

Decisions - Decisions A generic game for differentiation

We have seen that high order tasks help deep learning.
Higher order tasks help weak learners develop real understanding (deep learning)
High order tasks can also challenge the most able

High order tasks such as 'evaluation' 'synthesis' 'analysis' and so on are not necessarily difficult. For example asking an Advanced Level mathematics student whether the following expression is correct involves 'evaluation' but they should not find it difficult:

$$+2 - 3 = -1$$

They would find the low order task of memorising a long and complex formulae much more difficult.

The distinction between high and low order tasks is not their difficulty but the mental processes involved. *In particular high order tasks require understanding.* They cannot be completed unless the student has developed their own understanding of the material, so they force the student to make their own sense of what they are learning.

Low order tasks do none of these things, they only require recall and understanding may be minimal or even non existent.

Decisions–Decisions

This is a game that involves simple high-order tasks. If you did the 'which methods differentiate' activity you have already played it. If you saw the video on mathematics teaching you will have seen students using it. The game can be adapted to any subject, indeed practically any topic in any subject.

Students usually work in small groups though they can work alone. Each group is given a set of cards. These can have on them single words, sentences, short descriptions such as vocational scenarios, diagrams, photographs, mathematical expressions, almost anything. The task is then to match, group, or rank these cards in some way, or to treat the cards as labels and place them on a diagram or map etc.

The game is great fun, develops deep learning, and like any good student activity it allows misunderstandings to be checked and corrected, and gives feedback to the teacher on levels of understanding. The games can be designed to take very little, or a lot of time. It is best described by some examples. You will need to use your imagination to adapt the game to your subject. This becomes easier as you design more games.

A numbering code can be used on the cards, to allow quick identification of the correct answers if necessary.

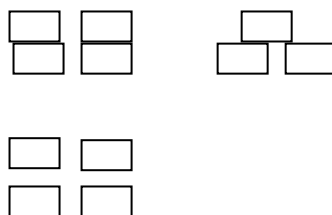
The games have a very sound educational grounding. They are 'constructivist' in that, because they require students to make decisions with their learning, they develop and test students' concepts and other 'mental constructs' and so allow these to be corrected. They are excellent for teaching difficult concepts or dry subjects. They are also great fun - much more fun than they sound!

Decisions decisions games fall into four main categories: matching, grouping, ranking and labelling.

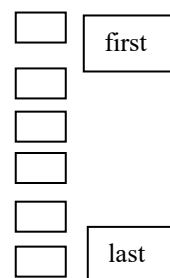
Matching

Word	Definition
Technical term	example
question	answer
$Y=3x -4$	$X = (y+4)/3$

grouping

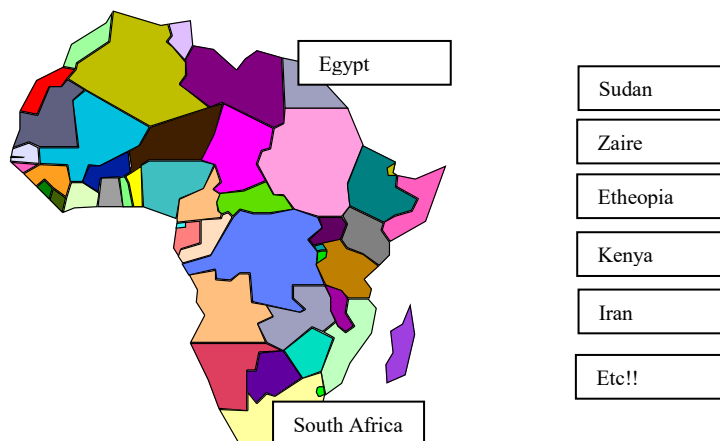


ranking (e.g. by time, priority, etc)



Labelling

(In this case the cards are labels that the student must place correctly on a diagram, map, or even a worked example etc)



(You are quite right, Iran is not in Africa! But well chosen 'spurious' cards can act as 'distracters' to make good learning points. They can also be great fun. Consider them for all decision-decision games.

Other labelling games include labelling diagrams, computer programs, worked examples, photographs, paintings, etc.

Grouping games: some examples

Groups are given a set of, say, 30 cards, each of which has a different phrase with an underlined word: for example, 'The fox ran quickly into a hole.' Students must sort the underlined words into nouns, adjectives, adverbs. Each group has the same set of cards.

This game, and the others below are made more difficult and more fun if some of the cards cannot be grouped correctly. For example some cards have words that are neither nouns, adjectives nor adverbs.

Similar games can be devised for students to practise classifying:

metaphor, simile and personification;
examples of conduction, convection and radiation;
igneous, sedimentary and metamorphic rocks;
valid and invalid arguments for the increased crime rate in cities;
categorise errors in punctuation under 'comma'; 'full-stop'; etc
etc.

Classifications that are useful include:

True; Sometimes True; False
Often; sometimes; never
Agree; Don't Know; Disagree;

- Groups of social workers and probation officers on an AIDS awareness course are given cards on which are described various sexual practices. They are to sort them into three piles: 'safer sex' 'unsafe sex' and 'don't know'.
- Maths students are given cards with expressions such as " $x + 3 > 2$ " or " $y - 7 < y - 2$ " and they have to sort these into three groups: always true, sometimes true, and never true.
- Students with learning difficulties are given photographs and drawings of clothes etc that they might, or might not take on a trip. These are grouped as: 'everyone needs it'; 'no-one needs it'; 'Our group only needs one of these'.

