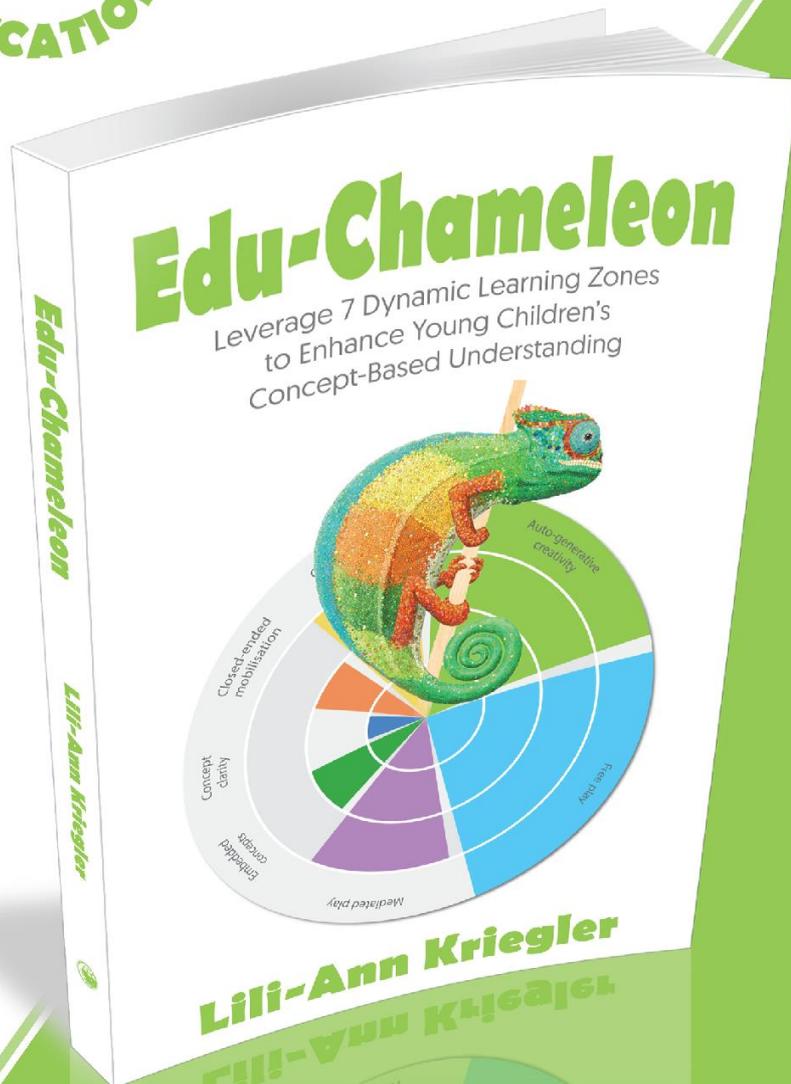


Edu-Chameleon



Lists



From the book **Edu-Chameleon - Leverage 7 Dynamic Learning Zones to Enhance Young Children's Concept-Based Understanding**

Foreword

The lists in this document are taken from my book: *Edu-Chameleon – Leverage 7 Dynamic Learning Zones to Enhance Young Children’s Concept-Based Understanding*. In the book I describe how children formulate and use concepts to understand the world around them.

Concept formation is language formation and language is the basis of most of our thinking and learning. Concepts range from extremely simple to extraordinarily complex.

Initially the book describes how children know, connect, mobilise and communicate their learning.

In the body of the *Edu-Chameleon* book I present seven learning zones each outlining a distinctive relationship between the educator and the student.

Rather than a binary perspective which gives a choice between learning or play, these zones recognise seven different ways educators can engage their students to develop a deep understanding of how the world works.

I hope you find the lists useful!

Lili-Ann Kriegler

Edu-chameleon lists:

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Thirteen Universal Relationships

It is through relationships that everything in the universe coheres. The relationships largely answer the grand old questions starters: *Who, What, Where, When, How and Why?* After reviewing the 13 universal relationships for all levels of learning in the table below, take a moment to pause and reflect on Rudyard Kipling's enduring poem, *I Keep Six Honest Serving-Men*.

Qualifying	What/who is it?
Analytical	How can it be analysed into whole and parts? (The opposite is synthesis.)
Functional	How does it work? What makes it work? And why?
Temporal	When is it placed in sequence and time?
Spatial	Where is it located or related in space?
Comparative	How is it similar, equivalent or different? And why?
Causal	What is the cause and effect? And why?
Dependent	What depends on what? And why?
Transformat- ional	How and what has changed and why?
Quantifying	How is it estimated or measured for precision and accuracy?

Hypothetical	If something happens what might follow? And why?
Imaginative	Wondering what, where, when, how and why something might be.
Ethical	What is whose responsibility to something?

