t ride a bike. But if you isolate one, develop it, then the rider’s overall ability will improve… this is the essence of skill-based teaching.

1. BODY POSITION & BALANCE

When a person first learns to ride a bike, the hardest but most important thing to learn is how to actually balance on the bike, whilst it's moving. ***Riding Position & Balance*: the fundamental bio-mechanical skill of mountain biking.** What helps a rider balance is a good body/riding position over the bike so their Centre of Mass (typically around the belly button/torso) sits evenly between the two wheels, and therefore the Base of Support (BOS). **The closer the COM of the rider, to the centre of the BOS of the object they are standing on, the greater the stability**. (The same is true for the bike itself... a bike with a COM lower and more centered will be more stable and handle better, than one with a high COM).



Stability can also be **improved by increasing the size of the BOS**... which is why bikes with longer wheel bases and bigger tires are more stable at speed. Most modern mountain bikes are designed for the riders weight to be centered on the bike for maximum bike control, wheel grip and superior handling characteristics. If the riders COM is significantly away from the center of the BOS for a significant period of time, controlling the bike will be very difficult.

Imagine trying to ride down a hill on a small skateboard with your weight too much on the front or rear foot; it would be nearly impossible as the skateboard has a very small BOS... so any movement of your COM away from the middle of the BOS would make it extremely difficult to maintain stability.

However, if a bike rider tries to get their COM as close to the BOS as possible (to maximize stability) they can end up in an inefficient, uncomfortable riding position that wouldn't necessarily help the control of the bike. If you are too close to the bike itself (in a low, crouched position) you won't be able to bend your arms and legs any further to absorb bumps or have enough room to be able to move the bike around underneath to control it.

In addition to this, mountain biking often involves moving the rider's centre of mass away from the middle of the bike in order to maintain control or achieve a certain result, like lifting the front wheel. Therefore, the overall **goal of this skill is**:

To maintain stability by generally keeping the rider's COM centered between the two wheels (in the middle of the BOS) and close to the BOS, whilst maintaining an efficient, comfortable riding position for the task at hand.

THE TWO COMPONENTS OF THIS SKILL ARE:

1. RIDING POSITION
2. BALANCE (RANGE OF MOTION)

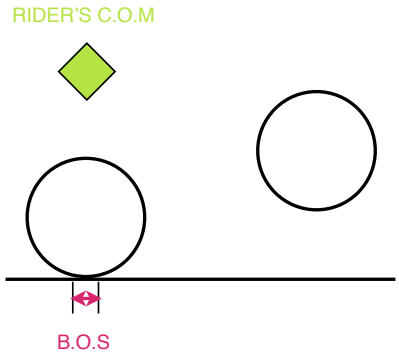
BODY POSITION *Stability*

As the terrain in Mountain Biking is constantly changing, to keep the bike balanced (evenly weighted from front to rear) and controlled over the rough terrain, we must use a number of different *Body Positions* including: Basic (seated), Climbing , Crouch Climbing, Ready (Downhill) and the Attack Position. Using the planes of movement described below, a rider can move into these different positions over the bike as frequently and quickly as is needed, so as to keep their weight as close to the centre of the BOS (and therefore bike) as possible, to maintain stability

BALANCE *Range of Movement in all 4 planes*

Different body positions enable the rider to enhance stability and therefore make it easier to stay balanced. That said, a rider can lift up the front wheel to now reduce their BOS to just the contact area of the rear tire on the ground... this is a very small BOS! Does this mean though that rider can no longer be balanced?

Here lies the relationship between the two... **stability is independent of balance**. Whilst greater stability (as outlined



in the information above) generally makes it easier to balance, it is not *essential* for balance to be achieved.
Here the rider has lifted the front wheel and therefore drastically decreased the size of the BOS. However, by moving their weight (COM) back to keep it centered of the BOS s/he can still remain balanced, at least momentarily. Less able riders may do this just for a front wheel lift, whilst more advanced riders may be able to balance longer in this situation to perform a manual. This is because more advanced riders generally have a larger range of motion over the bike; they are able to comfortably move further along the different planes of movement whilst riding. **A greater range of motion (ROM) makes it easier to balance, regardless of the size of the BOS.**

When a person rides their bike, there are many different forces (gravity, centrifugal, deceleration, acceleration, resultant) acting on their COM making it challenging to keep it close to the (centre of) BOS. By reacting and moving with or against the forces acting on their COM, a rider is constantly striving to maintain stability and balance; the more able they are to move over the bike with and against these forces, the more likely they will be able to achieve this.

So to be balanced a rider should first assume the correct riding position for the situation, but just as importantly, must also stay relaxed and mobile in that position. If the rider is stiff, as soon as the bike hits a bump or the terrain changes pitch, the rider will not be able to react, move accordingly and stay balanced. Balance is a constant reactionary, mobile skill that requires good ROM to move their body according to the demands of, and inputs from the trail. A good riding position (stability) is little without the principle of balance and range of motion.

The four Planes of Movement over the bike include: Fore-Aft, Lateral, Vertical and Rotational

FORE - AFT (FRONT-BACK)



LATERAL (LEFT-RIGHT)



ROTATIONAL (PIVOTING AROUND THE VERTICAL AXIS)

VERTICAL (UP-DOWN)



2. GEARS & BRAKING

As a MECHANICAL skill, *Gears & Braking* is the other **fundamental skill to mountain biking**. A bike is a complex tool and mountain bike trails are extremely varied as the trail's surface, pitch and difficulty can constantly change. If we are to navigate such varied, unpredictable terrain, we must therefore know how to use the tool (the bike) we are using to do it. Without being able to select the correct gears or to control speed safely, mountain biking can become very challenging. This is why it is the first skill learnt by beginner mountain bikers so they can select the correct gear for the terrain they are riding to keep the bike moving, whilst controlling their speed on descents to maintain control. Whilst *Gears & Braking* is the fundamental biking skill, it is however a skill that can constantly be refined to help even the most experienced riders improve their bike riding efficiency, performance and control.

GEARS *Cadence & Pedaling Technique*

The goal of this skill component is to maintain a consistent and correct pedaling cadence (how fast the cranks are turning and how much pressure is on the pedals) of between 60-90rpm; regardless of the the riders strength/fitness, speed and terrain gradient and surface type.

Riders achieve this by knowing:

- **what if feels like** to pedal with a correct and incorrect cadence
- **how to change gear** appropriately to maintain a correct cadence
- **when to change gear** to maintain a correct cadence

THE TWO COMPONENTS OF GEARS ARE

1. CADENCE
2. PEDALING TECHNIQUE

CADENCE

Beginner-novice riders need to learn how to find and keep a consistent cadence, whilst intermediate and advanced riders can learn when to change the cadence to better suit the different riding situations they will experience, as an able mountain biker.

CADENCE RANGE

The best way to think of cadence is to imagine the rev's of a car's engine - too slow, it stalls, too fast it makes a lot of noise but doesn't really get anywhere, any quicker and uses a lot of gas. This is exactly the same for the legs of a cyclist. As the bike speeds up or slows down according to the terrain, the rider keeps changing gear so that the cadence stays within this certain *range*. From this analogy you will be able to use your gears much more effectively and appreciate when it's best to have a slightly faster cadence (higher rev's) with more torque* and less power compared to a slower cadence (lower rev's) with less torque, but more power.

GREEN: Cadence is *too slow* and the bike will stall because the rider will not have enough torque to keep turning the pedals. The leg muscles will need to work/push really hard to prevent this.

RED: Cadence is *too fast* so the legs spin quickly, making it difficult to pedal smoothly, maintain control and to put the power down. The rider will get out of breath very quickly.

BLUE: Cadence is within the *acceptable range*. If a rider needs more torque to negotiate a bumpy trail, they can pick an easier gear for a higher cadence. If they need more power to pick up speed for example, they can pick a harder gear, slow the cadence and push harder on the pedals.

* ***Torque*** *is the tendency of a force to rotate an object about an axis - in this case, the ability of a rider to rotate the cranks by pushing the pedals around. The more torque, the easier it will be to push the pedals and therefore to keep the bike moving. There is a point where the pedals become too easy to push (high torque) and so the power is lost. This is where the rider needs to find the balance between the right torque and right power for the riding situation, by selecting the appropriate gear.*

PEDALING TECHNIQUE

The most efficient and smoothest way to pedal is in a circular motion, instead of just pushing in a downwards motion on the pedals. There are many advantages to this circular pedaling technique, whether you are riding x-country or downhill:

1. More efficient power transfer from the rider to the drivetrain
2. Smoother pedaling motion - this helps find the correct cadence (which is usually a little quicker than most people think) and also helps keep the feet on the pedals if using flat pedals
3. Reduces the amount of suspension “bob” (and therefore energy wasted) on bikes with suspension, whilst pedaling
4. Allows for more consistent power to give a more controlled ride - especially when climbing, or pedaling hard

BRAKING *How, When, Ratio*

The goal of this skill component is to apply the brake(s) in any given situation so as to control speed and/or stop, without causing the tires to skid and so maintaining maximum control.

THE THREE COMPONENTS OF BRAKING ARE:

1. **HOW** to apply the brakes safely, either independently or together, and without skidding
2. **WHEN** it is best to apply the brakes and also not apply the brakes to control speed whilst also maximizing grip
3. **WHAT RATIO OF POWER** to apply to the front and rear brakes depending on the speed of deceleration

BRAKING: A BALANCE BETWEEN CONTROL AND PERFORMANCE

As a riders speed along trails increases with their ability level, their need and desire to brake before corners, instead of during them will become increased. It is often said that braking in corners is bad and that you shouldn't do it. This is not entirely correct. Talking to many expert riders, you will soon discover that they often still are on the brakes, if only slightly, in a variety of corners. This is because they too understand that braking is all about finding a balance between bike control and bike performance; performance being able to ride a trail with the best grip, flow and speed according to the ability level of the rider, but it's no good releasing the brakes if you lose control!

Simply put, applying the brakes causes what we call the main FACTORS OF BRAKING:

- REDUCES SPEED
- REDUCES TIRE TRACTION
- STIFFENS SUSPENSION
- MAKES IT HARDER FOR WHEELS TO ROLL OVER BUMPS
- MAKES IT HARDER FOR THE BIKE TO LEAN AND THEREFORE CORNER
- CAN UPSET THE RIDER'S WEIGHT BIAS OVER THE BIKE AND THEREFORE OVERALL ABILITY TO CONTROL THE BIKE

Consequently, when we corner and/or are riding rough terrain, we ideally do not want the brakes applied. However, speed (and bike) control is more important. The **beginner-novice rider is simply learning how to apply the brakes smoothly, without skidding to control speed** whilst **intermediate to advanced riders are constantly trying to find the balance between braking enough to control speed, but not too much to significantly cause the *Factors of Braking***. Whilst these do adversely affect the bike, it can be only very slightly and indeed advantageous if it means the speed of the bike is reduced, so the rider can maintain control.