Physics students are given cards with examination style problems on them. They are not asked to do the problems but to sort them by what principle they would use to solve the problem. E.g. "use momentum" "use conservation of energy" "Use equations of linear motion" etc. Students often find deciding the appropriate principle more difficult than doing the question, so this can greatly improve student performance. The same or similar approaches can be used in most subjects.

Ranking games: some examples

Ranking by time, some examples:

- Business studies students are given a set of cards, each of which describes an activity which prepares for the launch of a new product. The students are to sort the cards into the correct chronological order.
- Students with learning difficulties are given photographs of various stages for making a cup of tea. Each stage has a short descriptive phrase such as 'boil the water'. Students must place these in the proper time order.
- Plumbing students are given cards that describe the process of fitting a new central heating system. They must place them in the order that the tasks would be done.
- Students of First Aid are revising how to respond to a medical emergency. They are given cards with phrases such as 'ring 999' 'Check airways and breathing' 'Turn off the electricity' and must place them in the correct order.

In all these games spurious cards are helpful to develop the concepts concerned. Cards can be

Ranking in other ways

Students can sort cards into orders of priority, or characteristics for example:

- “Place these diseases into order of infectivity” or
- “Place these wines in order of sweetness.”
- “Place these care plans in order of effectiveness”
- “Place these marketing strategies in order of costliness”
- etc

Cards can be ranked by any characteristic imaginable. This is very highly adaptable and involves students in evaluation which is a high order thinking skill.

Matching games: some examples

As well as grouping, sequencing, and ranking and labelling, students can also be asked to match cards:

- Science students are given a set of cards describing energy transformations, and another set describing processes. They have to match each 'process card' with the appropriate 'energy change card'. So they end up with pairs such as:

A rock falling off a cliff	Gravitational potential energy Being converted into Kinetic energy
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Students can also be asked to match:

Questions and answers
Problems and solutions
Words or phrases with their definitions
Types and examples e.g. "noun" and "cat"
Equivalent mathematical expressions
Etc

All of these games are made more difficult, and more fun, by 'spurious' cards which must be rejected - for example giving two or three alternative definitions only one of which is correct. Clearly, only your imagination limits the adaptation of such games to any conceivable topic or purpose.

Do consider getting students to write question and answer cards for other students to match. Writing the questions and answers is an excellent activity in itself, as well as saving you time. With a set of question and answer cards you can play the following game.

Mountain Climbing - A recall game with question cards

In small groups students devise cards with questions and answers. Each group is given their own sub-topic to write questions and answers for. The teacher checks the questions and answers, and then enough copies are made so that every group has a set of cards for every sub-topic. For example if there are five groups, then each group makes five sets of their question cards. Each group is given the cards from the other groups so they have cards to cover all sub-topics.

They now play a game like 'Trivial Pursuits' (registered trademark) in their groups, taking it in turn to answer the questions including the ones they devised.

For level 1 or level2 students you can draw a mountain on the game-board which needs about 10 to fifteen positions up the mountain on it, depending on the number of cards. The challenge is for every student to get to the top of the mountain.

If a student gets a question wrong, they keep this card and then have to answer it correctly before they can complete the game, ideally explaining their answer as well as giving it. They can learn this answer during the game of course, as they have the card they got wrong complete with its answer.

This is much more fun than it sounds and level 1 and 2 students absolutely love it, yet it has the serious purpose of checking that all students have the key points clear, and correcting errors and omissions in learning.

Activity: Making use of ‘decisions-decisions’ in my subject

- a) Using the handout provided, think of as many games as you can in your subject under the categories of matching grouping, sequencing, ranking and labelling.
- b) Choose a topic that you teach which is conceptually difficult and think of some decisions decisions games for this. The games is particularly powerful for concepts that students often confuse; for example students can be taught the difference between energy and power, or diffusion and osmosis by sorting cards describing examples of both.
- c) Choose a ‘wordy’ topic where there is a tendency for the teacher to spend a lot of time talking to students and try to devise a decisions-decisions games for this.

Activity: Action Planning

If you are in your teaching team you could divide up the games you have thought of making between you and make one or two each to share.

Think of as many topics for games in your teaching as possible:

Matching:

Grouping:

Sequencing:

Ranking:

Labelling

Mountain Climbing:

Other thoughts:

References and Notes for further study.

Geoffrey Petty (1998) "Teaching Today a Practical Guide" 2nd Ed Nelson Thornes
See chapter 19 for Decisions-decisions and other games for learning
See chapter 1 and 4 for constructivism

If you are interested in this approach to learning you might like to find out more about '**constructivism**' on which these pages are based. This is a learning theory that is almost universally accepted by neurologists, psychologists, and educationalists, and accepted in many other disciplines such as philosophy and sociology. It explains learning and a personal meaning making process, each learner makes their own understanding and adapts this with feedback and other experience. This understanding is contained in neural connections in the learners brain. Consequently learners need activities which require them to make these connections, and to check and correct them. See chapter 1 and 4 in the above reference for more detail on this.