

TEACHING PLANT ID TO BEGINNERS

What are the problems?

1. Where to start
2. How to present the subject
3. How to instil and maintain confidence
4. Making sure it all 'sticks'
5. Improving from one course to the next

1. WHERE TO START

Find out beforehand, if at all possible, how much experience your students already have.

If you have an application form – online or paper – you could ask whether

- their **work or volunteering** involves plants
- they have **attended courses** before
- they have been on any **field trips**
- they own and use a **field guide** (and which one)

Aim to start at the level of the **least experienced** – it will be useful revision for the others (who may, after all, not know as much as they think they do!)

This can depend on the type of course you are running.

What you class as a 'beginner' may depend on the type of course you are running.

Basic wildflower ID: a beginner may

- Know very few **basic terms** (sepal, bract, stamen etc)
- Not understand the relation between **family, genus and species**
- Not know how to use a **handlens**
- Have acute **kleidophobia** (= fear of keys)

Grasses, sedges etc: a beginner may

- **Not see themselves** as a beginner
- Still be having problems with **keys**
- Be unaccustomed to using **scientific names**
- Have no idea how to use a **microscope**

DON'T ASSUME ANY KNOWLEDGE UNTIL YOU HAVE EVIDENCE

Could this be your student?

I'm really looking forward to this!

I'm ready to take lots of notes



I hope there's lots of practical hands-on stuff

It will be so much better than learning from books

It will be good if I can remember it all in the field

Or might this be your student?

I hope I'll
be able to
manage all
this

Long scientific
words make me
so nervous

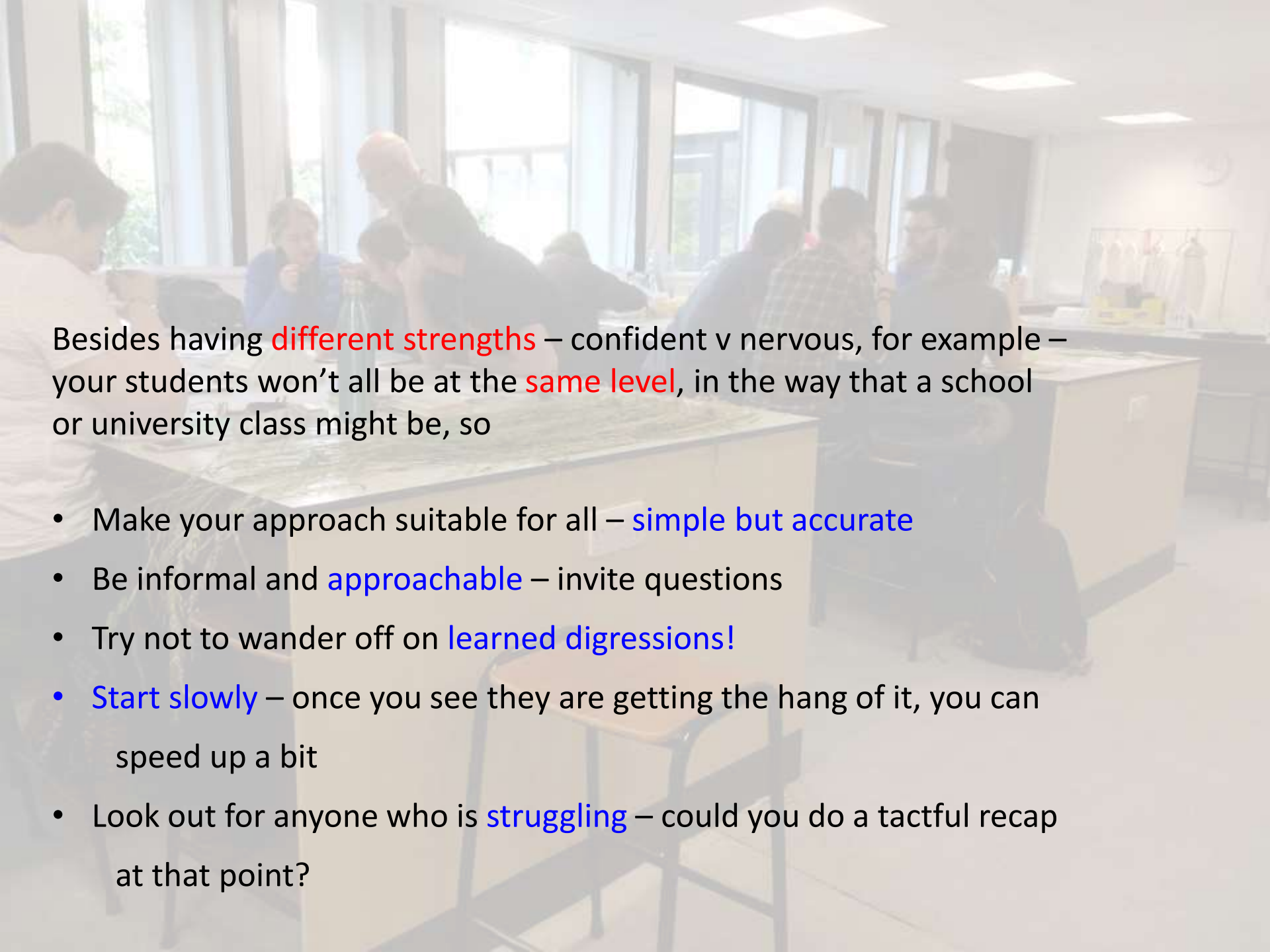
What if it all
goes over my
head?