3. LINE SELECTION *Trail Scanning & Line Choice*

Mountain biking is unique in its environment. No other mountain/outdoor sport uses terrain like mountain bikers do. Bike trails can be incredibly rough, technical, diverse and constantly changing whilst riding speeds can also vary greatly. As such, a huge part of riding a mountain bike is simply learning how to negotiate the trails we ride on. Often overlooked when teaching Mountain Biking, LS is a hugely important skill in order for a rider to progress, stay safe and have fun on the trails. Working on this skill alone can dramatically increase a student's ability to ride with more flow, consistency and on more difficult trails.

The goal of this skill is to learn how to look at and "read" the trail ahead with the use of *Trail Scanning* allowing the rider to then recognize and choose the different types of lines (and their consequences) available.

TRAIL SCANNING

This principle of *Line Selection* involves riders using their head and eyes to scan up and down the trail between these two viewpoints:

VIEWPOINT A: The part of trail they are about to ride over
VIEWPOINT B: The furthest down the trail they can safely see

The section of trail between these two viewpoints is called the *Field of Vision*. As a riders speed increases, the *Field of Vision* is generally further away from the bike than at slow speeds, when it is closer and also larger. However, factors such as how technical and windy (lots of turns) the trail are can also affect the *Field of Vision.* Through constant scanning of the trail between the two viewpoints, a rider can maximize their *Field of Vision,* helping them pick better lines on the trail to ride with more confidence, preparation and flow.

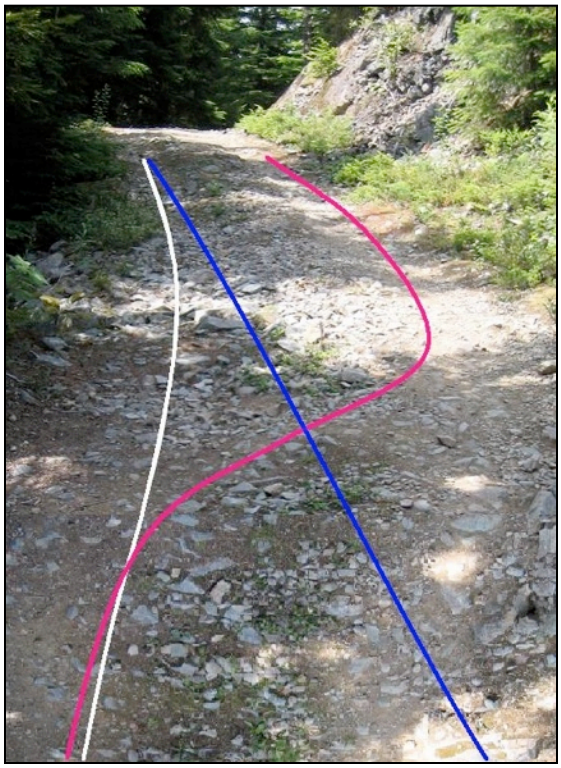
THE LINES

Reading the trail and deciding what lines are available and which lines are good for what can be a very personal, subjective thing and is largely based on ability level, experience and confidence. That said, we can specify three different line choices to make reading trails and picking the best lines to ride over them, a lot more objective and clear, facilitating the process greatly. The different lines available to a rider, though not necessarily all the time (it depends on the trail), are *Smooth, Direct,* and *Racing*.

SMOOTH: The easiest or most "hazard free" route, or line, through a trail. Depends on rider ability, is rarely direct and often the smoothest line. Typically used by beginners.

DIRECT: The line that is the shortest route from one part of the trail to another. Rarely the smoothest and often part of a *Racing* line.

RACING: The quickest line from one part of trail to another. It depends on the rider ability and experience, and can be a combination of the first two lines. Often used by advanced riders.



The green line represents the *Smooth Line* with the least roots and rocks, though quite windy.

The blue line represents the *Direct Line* which may appear the best option, although the rock-drop at the bottom of the frame could make it a less favorable option for some riders.

The *Racing Line* (red) has a smaller, smooth drop at the start, but is still much more bumpy than the *Safe Line.*

DIFFERENT LINE CHOICES

The trail starts in this picture (left) halfway through a right hand turn and is climbing a hill. The Smoothest Line (pink) is the path of least resistance, with little to no rocks.

The white line is the Racing Line as it stays in a straighter, shorter route to the end of the climb, despite going over a few rocks.

The blue line is the Direct Line, because just out of frame of this picture (bottom-right corner) is a large rock blocking that part of the trail, making it unfavorable as a racing line.

4. DIRECTION CONTROL *Steering & Leaning*

Mountain biking involves riding on technical terrain, that is, terrain that can be constantly changing in many different ways; trail direction, terrain surface and obstacles all contribute to making a trail challenging. In this environment, being able to control the direction of the bike is key to riding a trail successfully. Controlling the direction of the bike in “real” biking terms is grouped into 3 main scenarios:

1. Maintaining bike direction: be that in a straight line, or during a corner
2. Temporary direction change: where the general bike direction remains the same
3. Complete direction change: cornering

This skill uses the principles of steering (body steering and steering with the bars) and leaning (inclination and angulation) to control the direction of the bike; be that in a straight line, a small direction change (such as avoiding a rock but still riding in the same, general direction), or around a corner.

STEERING *Using the Body*

By rotating the body (head, shoulders, hips and knees) into the direction of the turn, a rider can better look through, lead and therefore control the bike through the corner. A feeling of “driving” the bike through the turn (as opposed to just being a passenger) is often described when using *Body Steering.* Turning the handlebars also controls the direction of the bike, but its a simple, largely sub-conscious technique that requires little explanation.

BODY STEERING - note the knees, core and chest
pointing to the inside of the corner to help the bike turn

STEERING TO MAINTAIN DIRECTION: Let's say the rider wants to ride through a rock garden in a straight line. Because of the rough terrain, the rider will need to make many small adjustments with the handlebars and with their body rotationally, to keep the bike going where they want to. This highlights that the importance of the principles of *Steering* when used to help *maintain* the direction of a bike, are just as important as when they are being used to *change* the direction of a bike, like through a corner.

STEERING TO CHANGE DIRECTION: Much like in snowboarding, pivoting part or all of the body can help drive, and lead the bike through a corner. Tighter corners require a stronger and quicker body steering movement… a quicker rotation of the body into the turn. More open (shallow) corners do not require as much, or as fast of a movement. The tighter the corner, the more rotation is required to keep the body ahead of the bike in the rotational plane. This makes it easier for the rider to control and manipulate the bikes as required, for better cornering control and performance.

Another part of steering, and so controlling the direction of a bike is ***Counter Steering****. This is actually how you make a bike turn... by turning the bars to the right, this causes the bike to lean to the left because of the angle of the forks relative to the frame and front wheel. The bike now begins to turn left and the handlebars instantly "catch up" as they too now turn to the left. For the purposes of teaching biking, this principle happens so quickly most people never even know it happens, so it's best to concentrate on body steering and leaning the bike. However, counter - steering can come into use for high speed cornering at an advanced level. Here's an example of counter steering at the start of a right-hand turn:*

LEANING *Inclination & Angulation*

We are able to lean the bike away from the vertical axis because of the centrifugal forces that occur as soon as an object (the bike) changes the direction of it's forward momentum; in other words, turns. These centrifugal forces are the same as those that push you to the left (to the outside of the corner) when you go around a hard right-hand corner in a car. In faster and tighter corners, the centrifugal forces are much greater and so this allows the rider to lean more than in slower, more open (shallow) corners.

When leaning into a corner, **a rider can lean the bike at the same angle (*inclination*)** or at a **greater angle (*angulation*) as they lean their body, by using bike-body separation.**

INCLINATION: Leaning the body (spine) the same angle as the bike

How much you can lean a bike is based on speed, terrain (and to some degree, the tires). As mentioned above, faster, tighter corners (smaller radius) can allow a rider to lean more because of the stronger centrifugal forces (among other forces) that will "support" the rider through the turn, and eventually help push the rider upright at the end of the turn.

During a corner, as a bike approaches 45° with respect to the terrain surface, it will begin to reach the limit of traction. This is because the *Resultant Force* (created from the combination of other forces like *Gravity* and *Centrifugal Forces*) is now pushing the tires at a shallower angle to the terrain surface, or less perpendicular. This can cause the tires to slide rather than maintain traction.

Berms (banked corners) can allow riders to lean more than flat corners because the terrain itself is at an angle, so the rider can lean the bike much further (with respect to the horizon) before the direction of the *Resultant Force* is pushing the tires *across* the ground, rather than *into* the ground. However, the further you lean over, the further your COM will be away from the BOS, potentially reducing stability and grip.

Bike-body separation through angulation allows you to lean the bike more than just inclination alone. This is because you can keep your mass more upright and closer to the BOS/contact point of the tires to therefore improve your stability and grip whilst cornering.

Therefore, angulation is very useful in flat corners, but also useful in berms that are either shallow (not very banked) or have a loose terrain surface where grip is compromised). By using angulation you can lean the bike past it being perpendicular to the surface of the berm, while still maintaining stability and grip by keeping your mass closer to the contact point of the tires on the ground. **A simple rule is, if you have to lean the bike to make the side knobs of the tires touch the ground, then you can use angulation to enhance stability and grip.**

ANGULATION: Leaning the body (spine) less than the bike

5. PRESSURE CONTROL

A rider going over rough terrain will naturally feel the bumps and knocks as the wheels hit the various rocks and roots. The forces, or pressure, felt from this can then be moderated depending on the speed, trail conditions and desire of the rider. Using the arms and legs a rider can reduce these pressures from the terrain by absorbing the impact. Similarly, if a rider wishes to exert onto or remove pressure from the bike, he can push or pull with his arms, legs and body to achieve this.

Pressure Control refers to the increases or decreases in pressure (or forces) a rider feels from the terrain, through the bike, and how they chose to control and react to these forces. In addition, pressure can be put onto or removed from the bike (specifically the tires) by the rider themselves.

This particular skill is therefore very much a **sensory skill, learning to "feel" the terrain and bike** whilst also learning how to manipulate the bike by pushing or pulling on it, for greater control and performance. Pressure Control can be passive or active:

PASSIVE: Just like the shocks isolating the body of a car from the forces of the road to give it a smooth ride, a biker can use his/her legs to isolate their body from the shocks of the trail. By simply keeping the limbs relaxed, they will act like suspension, compressing and absorbing like a shock each time the wheels hit a bump. This form of Force Control' naturally requires minimal rider input, and is therefore a "passive" process and generally involves *controlling* forces as opposed to *applying* them..