Rudyard Kipling – The Elephant’s Child

*I keep six honest serving-men
 (They taught me all I knew);
 Their names are What and Why and When and
 How
 and Where and Who.
 I send them over land and sea, I send them
 east and west;
 But after they have worked for me, I give them
 all a rest.*

*I let them rest from nine till five, For I am
 busy then,
 As well as breakfast, lunch, and tea, For they are
 hungry men.
 But different folk have different views; I know a
 person small
 She keeps ten million serving-men, Who get
 no rest at all!
 She sends em abroad on her own affairs, From the
 second she opens her eyes One million Hows, Two
 million Wheres, And seven million Whys!*

Twenty Key Concepts for Organising Knowledge and Eliciting Meaning

Umbrella Concept	Elements that belong to the concept
1. colour	This could be explored through the colours themselves: red, blue, yellow, green, purple, orange, violet, indigo, black and white; or the features: primary, secondary, pastel, shade, hue, light, dark, tone
2. dimension	These include length, width, height, area, volume, weight, density, speed, volume (sound), distance, pressure, angles, temperature, wavelength, interval and unit.
3. distance	Some examples related to distance include metric, kilometres, imperial, miles and light-years.
4. emotion	There are many emotions, each with multiple associated labels. For example, happy, sad, angry, excited, surprised, fearful and disgusted. It is important for students to be able to distinguish both the broad and subtle

	differences in emotions.
5. form	Forms that are not Euclidian shapes are included here: bulbous, thorny, tentacled, etc. Each example needs to be examined and described. There are some wonderful natural forms such as symmetrical, radiant, divergent, convergent, pinnate, linear, spiral, concentric, webbed, tessellated and fractal to name a few.

6. function	Functions are individual to entities, so need to be assessed in situ. Look at the internal workings and external impact of any object, entity or system. Examples are transport, measurement, locomotion, recording sound, mixing food, etc.
7. length	Units of measurements including metric, millimetre, centimetre, metre, kilometre, imperial, inch, foot, yard and mile.

8. location	There are lots of variations here, such as above, around, at, back, before, behind, below, beside, centre, down, far, front, in, inner, left, middle, near, next to, north, on top, on, out, outer, right, south, underneath, up and within.
9. material	A huge variation of elements can be examined here such as concrete, cork, glass, leather, metal, natural materials, paper, Perspex, plastic, polystyrene, porcelain, rubber, shell, sponge, stone and wood.
10. orientation	Generally, orientation refers to the universal directions and coordinates we use to locate ourselves in space: north, south, east, west, (plus all the in between measures), as well as Longitude and latitude.
11. pattern	Any identifiable recurring trend. Patterns can be labelled, e.g. ABAB, ABBA, AABACC etc. Patterns can also be seen in materials, and in all the phenomena around us, like the cycles of the moon, seasons, etc. We can see patterns of behaviour and many other kinds. These patterns also relate to

	the forms above.
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12. perspective	Similar to orientation, perspective is the position you view things from. This can be physical perspective, but also attitudinal, psychological, social, political and other perspectives. Students benefit from learning about perspective in a variety of ways.
13. senses	Sight, hearing, smell, taste and touch all have concepts related to them. We can also refer to our inward senses and intuitions. See the senses table that follows.
14. shape	<p>One-dimensional linear shape: crenelated, curved, parallel, round, straight, wavy</p> <p>Two-dimensional shapes (geometric): diamond, dodecagon, hexagon, octagon, parallelogram, pentagon, polygon, quadrilateral, rectangle, rhombus, square, triangle</p> <p>Curved Shapes: arc, circle, ellipse,</p>

	<p>oval, parabola Three dimensional shapes: cone, cube, cylinder, polyhedrons (3D shapes with straight sides), prism, pyramid, sphere and torus (like a donut).</p>
15. size	<p>Wide ranging including, diminutive, microscopic, miniscule, minute, small, medium, middling, midsized, regular, colossal, enormous, huge, large and massive.</p>
16. speed	<p>Lots of possibilities beyond the usual fast and slow, such as cadence, dashing, hastening, hurried, hurtling, moderate, motoring, rate, rhythm, sedate, slow-moving, steady, whizzing and zooming.</p>
17. tempera- ture	<p>Again, plenty of choices beyond the obvious including ambient, baking, blistering boiling, Celsius, chilly, cold, degrees, Fahrenheit, freezing frosty, heat, icy, tepid, thermal, thermometer and warm.</p>

18. time	From specific measurements to concepts, there is a multitude of ways to introduce an explore time, such as: 12 hours, 24 hours, afternoon, age, always, am, annual, biannual, century, contemporaneous, contemporary, continual, continuous, dawn, day, decade, dusk, early, eon, era, evening, future, half hour, hour, late, midday, millennium, millisecond, minute, moment, month, morning, never, new, night, now, old, past, permanent, pm, present, quarter hour, second, soon, temporary, then, today, tomorrow, week, year, yesterday and young.
19. volume	This can be further examined using elements like litre, millilitre, pint, quart, etc.
20. weight	There are lots of opportunities to explore here too, including heavy, light, gram, milligram, kilogram, ounce, pound and stone.