Will everyone
except me know
how to use a
microscope?

When I see
keys I want to
hide under the
table

I'm really
tense in case I
screw up





Besides having **different strengths** – confident v nervous, for example – your students won't all be at the **same level**, in the way that a school or university class might be, so

- Make your approach suitable for all – **simple but accurate**
- Be informal and **approachable** – invite questions
- Try not to wander off on **learned digressions!**
- **Start slowly** – once you see they are getting the hang of it, you can speed up a bit
- Look out for anyone who is **struggling** – could you do a tactful recap at that point?

2. HOW TO PRESENT YOUR SUBJECT

- Plan well in advance **how much ground** you intend to cover, and to **what depth**
- **Resist** the temptation to tell them all *you* know: consider instead what *they* need to know. Then:
- **Take Aristotle's advice:** Tell them what you're going to tell them . . . tell them . . . tell them what you've told them
- And **speak slowly** – much slower than normal conversation speed, so they have time to assimilate and to take notes.

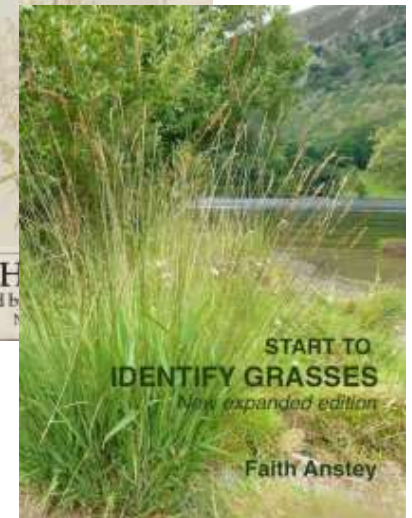
KEYS ARE ONE OF THE BIG STUMBLING BLOCKS FOR BEGINNERS

We are all so used to keys that it can be hard to understand why beginners find them so **intimidating**.

It is essential to introduce keys in a beginner-friendly way. For example, the 'Start to Identify . . .' booklets are **aimed at learners** where Hubbard, Stace and so on definitely are not!

By limiting the species covered, they can employ a '**flowchart**' style instead of dichotomous keys.

See the next slide for an example of an **alternative** to the exhaustive (not to say exhausting) keys found in textbook-style field guides.



Q1 INFLORESCENCE

Is the inflorescence a SPIKE † or spike-like?
(very short pedicels or none at all) If yes, GO TO Q2

Or is the inflorescence a PANICLE †?
(long pedicels/branches) If yes, GO TO Q5

Q2 SPIKE

Is the spike FLAT †? If yes, GO TO Q3

Or is the spike CYLINDRICAL †? If yes, GO TO Q4

Or is the spike HALF-MOON shaped in cross-section †?