ACTIVE: Instead of just keeping relaxed so the legs and arms can absorb terrain on their own (like shocks on a car), a rider can actively bend or extend their limbs to further moderate and change the pressures exerted on the bike. The rider has to read the terrain closely to pre-empt it, lifting the wheels before they hit the bump or pushing the bike down into the trough, instead of just letting it roll into it; this is a more "active" process and so generally involves force *application*, as opposed to *control*.

Passive use of this skill can be learnt quite easily, whilst active use requires much more riding experience and skill development before a rider can really apply this particular principle of *Pressure Control'* to their riding.

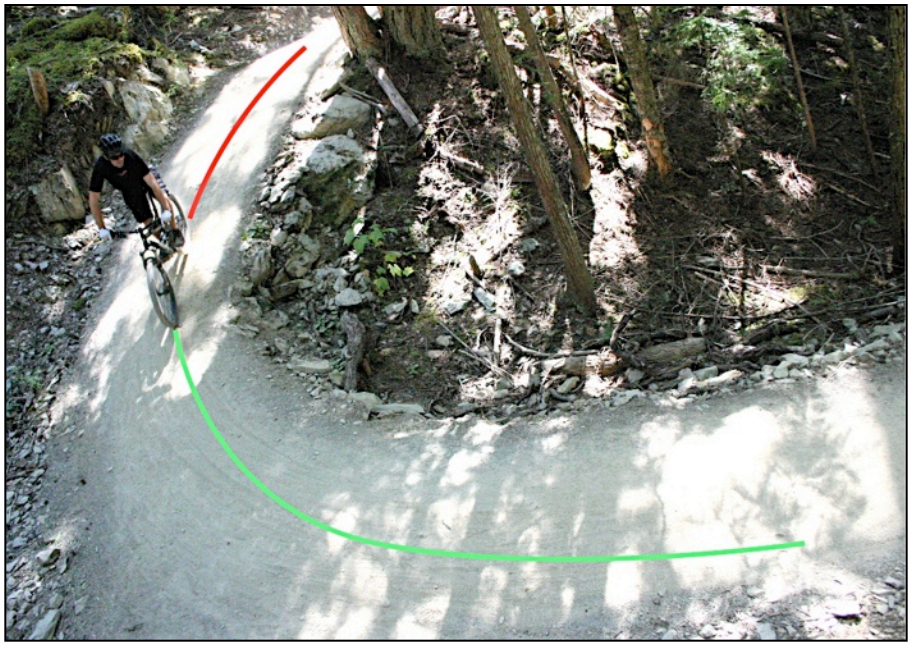
6. TIMING & COORDINATION

The final skill of mountain biking riding is concerned with putting all the previous skills together, at the right time, in the right place to produce smooth, controlled riding with accurate technique(s). It is the last skill to master because we can only truly improve this skill unless the previous skills are already within a person's riding. By improving the timing (e.g. when, how quickly or slowly) and coordination (e.g. the sequence of movements or skills) of the other bike riding skills, this skill, in its own right, will improve a person's riding ability.

TIMING: When (early or late), how fast, slowly or progressively movements or techniques need to happen
COORDINATION: How much, in what way and in what sequence do particular movements, skills or techniques need to happen.

T&C can relate to each skill individually and also to the skills as a group - the following example will explain this further:

SCENARIO: A rider is going downhill at a decent speed when he approaches a hard left-hand corner.



In this corner scenario we can see how T&C can be applied to the skills as a group - dictating in what sequence each skill is used for this corner.

1. LS: Select his line up to, through and out of the corner,
2. GB: In accordance to 1, brake (red line) and change gear so he does not enter the corner too fast and is in the correct gear to exit
3. RPB: As he breaks he would simultaneously need to lean back a little before..
4. C: Letting the brakes off (green line), steering and leaning into the corner at which point..
5. PC: he feels a few bumps in the corner and reacts by absorbing the shocks with his arms and legs
6. He should now be at the right speed, in the correct gear and in control to smoothly exit out of the corner.

Let's take *Gears & Braking* as an example of applying T&C to a skill individually.

- If he brakes too late he may enter the corner too fast and lose control – he will end up leaning in to the corner (C) too late and possibly not being able to react to the bumps properly (PC).
- If he changes gears too late (he would need to select an easier gear for the exit because he is slowing down) he may stall on the exit of the corner after reducing his speed so much to enter the corner.

A beginner rider will typically learn timing and coordination of individual skills, whereas an advanced rider will be able to apply TC to all some or all of the skills synonymously. What makes a rider improve is their ability to coordinate progressively more and more of the *Six Skills*, at the same time as they ride.

TEACHING THEORY

When we teach somebody something, whether its how to ride better or just to do up their shoe lace, it involves a whole lot more than just telling someone what they need to do, and this is what you will learn from the following information. The subject of teaching is complex, detailed and involves a great deal of understanding, not only of the skills we use to pass our knowledge onto the student, but also of the ways in which a student learns.

To therefore study the topic of teaching properly, we must look at the different sections of theory independently, those being i) Principles of Teaching, ii) Instructor Attributes and iii) Learning Theory and iv) Client Experience.

I. PRINCIPLES OF TEACHING

This list of principles explains the main points of teaching to better understand it not only as a skill and subject itself, but also what is therefore required from you as an instructor. It is your job as an instructor to remember and, more importantly, apply these principles to your own teaching if you are to become a professional instructor. It is easy to be a good instructor but it is also easy to be a really bad one; it takes very little for an instructor to go either way. This is why it is so important to know this information and be prepared and professional whilst on the job if you are to become an instructor that keeps their clients safe, whilst effectively improving their skills in a fun environment. We can think of these points as the **Three Goals of Teaching:**

- **KEEP CLIENTS SAFE**
- **EFFECTIVELY IMPROVE SKILLS**
- **SHOW CLIENTS A FUN TIME**

Applying these principles of teaching to your instruction will help you to meet each of these goals during your lessons.

1. **SAFETY FIRST!** The goal of any instruction should be to improve the safety of the student first, through the improvement of his/her skills, second: good teaching practice involves safety and improvement together.

2. **Teaching must be fun** - following safety and education, your teaching must be fun for the student; this will help them enjoy themselves whilst making it also easier for them to learn. Providing your clients with a fun experience is vital in getting them to return for more!

3. **Teaching is never just telling someone what to do:** Through the use of the Teaching Wheel, any and all teaching must take into account and manage every Principle of Learning, to ensure effective and safe learning.

4. **Teaching is a two-way communication:** Safe and effective teaching comes from promoting communication between the clients and yourself through the use of questions. This allows you to confirm they understand the information and for them to let you know how their learning is going – this is essential to the teaching and learning processes.

5. **Teaching is about helping your student(s):** A good instructor will make sure that every lesson is planned, executed and adapted according to the wishes of each and every client. This will ensure you are delivering a product that is catered to the needs of the individuals you are presently teaching and nobody else.

6. **Teaching is a fluid, dynamic process** – it is an application of knowledge: Flexibility and adaptability are key elements of any instructor. Teaching is not a rigid, fixed process you learn from a book and recite to your students. It's about the application of knowledge to a huge variety of situations and people; you are dealing with humans, not robots!

7. **Teaching *is* guiding:** Safe and effective teaching naturally results in safe guiding and management of the student(s) during the lesson: a good instructor will naturally also be a good guide. By teaching proper techniques in safe, effective progressions, the lesson ensures safety and by making them technically more able and aware riders, students naturally become safer riders themselves.

II. INSTRUCTOR ATTRIBUTES

In order for an instructor to show these teaching principles in their lessons, he/she must posses a certain list of characteristics, or attributes, as a professional instructor. Most of these can be learnt through training, practice and experience within the industry. Some however, rely on more innate qualities of the individual, such as personality and charisma. You can learn all there is about how to teach, but unless there is a personality behind the information, the ability to be a good instructor is always diminished. Read this list of Instructor Attributes and see how many you think can, if not already, apply to you and which ones you think you may need to work on to become the best instructor you can be.

1. **Knowledgeable and Competent be-fitting of a professional instructor:** If someone is paying money to be taught, they will naturally assume the instructor is an expert in their field. It is therefore imperative that every instructor can present themselves in such a manner not only through advanced riding skills, but through expert tuition, guiding and a professional self-presentation. Being a good rider is not enough… so know your stuff! **Your knowledge of teaching theory and ability to apply it in a lesson should be equal to your knowledge of riding theory and ability to perform the necessary riding skills, for your qualification level.**

2. **Excellent Self-Presentation:** So much of being a good instructor is about how you conduct yourself as an instructor and ambassador of the sport. Whilst you may normally be a shy person, when you are teaching, this cannot be so. A good instructor should exhibit these personality traits if not all the time, at least when you are teaching:

   CONFIDENCE: Vital for the students trusting what you say and therefore giving it a go. If they feel you are not confident, it will immediately translate to how they learn and so reducing the success of the lesson. Even if you don't feel confident, act it! You may find you'll start having more confidence just by acting like you do.

   PERSONABLE & FUN: Be the entertainer! Have fun with the clients not only for everyone's (including yours) enjoyment but also to provide a positive environment for them to learn in. Be someone they feel they can ask questions and approach with anything they may have on their mind… this will make it easier for you to teach them as well as provide the product they are looking for. Remember, it's there lesson and never yours!

   LEADERSHIP: Whether you are teaching, guiding or dealing with a difficult situation like a mechanical or first-aid issue, being an effective leader is crucial in maintaining the clients' trust, respect and even cooperation. The first two character traits will help you develop your leadership abilities.

   POSITIVE ATTITUDE: Learning can often become frustrating, regardless of the type or ability level of the student. It is imperative to provide constant, positive support to your students. Having a good attitude is more than just telling someone they can "do it", though. It's about being the professional and dealing with every situation appropriately, to the best of your abilities and in a self-less manner.

PATIENCE: Every person is unique and learns in a different way and at different speeds. When a student is having difficulty with a new technique, you must therefore be patient and do your best to analyze the situation to most effectively help the student keep progressing. Losing your own patience will only exacerbate the situation and will reflect badly on you.

3. **Excellent Communicator:** Teaching is not simply talking to people and saying what they need to do. Communication is vital to ensure student safety and progression. Being a good communicator means speaking clearly, in plain language (no technical terms) and only saying what you need to say in short, to the point explanations. If you need to take a second to "rehearse" what you need to say on your head – do so; it's much better than waffling and confusing the students. You must also ask questions and listen! This will ensure they understand your explanations and allows them to ask any questions. A good instructor will always take time to listen to their students.

4. **Passion for Teaching:** Any successful, long-term instructor who has made a living from coaching sports will have the essential ingredient of a passion for teaching itself. Teaching can be an incredibly rewarding career. If you have a passion for helping people achieve their goals by sharing your knowledge, then you will make a great instructor. That way when you are teaching a beginner how to change gear on a grassy field, you are not worrying about missing out on your own riding time; you are getting as much enjoyment and satisfaction from teaching as you do from riding.

