

Concepts in teaching and learning

Audience – kayak and swiftwater rescue instructor candidates

Environment – classroom; with handouts and/or blackboard,

Goals – after this presentation, participants should have a basic understanding of:

- why effective teaching is important
- how people learn
- how to use that knowledge to improve learning
- teaching tools, approaches and guidelines
- barriers to learning

Help students develop their own accurate understanding of the subject being taught

Motivate students beyond the minimum work needed

Help students develop questions, and the tools to answer them

“...every student requires something special... you don’t teach a class, you teach a student.”

A) Who Cares?

- 1) teachers – if you teach, this makes your life easier
 - 2) learners – if you learn, understanding how people teach makes your life easier
- We are all teachers and learners, every day. What we do in class should impact the rest of our lives.
- 3) Fundamentally, good teaching is hard work. Understanding how people learn

and how to teach effectively makes us more effective as teachers, and ultimately more effective at most aspects of our life.

B) Stages of knowledge

- 1) Unconscious incompetence – I don’t know what I’m doing and don’t realize it (and may not care). This can be an unsafe state.
- 2) Conscious incompetence – I don’t know what I’m doing, but I realize it (I still may not care). Generally, a much safer state.
- 3) Conscious competence – I know what I’m doing but I have to think about it.
- 4) Unconscious competence – I can do things without thinking about them.

An instructor’s goal is to develop unconscious competence. However, truly unconscious competence requires more practice than generally can be given in a class. As teachers, we can help people move from unconscious incompetence to conscious competence, and direct them towards opportunities to practice and develop true unconscious competence.

C) How people learn (presented as discrete steps, but in practice they’re not)

- 1) presentation – material presented to learners
- 2) impression – makes an impression and is stored in short term memory
- 3) incorporation – into long term memory
- 4) bridging – links to other memories and experiences

5) understanding – develop an ability to use the information; strong understanding leads to ability to present material to yourself and self-teach

D) How do we use learning stages to teach?

1) Presentation – participants decide to pay attention

Grab attention, using multiple types of sensory input

Make the material interesting and relevant to the learner – address intrinsic vs. extrinsic motivation.

Create excitement about the topic

Sell the topic – why should anyone bother with it?

Start with the students, not the discipline

2) Impression – participants add material into short term memory

Many different approaches to learning styles; create diverse learning experiences to address individual needs.

Balance activities to maintain interest.

Allow individual and group activities.

Focus on the long term goal.

thinker, watcher vs. doer, feeler

perceive concretely (practice) vs. abstractly (think/watch), process

reflectively (think and watch) vs. actively (practice), then watch vs. do

thinkers – need to think about things, watchers – need to see it done, doers

go out and do it, feelers – go out and experiment. No one way is right,

–and to actually do the skill effectively, you need to do all 4.

* we need to address all the styles and consider how our students learn

* discuss the technique, demonstrate it, and allow practice; the experiential students are likely to jump in and do, while the visual students may hold back to obtain more information – remember that both groups are doing what they need to do in order to learn; neither is right or wrong. Try to facilitate each student by incorporating multiple presentation methods. Remember that we all use all the approaches; it's a matter of when we use them and which we prefer.

3) Incorporation – make use of the material, create functional retention, practice the skills

occurs as an extension of the impression.

Reflective contemplation vs. physical experimentation

give students opportunities; help them learn how they learn

* can use several approaches for practice and skills development

*“whole” teach and practice the entire skill; good for simple things, essentially impossible for complex skills

* “whole-part-whole” demonstrate and discuss the entire skill, then practice parts leading to the entire thing; provides clear picture of where you are going, may be confusing if you over explain the material

* “part-progressive” teach a step, practice, and then add a step; doesn’t always let students see where they are going, probably the way most complex skills are taught

* “part-whole” teach a series of seemingly unrelated steps and combine them at the end into a “whole”; lets you focus on individual things, but not always a clear direction.

No one approach is correct all the time, but some combination whole-part-whole and part-progressive provides a clear understanding of where you are headed, while allowing you as an instructor to break the material down into useful chunks.

4) Bridging

skills presented in a vacuum are easily lost
provide an opportunity to link skills together, as well as establishing bridges with material learned in the past
Practice, drills and scenarios; homework
This is really where students begin to combine discrete skills into a useful/useable continuum.

5) Understanding

students can truly use the information
“big picture” of how things fit together
helps students teach themselves, speeds learning when taught by others
critical mass of knowledge – the more you know, the better you can bridge and connect individual knowledge nuggets
“knowledge is power, but communications is the key” – help students connect all their knowledge

Help students learn outside the class
Seek commitments to the subject
Engage in disciplinary thinking

E) How is that applied to teaching?