'front'
view

The only common species like this is
Crested Dogstail
Cynosurus cristatus

Check: ♂ spikelets in pairs
– one fertile, one sterile.

'back'
view



Q3 FLAT SPIKE

Are the spikelets BROADSIDE ON to the stem †? Or are they EDGEWAYS ON †?



Most likely species is

Common Couch
Elytrigia repens

Check: may have short awns,
leaves hairy, ligule virtually
non-existent.



Most likely species is

Perennial Ryegrass
Lolium Perenne

Check: never awned,
leaves hairless,
very short ligule.

Very like Common Couch, but long-awned, is Bearded Couch *Elymus caninus*

Or you could make up a
simplified key to a limited
number of species – see next
slide for an example

KEY TO POPPIES

- 1a Petals red (go to) 5
- b Petals not red 2

- 2a Petals yellow/orange 4
- b Petals not yellow/orange 3

- 3a Petals lilac Opium poppy
Papaver somniferum
- b Petals not lilac other garden escape

- 4a Sprawling on coastal shingle,
seedpods long & curved Yellow horned poppy
Glaucium flavum
- b Stony places or near gardens,
seedpods egg-shaped Welsh poppy
Meconopsis cambrica

- 5a Smaller crimson flowers, bristly
seedpod, S & Midlands only Rough poppy
Papaver hybridum
- b Larger scarlet flowers, smooth seedpods 6

- 6a Flowers slightly pinkish, seedpods
long & thin Long-headed poppy
Papaver dubium
- b Flowers true scarlet, often black-
centred, seedpods round Common poppy
Papaver rhoeas



WAYS OF MAKING IT INFORMAL AND FUN

Use examples from your **personal experience** – “I used to think . . .” “Someone once . . .” “We all make mistakes . . .” “Have you thought of trying . . .” instead of sounding as though you’re reading from a dry textbook.

Present ID more as a **detective story** rather than a college assignment.

Insert little **exercises, quizzes or games** at intervals. Flash cards, for example. Revision presented as a query: “How many new terms have you learnt so far?” Appeals to ID method: “Can you say what family this [*slide or real plant*] belongs to?” Such things are fun for everyone, believe me, not just for children.

Give them plenty of chances to practise what they are learning, with **hands-on material** if at all possible. All ‘chalk and talk’ will tend to send them to sleep!

Here's an example of a simple quiz about grasses (from *Start to Identify Grasses*)

OVERVIEW

Before you go on to try the flowchart itself, it might be a good idea to check whether you have grasped all the points you will be using to identify your specimen.

Are you sure it's a grass? Only one of the three images below shows a grass, so which one is it?



Of the two on the right, which is the **spike-like** inflorescence which is the **panicle-like**?



Can you say which of these two has spikelets **broadside-on** and which has spikelets **edgewise-on**?



Which of the grasses below has a **whorled panicle** and which has an **irregularly branched panicle**?



For each of these, would you say you are looking at a grass with **one-flowered spikelets** or a grass with **many-flowered spikelets**?



QUIZ FOUR

Put these sedges into their correct groups:

Group 1 = single spikelet

Group 2 = all spikelets similar

Group 3 = separate male and female spikelets

And here's one on
sedges (from *Start to Identify
Sedges & Rushes*)