5. **Adaptability and Intelligence:** Teaching mountain biking can be incredibly dynamic and challenging, especially when dealing with group lessons. Things are rarely simple and "set out in stone". A good Instructor must always be able to "think on their feet", adapt to situations and apply their base of knowledge to different situations and people. Teaching is all about how to apply the information in your head best to suit the people and situation in front of you. Students can have learning difficulties, physical difficulties or simply mechanical issues with their bikes. Nature can play its part; weather, trails closures or animals are all factors an instructor may have to deal with. If you are not able to adapt your skills or knowledge and change your plans as things develop in the lesson, looking after your clients safely and coaching them effectively will become very difficult.

III. LEARNING THEORY

The subject of and process by which human beings learn new information is vastly in-depth and complicated; a little research and you will find a huge number of studies and books on this matter. However, for the purposes of this manual, we shall limit the discussion of this topic to looking at the more basic parts of learning; how we remember information and the different styles in which people learn. If you are to become an instructor - a teacher - it only makes sense to study and understand the ways in which we actually learn.

MEMORY PROCESSES

When faced with new information, an individual must first remember it before the information can be processed and understood. Unless you remember something in the first place, you will never be able to think about and therefore understand it. Scientists have shown that human beings process information, and therefore remember it, in three main ways; visually, aurally and cognitively. The more of these that are used when learning, the more likely the information will be recalled:

- **Visually:** This could be reading text for a school test or watching somebody hitting a golf ball. The act of seeing something provides a visual explanation or reference for the brain to "capture" and remember that information. *You see a sign and don't really take note of it or even read it in fact, yet a couple minutes later you remember what it said. You see someone hit a golf ball and give it a try – whether you hit it or not, you will have an idea of how to stand, hold and even swing the club.*

- **Aurally:** This involves hearing and listening to the information. It could be somebody explaining an historical fact or saying how to do something. *You see the sign as somebody points it out and reads what it says. Whilst you watch the guy hit the golf ball, someone is explaining what he is doing and why, as it happens.*

- **Cognitively:** This involves actively thinking about the information. The process of thinking about the "why's" or "how's" of something, or even trying it, actively helps the brain remember the information in the first place. *The sign says something strange and you wonder why it said that or why it was even there – you recall it a week later. You look at the guy hitting the ball and think about how he held the club, how he lifted it and then swung it to hit the ball – you end up hitting the ball the first attempt!*

When you think of these different ways of receiving and processing new information, you can start to understand how we remember, and therefore learn. Typically speaking, we usually see or hear new information in some form. If it's of interest to us, we usually therefore think about it, too. The reason why so many school or university students don't do as well as they would like in exams (other than not doing the work!) is because they often only use one of the above ways to process and therefore remember new information. Simply reading text is only offering the brain one way with which to process and remember the information. If a student was to not just read (see) the information, but to also actively think about and fully understand it (cognitive) and even speak to themselves about it, even reciting the information to themselves (aural), they are far more likely to remember it come exam time.

Naturally, because of these three different ways to process new information, if we are to maximize the progress in our students, we must therefore structure our teaching to ensure each type of memory process is used. In addition to different memory processes, there are also different learning styles and thus further factors we must take into account, when teaching.

LEARNING STYLES

These are simply ways in which people tend to learn. It is generally agreed amongst teaching professionals that there are three main learning styles; “thinkers”, “doers” and “watchers”. Whilst people tend to favor one or two of the styles, it is important to note that everybody will use always adopt each of the learning styles – its just they naturally adopt one style more than another. Read through these and see which ones apply to you the most and see if you can pick the learning styles that might apply to your friends.

“THINKERS” – Cognitive Learners: These are the type of people that like to here or read explanations and then think about things before trying them. They often have an analytical mind and will ask many questions to make sure they understand correctly, before attempting anything. Often intellectual people where sports like mountain biking do not come naturally.

HOW TO BEST TEACH “THINKERS”

- Short, simple explanations are key. Talking a lot will only serve to make them over-analyze things and possibly confuse them.
- Allow questions and listen but you also should also try to manage the length and number of questions.
- Provide them with support and confidence to get them going. Thinkers tend to forget that the other ways of learning are to watch it and actually try it!
- Thinkers will always like to know how they did: provide plenty of encouragement and feedback.

“DOERS” – Experiential Learners: Often independent in their learning, this type of learner doesn’t always listen and just wants to try it themselves. They are keen and confident to try new things and learn from their mistakes. However, instead of thinking about things and evaluating what went wrong – they just go again! They are more likely to ride beyond their limits and get hurt, failing to reach their goals.

HOW TO BEST TEACH “DOERS”

- Make sure they listen and respond to your explanations – getting them to actually think about what it is they are trying or how they should be riding to improve.
- Control their riding in what they attempt – manage their speed and terrain choice threw your demonstrations and guidance.
- Encourage trial and error through small steps at a time. They will feel like they are riding lots whilst progressing and keeping safe at the same time.
- Allow plenty of time to practice – this will feed their desire to just “get on and do it” whilst providing you plenty of time to analyze their riding and offer feedback: doers often like to hear and talk about feedback after they’ve practiced, as opposed to listening to explanations beforehand.
- Be realistic with “doers” so be prepared for failure. At the end of the day, despite your best instruction and advice, people will still do what they want!

“WATCHERS” – Observational Learners: These people prefer to learn what they need to know through watching others do it. They can be happy to listen to explanations and discuss things, though tend to not fully comprehend the information until they’ve seen a “picture” of it. Watchers can often learn quickly as long as they have many, clear demonstrations – they are able to change and adapt their techniques, simply by copying the instructor.

HOW TO BEST TEACH “WATCHERS”

- Demonstrations that are clear and relevant to their skill level are essential for this type of learner.
- Watchers can often “picture” what they need to do in their mind, so allow discussion and time for this mental rehearsal.
- Static demonstrations whilst you are explaining things can help them create this mental image before you even show them the real thing.
- Feedback will help them assess their performance and try again – provide a picture of their feedback by showing them what they did compared to what they need to do: either by showing them yourself or through the use of a camera or video.

So, which of these styles applies to you the most? Again, remember that whilst these different learning styles exist and we tend to favor one or two, all three of them still apply to every student.

PRINCIPLES OF LEARNING

As with the Teaching Principles, applying this list of principles to your instructing methods will ensure safe, effective learning from all of your students.

1. **Everybody Learns In Different Ways:** Every person is unique, has different experiences, and so learns in different ways. Consequently, we must make sure our teaching manages the three memory processes and learning styles of everyone in the class. Being able to think on your feet and adapt your teaching to suit the needs of each individual is vital to ensure learning from everyone in the group.

2. **Complete Explanations Help Ensure Learning:** Complete explanations include simple, clear information that is presented in a "What, Why, How" format. Just telling someone *what* to do is not enough. Explaining how to do it in terms of body movements and/or bike operation and then giving them a reason for why this will help them ride better, is key to effective learning. They will more likely remember the information, be prepared to try it and succeed because of this and so ensuring they achieve the desired result – which is the "what" part of the explanation.

3. **Effective Learning Best Comes From A Series Of Steps:** Explanation, Demonstration, Practice and Feedback: If one of these steps is lost, a student's ability to learn becomes instantly compromised. Effective learning cannot occur from explanations alone – telling someone what to do won't ensure learning. Students must see, try and review their performances to truly understand and progress. Each step has its own significance and must therefore be included in the learning process.

4. **Learning is all about progression:** Keeping students safe is the priority before skill improvement. To achieve the goal of the lesson, the information must therefore be broken down into a series of small, manageable steps. Smaller steps are easier to learn and so this creates a more positive, successful learning environment, keeping the learning process safer. Each step should lead to a logical progression to the final step, which is the goal of the lesson. Fewer, bigger steps increase the risk of failure, and therefore a negative learning process and possibly injury.

5. **Constructive, Positive Feedback Best Improves Learning:** In order for a student to progress after practicing a new skill or idea, they must find out how they performed. Improvement comes from analyzing performance, figuring out what was good and what needs working on, to then try it again with hopefully a better result. An Instructor can typically offer more information on a student's performance than the student can. The way feedback is delivered is very important in creating a positive, enjoyable and therefore effective learning experience. Feedback must always be positive, include Complete Explanations and a demo' so the student can truly understand what is their goal, what they are currently doing and what they need to do differently, to achieve the goal.

From the *Principles of Teaching, Instructor Attributes* and *Learning Theory* we now understand not only what is required from a professional instructor, but also how and why we can structure our teaching to most effectively look after our clients… *Teaching Techniques* will discuss this in more detail.

IV. CLIENT EXPERIENCE

The three goals of teaching are to keep clients safe, effectively improve their skills and to show them a fun, enjoyable time. We use the *Guiding Protocols* and teaching methods described above to look after the first two goals. In terms of client care and satisfaction, we must therefore look "outside the box" a little when it comes to being The Instructor.

If you're keeping clients safe and teaching them well, whilst these are crucial to delivering a positive client experience, unless they are enjoying themselves, the lesson really won't deliver in terms of client satisfaction. At the end of the day, any instructor is simply delivering a product to the client(s). For that product to be successful, the clients must enjoy it. So how do we make sure clients have a fun, enjoyable experience if we're constantly thinking about safety and teaching?

A huge part of being a *PMBI Instructor* is realizing there is more to teaching mountain biking than simply coaching people how to ride better. Mountain bikers are often the type of people who got into the sport simply for the enjoyment and passion of being in The Outdoors, so we need to keep this ethos in our lessons as a major factor towards client satisfaction. Pointing out interesting local flora and fauna facts, like birds, deer, flowers or even bears and snakes is all part of The Outdoor experience and chances are, these little touches in your lesson will really be appreciated.

Asides from The Outdoor experience that mountain bikers seem to revel in, another part of being a *PMBI Instructor* is the Personal Experience - each client feels like they've each had enough one-on-one time through a lesson and/or the instructor has really taken the time to listen to and aspire to fulfill the clients' wishes. There's nothing like that "personal touch" to get return clients and therefore repeat business. Simply chatting through the lesson and getting to know the client(s) is key to knowing how you can show them a good time... it can even make the lesson safer - knowing more about your client will provide you with more info' to better plan the lesson to keep them safe and teach them effectively.

Questions: these are key to ensuring a positive client experience. Are you having a good time? Does what I'm saying make sense? Does everybody know what they are trying to do? How is the lesson going? Would you like to switch things up or stay with what we're doing? Do you have any questions? How are you guys feeling? Anyone got a joke?! Not only do questions ensure the client experience you want to deliver but they also serve as a type of "disclaimer" at the end of the lesson. If a client complains "they didn't do this" or " I didn't get this" and so on… if you kept asking them how things are going and do they understand, then you can at least have some peace of mind that you gave them the option to change things up or re-explain.