1) Basically, follow how people learn – present the information, grab their attention, help them understand and give a chance to practice and connect to prior knowledge

2) Of course, that's too easy, which leads us to lesson plans and syllabi

3) Lesson plans (fairly specific)

overview of what you want to teach

* includes target audience, environment, limitations, specific goals, aids, needs, ...

* provides enough detail for you to teach in a coherent fashion – may need extensive detail for some topics; minimal detail for others

* describes the order you plan to teach; helps you proceed in a logical fashion

* helps you practice the lesson; perfect practice makes perfect so keep practicing!

4) Syllabi (more broad)

* an overview for the entire class

* amount of detail varies widely

* where a lesson plan helps insure that an individual topic is taught in an appropriate order, syllabi help insure the entire class flows well

5) Things to consider for both

* order depends on logical flow, time and space limits, student and instructor interests, ...

* think about systemic limitations – where you teach, travel time, ... you have to deal with system limits; advance planning helps the class go well!

* know why you present what you present; know what you want students to get out of the class. Focus on the goal. What do they need?

6) Options

Lectures

* effective at communicating large amounts of material in a short amount of time

* easy to be long winded

* need to be highly organized

* even the best speaker loses the audience after 15 to 75 minutes

Discussion

- * involves students

small group activity

practice situations

scenarios

homework

handouts and reading

student presentations

7) Visual Aids

- * increase the number of senses used by students (and thus increase retention)
- * need to be focused on what you want to present
- * use them to grab and keep attention
- * demonstration is a visual aid; learn how to present and demonstrate, learn how to use a demonstrator; learn how to watch students while you demonstrate; learn how to talk while you demonstrate

8) Sensory input - the more sensory input students have, the more they'll remember

- * hear
- * see and hear
- * see, hear, touch (take notes, practice, ...)
- * add smell and taste if you can
- * kinesthetic teaching (move the person through the motions, directed practice)
- * but self discovery (via practice and understanding) will provide the most intense and long-lasting learning.

- F) Learning barriers – what keeps us from learning?
- psychological (fear, prior experience, pre/misconceptions)
 - consider all the things people might fear!
 - environmental (cold, heat, sun, wind)
 - physical (discomfort – too hot, cold, wet, full, empty)

* Effective instructors identify and correct as many potential barriers as possible, before the student enters the teaching venue, and then constantly watch for and correct additional barriers as they develop.

G) Elements of supervision

Part of any teacher's job is to supervise students. Supervision becomes vitally important when students do potentially hazardous things (like swimming class III rapids). What do we need to do to reduce the risks to our students (and to ourselves)?

1) Minimize hazards whenever possible

PFD, helmet, shoes, gloves, pads, ... for people

Remove strainers, debris, ... in the environment

Remember the weather and the water level, and watch for them to change

2) Treat drills as rescues

set up stream and down stream safety

minimize the number of people in the water at any time

know what is going on

NO horseplay

set redundant backups

have a safety plan and make sure everyone knows it

have an IC who oversees things; use assistants for immediate feedback

empower students to look out for their own safety; make sure they

understand the dangers, look out for hypothermia, dehydration and fatigue

(in your students and yourself)

3) Supervise the scene

direct supervision is essential – you need to be on scene paying attention

have a real lesson plan (in your head at least) and a plan for what you want to do

BUT don't be so fixed in the plan that you can't change when the situation changes.

4) Risk management

Remember that, by teaching a whitewater class, you have a legal and moral obligation to your students. Treat your responsibilities as real responsibilities. Teach within your skill and safety envelope.

5) Listen to your students and co-instructors

Many problems fall into the “too cold, too hot, too thirsty, too hungry, too tired, too scared, bladder too full, ...” category. These are all pretty easy to deal with (at least initially), but can easily be overlooked. Anticipate them and take steps to minimize their occurrence.

Closing

Teaching is hard work – treat it as such. Do the hard work early and in advance, practice, and don't be afraid to try new things

I. Create a natural critical learning environment

Intriguing question or problem

Guidance to understand significance of the problem

Engage in higher order thinking – compare, apply, evaluate, analyze, synthesize

Help students answer questions and come up with new questions

Develop a positive learning environment

II. Get their attention and keep it

III. Start with the students, not the discipline

IV. Seek commitments

V. Help students learn outside of class

VI. Engage students in disciplinary thinking

Think like the experts

Develop critical eye and critical evaluation skills

VII. Create diverse learning experiences.

Have fun!