A



B



C

D

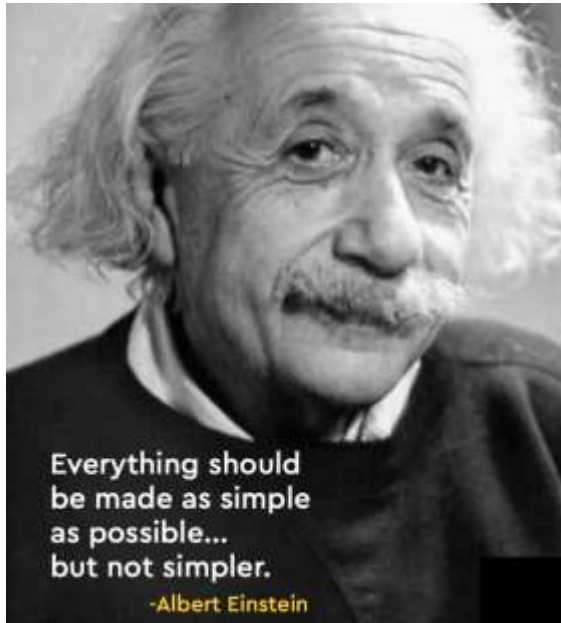


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F





WAYS OF KEEPING IT SIMPLE

Start by using **vernacular names** for species, then both, then perhaps scientific names only if appropriate to the group.

Introduce new terms with **definitions and/or diagrams**

Don't expect students to grasp too much in one go. Divide your material into **chunks**, with a short **recap** or summary at the end of each chunk.

Don't use a long fancy term where a shorter, simpler word will do.

E.g. **radial** for actinomorphic, **mirror symmetry** for zygomorphic **flower-stalk** for pedicel, **unstaked** for sessile, **petals** for corolla etc etc. Then introduce the technical terms gradually.

So long as what you say is **accurate**, it is not 'dumbing down', however simple.

See the next two slides for examples of **simplification** that remains accurate.

SO WHAT IS A COMPOSITE?

The family that includes daisies, dandelions and thistles is probably the largest and most widespread of all the flowering plant families. It has more than 32,000 species worldwide – but relax, we are only going to cover a very small fraction of those: about 50 of the most common species found in the British Isles. As with all the books in this series, the intention is that once you get to grips with the commoner species, you will have the skills and confidence to tackle the rarer ones by using more technical books with keys.

When you first compare a garden daisy, for example, with a garden rose, they look as though they might just be variations on the same theme. Same radial shape, petals round the outside, those yellow bits in the middle.

Rose



Daisy



Knowing exactly what those yellow bits in the middle are, though, is the first step in understanding how a composite flower differs from all the others.

So have a look at this picture of the centre of a rose (below left). In close-up we can see that there are two separate structures. The lollipop-like bits in the outer whorl are the **stamens**; these carry the pollen grains which are the male element in the reproductive process. In the very centre are the **styles** (one or more); these are the female elements which receive the pollen – perhaps brought by a bee from another flower – and transfer it down to the ovary where it will form the seeds of the next generation.