TO SUMMARIZE

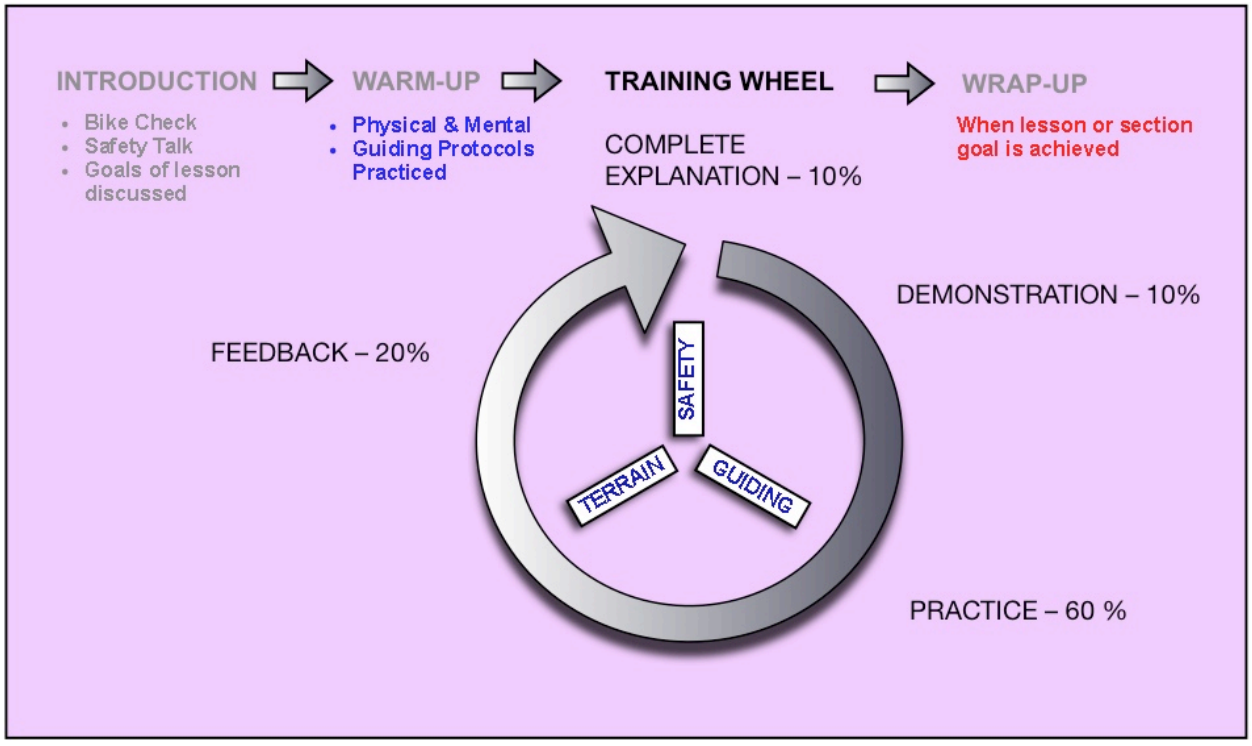
- Whilst most mountain bikers will have a good time from just riding and learning, there are other ways to provide an enjoyable experience
- The Outdoor experience is often at the heart of any mountain biker - include this in your lesson
- Getting to know your clients is key to delivering that "personal touch"
- Keep asking Q's so you can evaluate the lesson as it progresses and change things up, if needed.

TEACHING TECHNIQUES

In order to manage the *Teaching & Learning Principles* whilst instructing, PMBI have devised the *Lesson Format & Training Wheel* to enable a structured, yet flexible approach to teaching. The *Guiding Protocols* involve the safety and management side of the instruction.

Providing a lesson with a structured format enables both the instructor and the student(s) to make the most out of the lesson. It simplifies the lesson into somewhat of a standardized procedure, which the instructor can perfect whilst the information to the student is presented in a clear, concise way, ensuring understanding, safety and therefore effective learning. It allows students to work on small pieces of information at a time and perfecting them before moving to the next stage.

LESSON FORMAT with **Training Wheel** & **Guiding Protocols**



The *Lesson Format* encompasses everything you see in the box; all the parts of the lesson from start to finish, whilst the *Training Wheel* is purely the instructional part of the lesson; Explanation, Demonstration, Practice and Feedback. The *Guiding Protocols,* Safety, Guiding and Terrain*,* review how you manage, guide and keep the students safe during the lesson.

1. INTRODUCTION

First impressions are very important in establishing respect from the clients and setting the general "tone" for the lesson. **Look as well as be professional; be welcoming, confident and prepared. Your equipment should match your self-presentation** – equipment that looks worn, dirty and beaten is unprofessional, not to mention unsafe. How you appear visually is all part of being the professional; mountain biking and other sports like it are retail driven industries, so can be quite vain. Like it or not, that's how it is and if you want to be noticed and respected as a top-level instructor, the first step is to look like one. Think of any other profession and it's the same.

- Be confident and friendly when introducing yourself to clients. Shake their hands and make eye contact to make it genuine and personable.
- Ask them what mountain biking experience they have and their ideas or goals for the lesson.
- Discuss the plan for the lesson and try to come up with an overall goal of the lesson that is to the interests of everyone. Then propose a rough plan of what you might work on to reach the lesson goal. Keep things general though at this stage to give you flexibility to modify things as the lesson progresses.
- Personally guide everybody through a **BIKE AND EQUIPMENT CHECK** (see Level 1 Riding Material) before riding and address any issues before hitting the trails.
- Finally, go through a **SAFETY TALK to introduce and discuss the *Guiding Protocols*** (see below) for how students should ride together, keep safe and show respect for the trail and other trial users.

BIKE & EQUIPMENT CHECK

Before you ride anywhere off-road, you first need to check that yours as well as the clients bike is safe and in good working order. Mountain Biking, due to its very nature, demands a lot more from a bike so its important to check your bike each time before you use it too keep it and you safe. Although the following text seems a little exhaustive, once mastered, it only takes a minute to do everything explained in this section. If you find anything that is a problem, not matter how small, on anyone's bike (including your own) get it fixed 100% before you begin riding.

To make sure you don't miss anything whilst checking over your machine, it's best to start from the handlebars and work down and back across the bike to finish at the rear skewer. You can pretty much do all of this tool-free. Take a look at this picture to get yourself familiar with some of the different bike parts and their names…

HEADSET: Turn the bars 90 degrees, put the front brake on and "wobble" the bike back and forth along the axis of the top tube. As you do this place your thumb and fore finger around the bottom headset race and top of the fork crown. If you feel any play, tighten the headset.

BRAKES: To check the brakes are working apply both brakes and rock the bike back and forth to lift the front and rear wheel off the ground. The brakes should feel positive and stop the wheels enough to allow the bike to "rock". The end of the brake levers should not reach the handlebars.

WHEELS: Holding the stem, lift the front wheel and spin it – it should rotate freely, not rubbing on the brake. Also watch the wheel as it spins noting any side-to-side movement – if the wheel is buckled then get it fixed before you ride. Repeat with the rear wheel – lift the bike with the seat.

TIRES: Firmly squeeze both tires on the sidewalls. They should be firm but not rock solid either. Most mountain bike tires should be inflated between 25-50psi – it should say on the sidewall of the tires. Check this and re-inflate if necessary. A firmer tyre will help prevent punctures, roll quicker but offers less comfort and traction – conversely a softer tyre will give a slower ride with less puncture protection but will provide more grip and comfort.

SPOKES: Squeeze each "pair" of spokes to check for any loose, broken or missing spokes. This is particularly important if it is a downhill lesson.

QUICK RELEASES: Check that either the quick release skewer or bolts that attach both wheels to the bike are tight and secure. Also check the quick release on the seat is tight and that the seat is set at the correct height… and dropped if riding downhill all day.

SUSPENSION: Compress both forks and rear shocks (if the bike has them) to make sure they are not locked out and that they are working smoothly. Rebound should be set at neither too quick or too slow - when you compress the fork, it should rebound by "following" your hands; neither pushing them back or lagging behind. Suspension on XC bikes should have around 20-30% sag, whilst downhill freeride bikes should be around 25-40% sag depending on the bike design. If the suspension is obviously out of tune, set the bike up properly before riding.

GEARS: With the bike standing, spin the pedals backwards. If the rear mech hanger is straight and the chain is on it's correct cog, the pedals should spin backwards freely. Riding the bike, check the front and rear gears independently looking for accuracy and smoothness of shifting. If the gears are not working properly, get them fixed – many expensive repairs (and even crashes) can be prevented by fixing 'small problems' first. In particular, if the chain falls off either the cassette (rear cogs) or chainrings (front cogs) the derailleurs must be adjusted correctly before you ride.

OTHER EQUIPMENT: Helmets need to be checked for condition and correct fit. Gloves, body armor, protective eyewear, shoes and clothing all need to be appropriate for the type and level (skill and fitness ability) of mountain bike lesson taking place. Downhill clinics require a full-face helmet, knee and elbow pads as a mandatory minimum. Clients should also have enough water, food and preferably their own bike tools and puncture repair kit as well. The further you will be riding away from emergency services, the more skilled, physically prepared and self-sufficient your clients needs to be.

IMPORTANT: If in doubt about the operation, condition or safety of any aspect of yours or a customer's bike, either fix it immediately or arrange for another bike before beginning the ride. Failure to do so can put the rider and the other people in the group in great danger.

GUIDING PROTOCOLS

As with the first *Teaching Principle*, safety is the priority when teaching and a good instructor will ensure this through the help of the *Guiding Protocols*. These can be seen as the "spokes" of the *Training Wheel*, supporting the instructional part of the lesson by keeping everybody within the lesson, including the instructor, safe and happy on the trails. If one or more of the "spokes" is weak or not present, the structure of the wheel and therefore ability of the lesson to keep the students safe and learning, is immediately compromised; SAFETY FIRST = LEARNING & FUN!

IT IS VITAL THE FOLLOWING SAFETY, GUIDING AND TERRAIN POINTS ARE MAINTAINED THROUGHOUT THE LESSON BY BOTH INSTRUCTOR & STUDENTS, AT ALL TIMES. FAILURE TO DO SO IMMEDIATELY COMPROMISES SAFETY FOR EVERYONE IN THE LESSON AND FOR OTHER TRAIL USERS.

USE THE INTRODUCTION AND WARM-UP PARTS OF THE LESSON TO ENSURE ALL POINTS ARE UNDERSTOOD AND EXHIBITED BY ALL STUDENTS *BEFORE* ANY TEACHING BEGINS, AND FURTHER ENSURE THEY ARE MAINTAINED *THROUGHOUT* THE LESSON WITH FRIENDLY REMINDERS.

SAFETY RULES: These safety considerations **must be in place at all times and form the points to be covered during the SAFETY TALK**. Although they may appear as matters of common sense, many riders do not follow them. Fortunately, they are very simple and quick to explain so just make sure you do!

- **Rider – space:** Distance between each rider on the trails is crucial for safety and learning and is measured in seconds, not meters. As riders' speeds increase, so too should the time between each rider. A minimum of 3 seconds should be in place when riding at slow speeds with a minimum of 6 seconds for downhill riding. Should the rider in front fall or slow down, the rider behind should always have enough time and therefore distance, to react accordingly.

- **Stopping:** When stopping, all riders in the lesson must stop to the side, so the trail is free for other users to continue through. Absolutely no trail obstruction should occur when stopping. Never stop in a blind-spot, such as the exit of a corner or below a roller, where riders cannot see you as they approach. An ideal stopping place is an area that puts the riders actually *off* the trail and so not obstructing the trail at all.

- **Starting or Entering a Trail:** When setting off or riding onto a new trail, all riders must look both ways along the trail to make sure it is safe to enter the trail. The instructor must only lead the group onto a trail when it is safe for everybody to follow, ensuring nobody gets left behind. When entering a new trail, those riders already on that trail have right of way.

- **Right of Way - Passing Others:** When approaching an oncoming rider, if there is plenty enough room to keep riding, move to the side of the trail, say "hi" and how many students are behind you; e.g. "4 more!". If there isn't enough room for you and your students to pass the oncoming rider(s) safely, give way, pull to the side, dismount, ask the students to do the same, then continue once the trail is clear. When approaching riders who are going the same way and are slower, it is safest to wait until they move over and stop before passing them - especially with a group behind you. Be patient and allow other trails users the time to enjoy the trail without fear of people riding behind them, on their "tail".

  When descending a trail the uphill rider will have right of way, so make sure you are in control of your bike to avoid and respect other trail users. When descending, the rider furthest downhill, has right of way and priority over line selection.

- **Navigation Rules:** With larger group sizes and winding trails, riders can often lose sight of the person in front, especially if they are paying attention to the Rider Space protocol. To help keep the flow of the lesson when riding in an area with many intersecting trails, adhere to the following ***Navigation Rule*** – explaining only part A to your students. This rule only applies if you want the students to stay on the current trail.

  A: "If you reach a trail-junction and cannot see the rider in front of you, go straight ahead and stay on the current trail – do not deviate onto another trail."

  B: Should the Instructor reach a trail-junction that is not clear in terms of where the current trail goes, s/he must stop to the side and wait until all students are together before carrying on, unless riders have been informed of which trail to take. In this case the **Turning Rule** must be followed.

  Whenever you turn off one trail onto another, you must:

  I. Tell students in advance of the direction and trail change.
  II. Make sure all students follow you onto the new trail before continuing on (slowing down before the corner will help to bring the group together a little, ensuring everyone sees where to go)

The next two guiding protocols, *Guiding* and *Terrain Choice* are what an instructor must do throughout lessons to make sure people are not only paying attention to the safety points mentioned above, but that he/she is also guiding and managing the group safely as their Leader/Instructor, as well as setting appropriate lesson goals and choosing appropriate terrain to ensure a safe, effective, mountain bike lesson.

GUIDING: To effectively guide the group, an instructor must have clear knowledge of the trails they are riding, where they are going and how they can safely lead the students along the way.

- **Class Management:** Maintain group control and safety by ensuring all the above Safety protocols (above) are met. Keeping riders safe from each other is just as important as keeping them safe from themselves and other trail users.

  - **LOOKING BACK** as you lead a group is a **vital skill to be able to monitor your group and must be performed by The Instructor throughout the *entire* lesson to effectively manage safety**. It will enable you to determine whether you are going too fast, too slow, if someone has stopped, whether they are riding too close to each other, and so on. An instructor who is not looking back is an instructor who is not managing safety effectively. As a rule of thumb, on most straight, non-technical sections (minimum bumps, no jumps etc) of trail and after most corners, an instructor should be able to quickly glance back to get a "shapshot" of their group.

    Practice looking back on easy sections of trail by just moving your head and making sure you keep your shoulders and arms still, so that you don't steer the bike off the trail. This will also allow you to read the terrain ahead and begin to get a better idea of what sections of trail and on what corners it is easier, safer and more effective to look back at your group.

  - **REGULAR STOPS**, particularly at the beginning of the lesson, are a great way of "checking in" with the group to make sure things are going okay… is the riding pace appropriate for them, is the terrain/trail choice to their liking, do they have any questions, are their bikes okay etc.

  - **LEADING THE GROUP - INSTRUCTOR FIRST.** For new LEVEL 1 Instructors, we recommend always staying at the front of the group. It is much easier to control the speed, trail direction, group dynamics and manage safety from the front of the group.

  - **LEADING THE GROUP - INSTRUCTOR SECOND.** For experienced LEVEL 1 and LEVEL 2 Instructors, you can have one student ride in front of you so you can watch their riding to offer them **feedback.** Let the student who is going first know where you intend to stop later down the trail, and ask the rest of the group to follow you as normal.

TIPS FOR WATCHING STUDENTS TO HELP GIVE FEEDBACK!

  - **WATCHING STUDENTS COME TO YOU.** For experienced LEVEL 1 and LEVEL 2 Instructors. As you set off, let the students know to give you a bit of time (perhaps 30 seconds) before setting off down the trail themselves. Remind them of the Safety Rules (look before you enter the trail, keep you distance between each other etc) and make sure they know where they are going and tell them stop on the side by you. You can then choose a good place to stop the group and watch them come down the trail towards you.

  - **WATCHING STUDENTS RIDE PAST YOU.** For LEVEL 2 Instructors *only*. Let the students know you are going to stop on the side of the trail at a specific point ahead. Instruct them to give you some time to get there and then come down the trail themselves (again, paying attention to the Safety Rules), stopping at a specific place. Make sure they all know and have already seen the designated stopping area - make sure it is as safe and obvious place to stop for everyone; "Stop two corners after you pass me on the side by that blue sign", for example.

- **Group Size & Sweeps:** For safe, effective instruction, PMBI Courses recommend a *maximum* of 1:6 and 2:10 Instructor-Student ratios. Should there be just one instructor (for any size group, but particularly for those with 6 students or more) The Instructor can appoint a "tail-guide/sweep". This persons responsibility, whether as a student or as volunteer who is assisting The Instructor and is not part of the lesson, is to always remain at the back of the group so as to help keep the group together, and further manage safety.

  A SWEEP CAN:

  - See other people in the group and so remind them of the Safety Rules if need be.
  - Communicate to The Instructor about a number of factors such as riding speed, group dynamics and terrain choice.
  - Should a rider in the group stop due to a mechanical and/or crash, the sweep can either assist that person or, if necessary (if first aid is required for example), can find out what happened from the person involved, and then ride ahead to communicate the situation details to The Instructor so he/she can act accordingly.

  A SWEEP SHOULD BE:

  - Someone responsible - at least more so than the rest of the group
  - Someone with stronger or equal skills to the rest of the group: weaker riders should NOT be sweep
  - A sweep can be changed so everyone in the group gets a chance to be (or not be!) the sweep

- **Goal Setting:** Keep the riding level and terrain difficulty to a point that is never dangerous for the student. Whilst most teaching will ultimately involve challenging the students at some point, make sure the goal is still within their ability level and therefore realistically achievable. It is often much safer (and provide a more successful and effective learning experience) to challenge the technical skills of a student on easier terrain, than to simply challenge them by making them ride difficult terrain.

  - Skill development can be easily achieved through proper instruction, without making the student ride any trail or obstacle that is too difficult or even slightly challenging for them. Often, easier terrain allows a student to relax and actually try new skills and body movements without the "fear" of challenging terrain (see APPENDIX - part 3: SESSION TRAINING).

- **Route Plan:** The Instructor must know an approximate route plan for the duration of the lesson whilst having an expert knowledge of the general riding area (such as a park, or local trail network) that will be used. The better you know the surrounding trails, the better you pick terrain to suit your student's riding ability and needs - good terrain can turn a bad lesson on into a super fun, safe, effective lesson. A quick explanation of the area and start and finish points of the lesson must then be communicated to the students, during the *Introduction* part of the lesson.

TERRAIN CHOICE: Choosing the appropriate terrain for the student's ability level and what it is they are trying to do; this is vital in keeping them safe and ensuring they learn successfully in a comfortable environment. The following points must be taken into account when choosing suitable terrain.

- **Trail Conditions:** Trails can quickly and drastically change due to use from other riders and/or weather factors. Expert knowledge and experience of the area are essential to know what trails to use for what and when. Be aware of the recent trail conditions and use so you can take riders on the most suitable trails for the lesson.

- **Trail Difficulty & Type:** As ski resorts do in the winter, try to separate trails (if they are not already) into easy (green), intermediate (blue), advanced (black) and expert (double black). Categorizing the trails like this, if they are not already, will make it much easier for you to select the appropriate trails as the lesson develops. Trail selection is crucial in guiding the group safely - terrain that is too easy or difficult will limit how much they can progress safely when practicing.

- **Trail Respect, Etiquette & Use:** All riders must follow the *International Mountain Bike Associations' Rules Of The Trail:*

1. **Ride On Open Trails Only** – trails are closed for a number of reasons; maintenance, building, improvements and weather conditions are just a few. Respect the trail closures, obey any signs and stay off them if they are closed.

2. **Leave No Trace** – The outdoor environment is as special as it is delicate. Respect it, enjoy it but don't change it! No litter and no unnecessary/excessive trail erosion from irresponsible riding, like skidding. Volunteering for trail maintenance days is a great way to give back to the outdoors and bike industry that provides our most precious commodity; trails.

3. **Control your Bike** – Keep yourself safe and others safe by controlling your bike at all times.

4. **Always Yield Trail** – Always give way to horses and motorized vehicles. Find a safe place to stop, pull to the side of the trail, dismount and keep the bike between you and the horse. Say "hi" and wish the horse (and rider!) a pleasant day. Resume riding slowly and quietly only after the horse is a good distant away. Also when climbing, try to give way to those riders coming downhill. When merging onto another trail, look up the trail and give way to those already on the trail. When riding downhill, let the rider ahead have right of way and give them space.

5. **Never Spook Animals** – Animals will naturally want to avoid riders. However, should you find yourself close to an animal, respect it, give it space and let it move away on its own accord. Spooking animals is immature and can be dangerous to both you and the animal.