Rose



Daisy

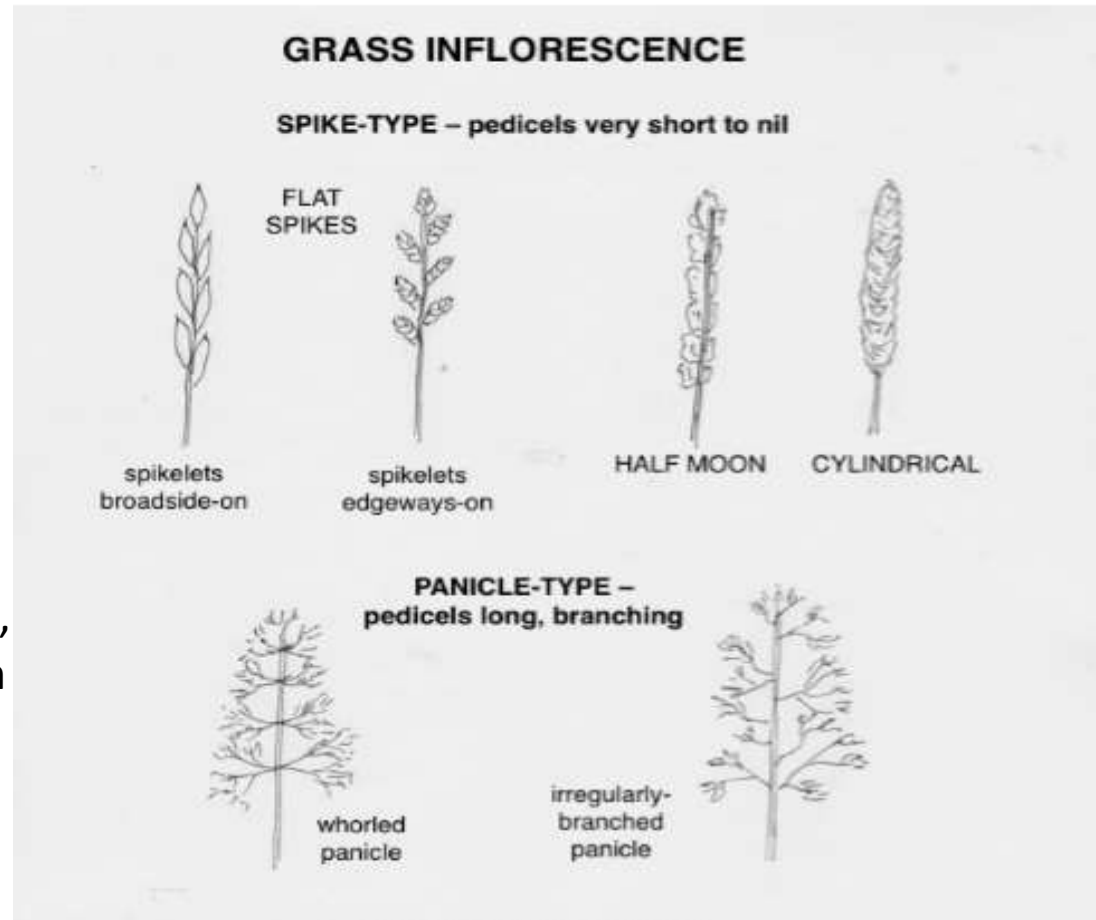


Most beginners, and quite a few ‘improvers’, have always assumed that composites are constructed like other flowers. A **simple explanation** to start with will pay dividends later when you introduce more subtle points. (This is from *Start to Identify Composite Flowers*)



In this diagram (*from Start to Identify Grasses*), for example, inflorescences have been simply divided at the outset into two: **spike-type** and **panicle-type**.

We know that some grasses may look like spikes, yet in fact be compact panicles. With beginners, going into that fine distinction can open a can of worms about many more small details.





3. CONFIDENCE TRICKS

It is one of the great principles of teaching that students who feel confident and relaxed learn best. Worry distracts them from learning.

The teacher's approach is all-important, so you might ask yourself how you come across as a teacher. Do you appear to be lacking confidence yourself? Or do you seem to be on a pedestal students can't aspire to?

Either of these two extremes will dent the confidence of the learners. Aim to be **knowledgeable** without being **know-all**.

Is this you?

I don't know
where to start

How much should I
try and get through?

I wonder what
they're expecting?



It'll be OK
so long as I
keep
talking

I'll need to explain all the
difficult concepts at
length

If I dry up, I can
always read
from my slides!

Or could this be you?

I know a lot about botany and I'm going to teach it to them

Stace is the book they need if they're serious

We'll try and get through as much as possible

They'll want microscopes to see the finer points

They'll soon know their zygomorphs from their actinomorphs

If they fail, they'll see what a difficult subject botany is!



SOME WAYS OF INSTILLING AND MAINTAINING CONFIDENCE

Know your stuff

That doesn't mean you have to be the world expert on grasses, or whatever it is, but you have to know enough to feel confident of teaching it effectively.

Start with a little of what they know already

It may sound daft, but they'll relax ("This is going to be easy!") and so learn quicker.

Admit mistakes

If you don't know the answer or know you've got something wrong, say so – and show the students how they might find the correct answer for themselves.

Give praise as much as possible where due

But don't make a litany of it – students soon cotton on to an automatic 'well done' that follows whether they've done well or not.

Don't tell them the answers!

People learn best when they work things out for themselves. They also remember for longer. Instead of "This is a crucifer, which we know because . . ." try "What clues can you find as to which family this belongs to?"

4. MAKING SURE IT STICKS

Obviously, it isn't enough for students just to learn something on the day. They need to **retain** it and to **use** their knowledge and skills **in the field**. This is why we are teaching plant ID after all.

Taking my own advice, I give you a personal anecdote:

Many years ago, I went on a weekend grasses course. I went on the same course two years running. But even then, at the end I discovered I had learnt very little about grasses that was any practical use!