6. **Plan Ahead – Be prepared!** Mountain biking in the outdoors is an inherently dangerous sport where many different factors can change rapidly. Preparation, knowledge and experience need to be constantly reviewed to stay "one step ahead". Be prepared for the worst and trained so you can deal with any situation to the best of your abilities as a *Professional Mountain Bike Instructor.*

2. WARM-UP

TEST THEM - (WITHOUT THEM KNOWING THEY ARE BEING TESTED)!
A slow-paced, easy ride is essential to get the clients physically and mentally warmed-up for riding and being ready and happy to learn. More importantly, **the warm up is time to practice and address any issues with the *Guiding Protocols* that you present during the Safety Talk**. A warm up can take 10 minutes or half an hour… it all depends on how well your students have listened to and are respecting the safety rules of the trail. If they keep stopping in the middle of the trail or riding too close to each other, then kindly remind them to not continue with that behavior, otherwise you won't be able to teach them anything as they are not riding safely. Some of the ways you can "test" your students are;

- LOOK BACK FREQUENTLY to see if they are with you, okay and riding spaced out
- Stop a few times to test if they stop on the side of the trail
- Vary your speed slightly so you can better judge their riding speed, fitness and skill levels
- Pick up a little speed and get slightly ahead of them, to then stop on the side. You can then look back as they approach to assess them

BRING UP NEW SAFETY POINTS & REMIND THEM
The Safety Talk includes a number of different points that might be tricky to remember, both for instructor and students, all in one go. You can therefore use the warm-up to go over any points you missed in the Safety Talk (either intentionally or unintentionally) so as to not feel like you need to "bombard" them with safety points all at once, right from the start. By spreading them out this way, it will make it easier for people to remember and therefore help keep them safer as they start riding as a group.

ASSESSMENT & PLANNING
The Warm-up also serves as a time for The Instructor to assess the group in terms of dynamics, personalities, skill and fitness levels; remember, you can have physically fit students who are technically weak and vice versa. Also, people often say they are better (or worse) than they actually are… the warm up is essential in figuring all these factors out so you can plan a safe, effective, fun lesson.

It is a good time to determine a good riding speed for the group and start to review the initial lesson plan as you figure out what skills, techniques you think might help the most and what trails you think would be the best to ride for the students.

- Do not progress onto the *Training Wheel* and therefore the instruction part of the lesson if students do not appear physically and mentally warmed up
- Use the Warm-up to assess the students ability and dynamics so you can begin to develop a more detailed lesson plan
- Only when all students are showing they understand and respect the *Guiding Protocols* by safe, group riding can you progress to teaching.
- Similarly, keep warming up if students are having difficulties following the *Guiding Protocols* and therefore riding safely and responsibly as a group.

3. TRAINING WHEEL - THE TEACHING PART OF THE LESSON

The instructional part of the lesson format – where we teach and they learn. Wheels like to keep turning and the Training Wheel is no different; you must keep using it, repeating the process of explanation, demo, practice, feedback until the lesson or section (part of a lesson) goal is achieved.

1. COMPLETE EXPLANATION – What, Why, How, Why2

    - WHAT: The simple statement of what it is they are trying to do: *"Learning how to climb steep terrain", for example.*

    - WHY: This part of the explanation is often overlooked by (mediocre) instructors, yet is vital for true understanding, effective learning and helping them to remember. *"If we can climb better, up steeper terrain, we can ride trails with more flow (not having to get on and off), quicker and enjoy riding more because of it."*

    - HOW: Simply and clearly explaining how they achieve the "what" through specific bike operations and/or body movements. For the **bio-mechanical** skills of biking, we can keep this part of the explanation simple with the use of "bullet points" explaining how we use certain body parts, to achieve particular body movements: *"If we a) slide our bum forward on the saddle, b) drop our chest over the stem and c) pull back on the handlebars this will help keep our body forward over the bike on a climb"*

    - WHY2: To further enhance the explanation, we can now offer a quick, yet very important second "why", after the "how", to fully ensure student understanding. *"By moving forward over the bike on a climb, it will help keep our weight centered on the bike and front wheel on the ground, making it much easier to control and therefore ride up the trail"*

2. DEMONSTRATION: In order for a demonstration to be effective in teaching people something, it must show a clear picture of what you just talked about in your *Complete Explanation*. The saying, "a picture says a thousands words" could not be more true. The demo must also reflect the ability level of the student so as to not intimidate or alternatively bore, the students. They are going to try and do what you show them so make sure your technique and speed are both appropriate for the demo' and ability level of the student: remember, some demo's will need speed! Performing a weak demo often happens when instructors get lazy and don't properly think about what they need to show for the students they have, beforehand.

    Students typically do not have a trained eye when it comes to looking at peoples' riding and trying to discern information from it. This is why we need to exaggerate our demos to make sure they really see what it is you want to show them. If it's moving low and forward over the bike for a climb, do it more than you normally would, perhaps even to the point where it feels strange – but within reason though! Not only will this make your picture a closer "fit" to your explanation, but it will also encourage them to exaggerate and try the movements more themselves. *If you move 2", chances are they'll move 1" - so you'll need to move 4" to make them move 2'*!

    - **STATIC Demonstrations** (not riding) as you are explaining can help students visualize things as you talk to them.
    - **Select a safe section** of trail or area in which the student(s) can clearly watch the demonstration. Neither you nor the group should be obstructing the trail or area at anytime, incase there are other trail users present.
    - **Think about it before** you do the demo - what is it you most clearly need to show them?
    - **Demonstrate the maneuver**, or even parts of it if possible, to the student a number of times to give them a clear picture of your explanation.
    - **Exaggerate** each demo to show a clear picture of your explanation to the untrained eye.

3. PRACTICE: Explanations and demos will simply not improve a person's riding unless they actually get to try the skill or maneuver, itself. Giving the students plenty of time to ride and practice what you've been talking about and showing them, is essential for improvement. Not only that, it's what they pay for; people want to and expect to ride lots when being coached.

   Practice time also involves the guiding part of the lesson, previously discussed in the warm-up. Re-cap the *Group Riding Protocols* (see below) *before* you set off. Terrain selection is also a crucial part of how the instructor safely guides the group; maximize their practice time by selecting the most suitable terrain for the students' ability level and what it is they are trying to do. Terrain that is too easy or difficult will only limit how much they can progress when practicing.

   - **Essential for actually learning** the skill or maneuver
   - **Review Group Riding Protocols** before setting off.
   - **Choosing safe and appropriate terrain** will maximize students learning and success, whilst keeping them safe. Choose terrain that is appropriate for their skill level and what they are practicing.
   - **60%+ of the lesson is riding!** Over half of the lesson sees students riding and practicing the theory – remember they want to ride!
   - **Observe their riding** as they practice so you can get some feedback ready.

4. VISUAL FEEDBACK: As we have discussed in the *Learning Principles*, feedback is essential for effective learning. Avoid any negative comments. Start with pointing out what they did well then discuss what they can do to improve. They will be encouraged by knowing they did something well and can now focus on how they can do it better. Use non-demanding language to keep the feedback positive and setting the students up for success. By saying "let's try…" or "give this a go…", whether the student succeeds or not, it doesn't matter as they are only *trying* it. Phrases like "I want you to…" or "do this" can set students up for failure as they can only then do it, or not do it.

   ASKING Q's TO DEVELOP FEEDBACK: Typically speaking, feedback is generally communicating with students how they performed after the instructors have watched them ride. There are however other ways to find out how their learning is going and provide feedback for them. By simply asking **leading questions**, such as, **"Did moving your hips back more that time, make it easier to lift the wheel?"** and discussing things, you can often find out what is going well, what needs working on or if they need to try again, just from discussion, that is directed and driven by you. That means, an the Instructor, you know what information you need to get out of them, so you have to direct your questions and discussion so they end up providing this information themselves. This form of feedback is particularly useful when riding single-track with groups where chances to stop and view their riding may not be abundant.

   For the feedback to be effective, the training wheel must start again with an explanation, demo and then practice of what's discussed during the feedback part of the wheel. Continue this cycle until the goal of the lesson or session, is achieved. **A lesson should never involve just one cycle of the training wheel.**

   - **Positive comments first** to help encourage the students
   - **Non-demanding language** for how to improve – to set students up for success
   - **Ask "leading" questions and discuss** how the students are doing is a great way for students to be able to think about their riding and come up with their own feedback
   - **Continue with the Training Wheel** to apply and practice what is discussed during the feedback and explanation parts of the lesson.

4. WRAP-UP

SUMMARY

Once the goal of the lesson or session has been achieved, we can summarize things with a wrap-up to finalize the learning process, before moving onto another lesson or goal. The wrap-up is incredibly important for lesson structure, professionalism and even the learning process. By clearly explaining what the goal was and how they achieved it, it will help the students reflect on their achievement, feel good about it and remember it all so they can keep applying the skills to their riding, after the lesson is over.

TIME TO ENSURE UNDERSTANDING & READINESS TO MOVE ON

If the wrap-up is after a session (part of a lesson), it allows students to neatly finish that “chapter” of the lesson, making sure things are clear before moving onto the next session, or “chapter”, within the lesson. It allows time for students to ask any questions they may have to make sure they “got it” before moving on. Similarly, The Instructor can do the same; asking students if they have had a good time so far, learnt what they needed to, had enough feedback, are ready to move on etc.

LINKING PARTS OF A LESSON TOGETHER

A wrap-up also enables the instructor to plan for and link sessions together within a lesson – creating a logical step-by-step progression through a series of sessions, to reach the overall lesson goal. For example, in a 3 hour lesson, you may go through three or four different sessions such as braking, body position and cornering skills… each building on the other to achieve a final goal of railing berms better.

WHAT THEY CAN DO NEXT TIME - REPEAT CLIENTS

Wrap ups also work very well to help sell another lesson to the clients, or at the very least, letting them know what they can continue to work on after the lesson. By letting the student know where their learning can progress to after the lesson, you are sending them away with another positive, “high note” to the lesson. This can act to not only allow them to continue working on their riding outside of the lesson, but also give them an idea of what they could learn of they were to get another lesson.

TEACHING STRATEGIES

Teaching mountain biking involves two main strategies – improving the specific components that make up a mountain bike rider to enhance their overall abilities or, focusing on a particular maneuver, breaking it down into a sequence of movements to then develop and improve on it. We thus have Skill-based Teaching and Maneuver-based Teaching.