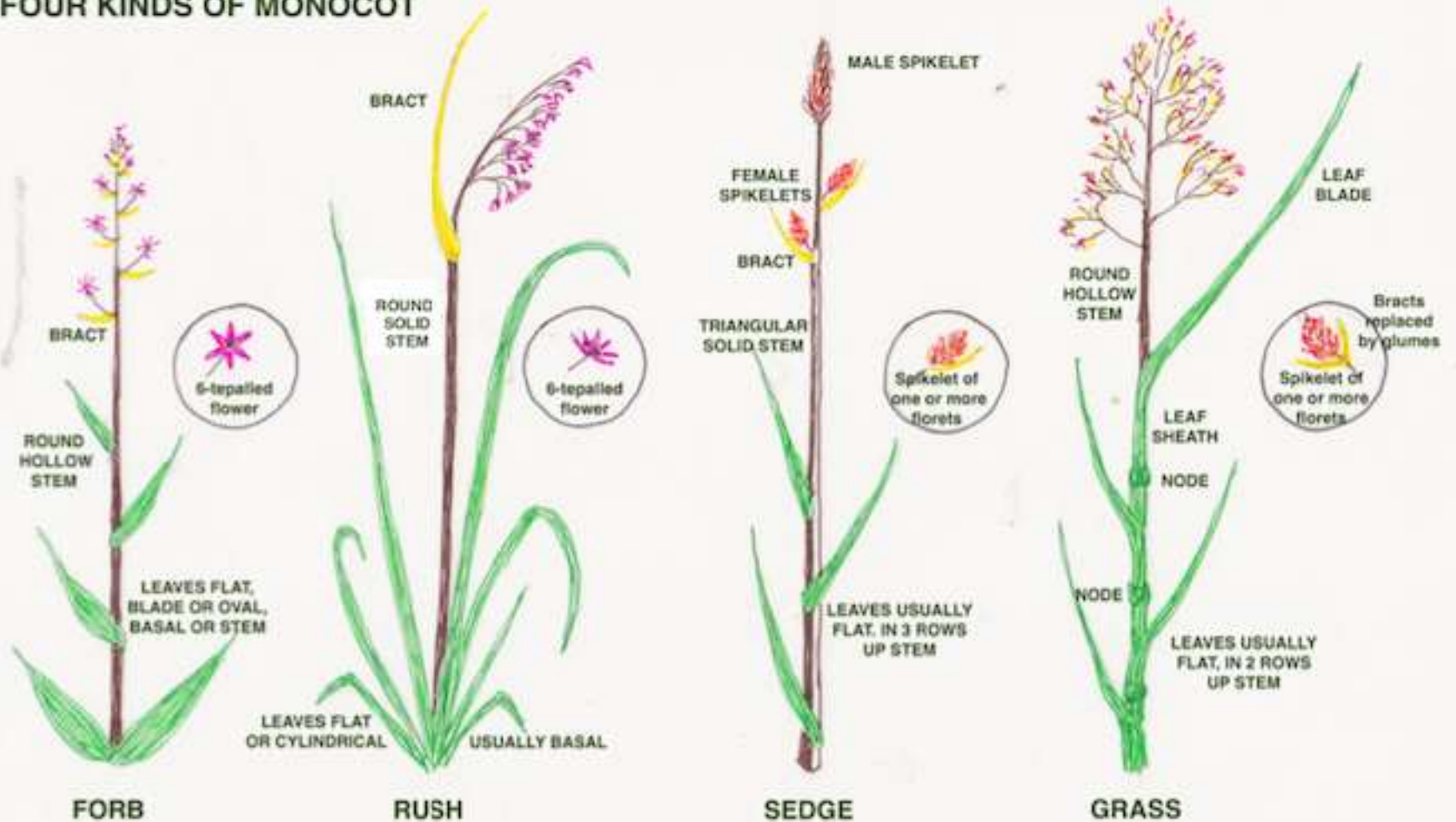
The course was full of keys and microscopes – do you wonder I now try to avoid these in workshops wherever possible? – but somehow basic ID principles got lost in the jungle of fine detail.

SOME WAYS OF AIDING RETENTION

- Say the same thing in **various ways** – people’s minds latch onto different aspects.
- **Summarise** frequently and **ask for questions** to check understanding
- Use **mnemonics** – “sedges have edges . . .” that kind of thing.
- Give **handouts** with diagrams etc – students can make their own notes on them and then they have them for future reference. (Phone snaps of Powerpoint slides just don’t compare.)
- Provide as much **hands-on** study as you possibly can – the best way to learn is to **DO**.
- If you must use Powerpoint (look who’s talking!) have lots of **visual input**. The worst sin of all is too much verbiage on a slide – and you reading it out!

Look at the diagram on the following slide, for example, (from *Start to Identify Sedges & Rushes*) and think how much verbiage it saves. A thousand words at least. **Images** are easier to recall than words.

FOUR KINDS OF MONOCOT



These are not diagrams of any particular species – they are typified examples.

The colours are diagrammatic – not necessarily true to life.

The different colours represent roughly equivalent parts in each kind of monocot, so that you can compare them.

Thus grasses have glumes instead of bracts, and the stem consists of interserted leaves.

Feature practical fieldwork wherever possible!



5. MAKING YOUR NEXT COURSE EVEN BETTER!

Chances are you are a knowledgeable, approachable, even charismatic teacher.

You have planned your course carefully and delivered it to the best of your ability.

But will they **remember** what they have learnt?
And how can you **find out**?

You need to get **feedback** at the time and – if possible – later on too.

Evaluation is essential

Some possible questions could aim to discover

- Did they **enjoy learning**?
- How much did the course **add to their knowledge and skills**?
- Which parts of the course did they **find most useful**?
- Which parts could they have **done without**?
- Did they feel **bored/anxious/frustrated/left behind**?
- Or did they feel **motivated/satisfied/fascinated/confident**?

A good way is to use a **feedback form** at the end of the course to find out.

Then you need to **analyse** the responses, to find out where you might be able to improve your course.

The next slide shows an example of a simple feedback form.

COURSE EVALUATION

(circle your choice of answer, or write in)

1. Was this course what you expected? YES NO
If 'no', what did you expect?

2. What did you think of the level the course was pitched, as far as you were concerned?

MUCH TOO EASY A BIT TOO EASY ABOUT RIGHT A BIT TOO HARD MUCH TOO HARD

3. What did you think about the balance between classroom and fieldwork?

TOO MUCH CLASSROOM ABOUT RIGHT TOO MUCH FIELDWORK

4. How useful did you find the handouts?

VERY USEFUL QUITE USEFUL NOT VERY USEFUL

5. In your own words, how did the leaders come across?

6. Any other comments on the course content, delivery, venue, timing, whatever?

. . . so your next course will be even better!



TO SUMMARISE

1. **Start** where students are at. Allow for differences in basic knowledge and in strengths and weaknesses. Encourage questions.
2. **Presentation** needs to begin easy and slow. Plenty of pauses and recaps. Follow Einstein's advice – keep it simple but accurate. Informality and enjoyment make the best atmosphere for learning.
3. **Confidence** comes from relaxation and active involvement. Students need to learn for themselves, not be told the answers.
4. **Retention** is enhanced by hands-on, visual, tactile and memorable opportunities to learn.
5. **Improved courses** result from evaluation and analysis.



In Scotland, we have been running highly successful day-long workshops on Plant Families, Grasses, Sedges & Rushes and (postponed by Covid) Composite Flowers for seven years.

These comprise classroom learning, hands-on practical exercises in small groups, keys introduced in an unthreatening way, and study in the field with tutors. We give out the relevant booklets to all the students, costs included in the joining fee.

The format and programmes for these workshops are available to any BSBI member who wants to run a workshop in their local area. The programmes can be used as they stand or infinitely varied according to your own needs and wishes.

The programmes, worksheets, exercises, evaluation forms etc are all free. The booklets can be purchased at a substantial discount to BSBI members.

www.wildflowerstudy.co.uk