SKILL-BASED TEACHING

The six skills of mountain biking are simply components of a person riding a bike – put them all together and you have a mountain biker. If we therefore want to help someone improve their mountain biking, we can look at one of these skills and develop it. Their overall ability to ride better will then be increased just from working on one of the six skills. Take this example:

An intermediate rider turns up for a half-day lesson and shows a typical intermediate ability – strong use of gears & braking and a reasonable use of the different body positions; he's fairly able at the first two skills of mountain biking. For the first half of the lesson, we therefore decide to focus on his Riding Position & Balance skill to refine that part of his riding, and so preparing him to work on the next skill of Cornering for the second part of the lesson. After introducing some new cornering techniques and practicing them, at the end of the lesson the student's Riding Position' and Cornering skills are now stronger, making him a more able rider, no matter what or where he's riding.

A good analogy is that of a race car: A race car has a large number of different components like the engine, wheels, tires, suspension and aerodynamics that will determine it's overall performance. When drivers are testing these cars to make them perform as fast possible, they do this by picking one component at a time. This way any change in the results (say the lap time) will be because of that one thing. By working on just the suspension set up of the car, they can make the car handle better, so the lap time becomes quicker and thus the overall performance of the car is better. Next, they could work on just the aerodynamics of the car to achieve the same thing and this is just like skills within sports… pick one, work on it and the overall picture (the riding) will be improved and furthermore because you've focused in on one skill, you'll know exactly why and how your riding improved.

ANALYSIS

Skill-based teaching is the backbone of any athlete's development in many sports: improve the specific skills of the student, relevant to the sport and the overall ability of the student will increase. It is the best way of taking what can be perceived as a subjective thing – how we ride a bike, for example – and breaking it down into objective pieces of information. This is crucial for the analytical purposes of not only teaching but also actually doing the sport.

If we are to improve somebody's ability to perform at a sport, we must first be able to look at how the sport is performed in an objective and clear way. By doing this, we know what techniques should be happening when and can compare this to what we see the athlete doing; this is how we accurately analyze an athletes performance – by comparing the "picture" you see when they perform, to the "ideal picture" you know in your head, according to the preferred, correct techniques and skills of the sport. By dividing mountain biking into six skills, we can thus analyze peoples' riding and focus on each skill separately, working on one thing at a time. It provides the teaching and learning with a specific focus, which ultimately ensures safe, effective learning.

PROGRESSION

In addition to enabling us to analyze the sports' techniques objectively, skill-based teaching also provides a natural progression from one ability level to the other. Although each of the six skills work together to produce a mountain biker, they also build on each from the more basic skills of *Gears & Braking* at the beginner level, to the more

advanced skills of *Pressure Control* and *Timing & Coordination*, at the advanced ability level. The better the rider - the more skills they have accomplished.

Teaching mountain biking is all about progression. It provides a safe, logical format to teach with whilst maximizing the chances of successful learning. We naturally learn the skills in order as riders so it only makes sense to teach the skills in the same order.

SKILL DEVELOPMENT - EXERCISES

To develop and improve a skill, we use exercises that help isolate the skill whilst keeping the learning process specific and focused. The exercise must also be appropriate for the safety, student ability level, lesson dynamic, terrain and goal of the lesson. Whilst a well chosen exercise can greatly improve a person's riding in a short period of time, a poorly chosen one will not help a rider improve and may even hinder the learning process.

Generally speaking, exercises are skill-specific and are designed to help the rider feel new things about their riding whilst keeping them as safe as possible. They need to be informative, presented in a clear manner so as not to cause confusion and must be enjoyable for the students to try. But remember, clients pay to go riding, not do a bunch of exercises! They are simply tools for you to help students progress, achieve their goals and have fun as the lesson develops, so remember to allow plenty of riding time and practice after the exercise(s).

ADAPTING TO ABILITY LEVELS

BEGINNER/NOVICE: PROGRESSION TEACHING

Very simply, we can follow the *Six Skills* through a beginner-type lesson to provide a step-by-step progression for new or less experienced riders. A lesson that starts with *Gears & Braking* exercises can then progress to *Riding Position & Balance* exercises and coaching for the next stage. Once these fundamental skills have been effectively learnt, students can progress to some basic *Line Selection* and *Cornering* techniques.

Whatever stage a beginner or novice rider is at, using the progression of the *Six Skills* provides a very simple, clear method of effectively teaching them. A complete beginner will start with the first skills, whilst a more experienced rider can start with the next skill along the progression that they need to improve on.

INTERMEDIATE +: ANALYSIS & IMPROVEMENT TEACHING

At this level of ability, riders should have most of the skills at least somewhat present in their riding. In this case, we can still flow through the skills to provide a progression based teaching format, but with a little more flexibility. The first step is to simply ride and analyze their riding skills. It is now the job of the instructor to look closely and discern the skill (e.g. *Cornering*) that will benefit the needs of the rider(s) the most. Next, some exercises and coaching to improve that particular skill must be given to finally, allow some riding time to apply the newly learnt techniques. Hopefully, the skill the instructor selected, is now improved.

The lesson can then continue by working on the next of the Six Skills (*Pressure Control*), or by riding, analyzing and selecting a different skill all together - say *Riding Position & Balance.* Whilst keeping to a progression can always maximize a riders ability to learn, when a student is more experienced and able on a bike, it allows a little more flexibility to move things around as they are refining skills more than learning new ones. The rule of thumb we can use therefore to help offer some structure to teaching intermediate to advanced riders is thus:

BEGINNER - NOVICE - LEARNING NEW SKILLS: PROGRESSION TEACHING

INTERMEDIATE ONWARDS - REFINING SKILLS: ANALYSIS & IMPROVEMENT TEACHING

MANEUVER-BASED TEACHING

Because of the terrain and nature of the sport, mountain biking inherently consists of a huge number of specific maneuvers that riders perform when riding. Front-wheel lifts (wheelies, manuals), rear-wheel lifts, bunnyhops, trackstands, drop-offs and jumping are all maneuvers that each involve different, specific skills and can vary greatly in the bio-mechanics of how they are performed. In the case of improving a students riding skills, we can therefore look to maneuver-based teaching to effectively improve their "bag of tricks", to make them more confident, able riders.

We can simply view maneuvers as tools to help us ride off-road better. For example, if we are able to lift the front wheel, we'll be able to ride over things more easily. Whilst each maneuver utilizes all of the *Six Skills* (remember, any riding is simply a product of these six skills naturally working together), each maneuver requires a focus on two of the skills more so than the others.

FRONT WHEEL LIFT SEATED: *Gears & Braking* and *Riding Position & Balance*
JUMPING: *Riding Position & Balance* and *Pressure Control*
BRIDGE/RAISED TRAIL: Line Selection, *Riding Position & Balance*

MANEUVERS vs. SKILLS

With any teaching, be it skill or maneuver based, it is important the instructor follows the *Lesson Format* and in particular, the *Training Wheel.* As with using exercises in skill-based teaching and then riding to allow students to apply the techniques, maneuver-based teaching is the same: explain, demonstrate, practice, feedback, repeat. The only difference being the instructor is teaching a maneuver that uses a couple of different skills as opposed to skill based teaching where they focus is on just one specific skill at a time. Indeed, maneuver-based teaching relies on an instructors ability to understand the *Six Skills* and how the apply to biking so that they can effectively break-down, analyze and therefore teach how and why each maneuver is performed.

TERRAIN

Whilst skill-based teaching can largely be performed on the trails, maneuver-based teaching can often benefit from finding an isolated area, away from trails and traffic. Providing plenty of space for students to practice the maneuver allows them to practice in an environment where they can purely focus on the task in hand, build confidence and succeed. Purpose built skill-parks are a perfect example, or any open area where you can either create or find an isolated feature. Always ensure safety be testing out any features yourself first, making sure they are safe to ride repeatedly as students practice and that there are no other hazards nearby.

TEACHING A MANEUVER

To teach the particular maneuver, we must break it down into a series of steps based on the main skills involved, explaining how to move at what points, so the student understands exactly how and why they must move over the bike to perform the maneuver themselves. Imagine a sequence-photo of the maneuver and how you would describe what is going on when and why, in each frame. In doing this, it is then vital to the students understanding and success of the maneuver, to then deliver the information in a very clear, concise manner. "Bullet points" or short sentences, are a great way of keeping explanations easy to understand for both teacher and student. No more than three or four should be necessary to accurately explain the "what, how, why" of a maneuver. Remember also to find a safe, appropriate area of terrain before you begin the lesson… and follow the *Lesson Format* and *Training Wheel.*

SAFETY - AREA INTRODUCTION

Before you begin teaching any maneuver, a Safety Talk must take place. Assuming you've already covered the key points in your *Introduction* and *Warm Up*, an Area Introduction is a great way of keeping students safe in an specific trail area or skills area, such as those seen in many bike parks. First, make sure the skills area is actually safe to ride… checking the features for things like broken wood slats on bridges and drops, nails sticking out, sticks or rocks on landings, approach terrain and so on. Points to raise in the *Area Introduction Safety Talk* are:

- **Traffic Flow:** Point out where students should ride and not ride. Points of entry and exit into the area from other trails and therefore places to be aware of other riders. Describe the desired direction of traffic flow so people are all approaching and exiting obstacles in the same direction and not riding into each other.
- **Features:** Let them know which features they will be using and similarly which, if any, features they are to not ride at the time… "We're going to be using these two drop-offs, so please don't ride over these other two drops-offs."
- **Areas to stand in and avoid:** In some skills areas (whether they are in a bike park or one you have "made" out on the trails yourself) there may not be lots of room for the group to both ride and hang out in safely. You may need to appoint areas to avoid standing in (like landings of drops) so people can ride over features safely without fear of crashing into someone. Similarly, appointing areas to "hang out" in can help the flow of traffic too.

TEACHING

1. **Break the maneuver down** into no more than three, perhaps four, steps - focusing on the body movements required and the two main skills involved.

2. **Clearly explain with "bullet points"** (no more than three or four) to the student what they have to do at each step, why and what they should expect the bike to do as a result.

3. **Static Demonstrations** (not riding) as you are explaining can help students visualize things as you talk to them.

4. **Demonstrate the maneuver**, or even parts of it if possible, to the student a number of times to give them a clear picture of your explanation.

5. **Practice & Progression:** allow plenty of time for trial & error, whilst providing constant encouragement and positive feedback, whilst providing a progression of small steps to ensure safe, successful learning.

6. Re-explaining should only include short "bullet points" and further demonstrations to keep things simple and the students focused on trying it rather than thinking about it too much.

APPLICATION

After the session where students have begun to understand and achieve the maneuver, the next step is to allow some "real-life" application of it, out on the trails. Remember, maneuvers are simply ways to help us mountain bike better when we're riding and students will only begin to master the finer points of each maneuver like how, why, when and to what degree to use it on the trail, by actually going riding. They will also, hopefully notice an improvement in their confidence and overall riding ability. Learning maneuvers in a skills area involves repeated movements at the same speed and on the same obstacles. Applying them on the trail involves different terrain, different speeds and different obstacles, so requires practice to figure out the different timing of and modifications to the "standard" maneuver.