A Dozen Thinking Skills

1. Focus and attention

No learning can take place without focus and attention. It implies self-regulation. Attention may be directed to a single object or a complex task. Irrelevant stimuli are ignored. When there is complex field, focus needs to be directed in a systematic way to gather all relevant information (often left to right, or top to bottom).

2. Labelling

Language is the essential toolkit for thinking and learning. Precise meaning should be attached to each label. Labels denote phenomena in both the concrete and abstract domains. They can be contextual. Labels apply to simple and compound ideas (like electro-magnetism). All parts of the compound idea need to be understood. Labels may be understood in receptive language before they are readily articulated in expressive language.

3. Spatial perception

This is a relational understanding of position and orientation.

Each object is positioned or oriented in relation to something else. Spatial perception involves different points of view. Some spatial information is informed from a personal perspective depending on which way the viewer is facing, such as left, right, front or back; while other information relates to universal reference points like north, south, vertical and horizontal.

4. Temporal perception

Understanding time, sequence and order.

5. Representation

Human beings have developed innumerable ways of representing reality and ideas. These may be verbal, pictorial, graphic or symbolic, to name a few. Representation can be simple like the word 'blue' representing the colour blue, or highly complex like mathematical symbols for a combination of abstract ideas. Students' performance will become limited at the point where they lose track of what representations and symbols mean.

6. Comparison

Understanding how things are equivalent, similar or

different. Comparison is achieved by focusing on specific criteria in both a focus entity A, and a target entity B. It can be simple when one object is compared with another object; but it becomes highly complex when one system of interrelated elements is compared to another. For example, comparing the circulatory system of reptiles versus mammals. Comparison is the basis for categorisation because it reveals how things belong, or do not belong, in a group. When comparing, equivalence, similarity and difference can simply be noted. It is important to remember that depending on the feature that is the focus, a single entity can belong to more than one category. A red circle can belong to a colour category and shape category. This is the basis of Venn diagrams. At a higher level of thinking, comparison is the basis for decision-making and evaluation. A further fundamental aspect of comparison is to keep track of what remains the same and what has changed or transformed. For example, if six oranges have been cut in quarters, there are 24 pieces, but the fact remains that all the parts originate from six oranges. This is the conservation of constancy – tracking what is the same.

7. Visualisation

Mentally representing things in the mind. This may be a single visualisation or a complex manipulation of information. Visualisation can relate to the present, past and future.

8. Identifying relationships

Internal relationships exist between a whole and its parts. A person can move, because he or she has feet and legs. External relationships exist between a whole and another whole. A torch, a lamp, a taillight and a chandelier are related because they all project light. Some relationships are determined with reference to a specific criterion internally or externally. One box is bigger, has greater volume, is sturdier than another. Relationships might be contextual. A nurse, hospital, ambulance and emergency care are related. Some relationships are causal: x happened because of y. I checked my Facebook and burnt the toast ... again.

9. Problem-solving

Problem solving has a process. Perceive a problem, assess it and develop a plan to solve it. Gather full and complete information, discard irrelevant

information, combine more than one source of information, plan the sequence of steps, enact the steps, solve the problem.

10. Providing logical evidence

Using what is known, often from several different sources, to explain occurrences. It is related to inferential thinking whereby conclusions are drawn based on evidence.

11. Hypothetical thinking

Hypothetical thinking is 'if ... then' thinking. It is using available information to project what might happen, or to visualise alternatives. It is related to the scientific method but can be used in all areas of life

12. Imagination

Imagination can occur at many levels. It can be a simple image, or it can lead to infinite possibilities. It is the fuel of creativity. Sir Ken Robinson considered the two in this way: 'Imagination allows us to think of things that aren't real or around us at any given time, creativity allows us to do something meaningful with our imaginations' (Robinson & Aronica 2010).

Five Senses Words

sight	blind, blurry, clear, dark, glance, glimpse, keen, light, observe, outlook, panorama, peripheral vision, range of vision, scenery, see, sight, spy, stare, survey, unclear, visibility, vista, witness
sound	alliteration, animal sounds, bang and crash sounds, distant, drone, echo, high, insect sounds, knock, loud, low, mechanical sounds, movement sounds, musical pitch, natural sounds, onomatopoeia, rattles, sibilance, sirens, signals, soft, volume, weather sounds
taste	acidic, bitter, chewy, creamy, crisp, crumbly, crunchy, dense, dry, edente, fluffy, fresh, gelatinous, granular, gritty, herby, hot, light,

taste cont.	liquid, lumpy, oily, powdery, runny, saccharine, salty, savoury, smooth, soggy, solid, sour, spicy, stale, stodgy, sweet, tart
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smell	aromatic, cloying, damp, fetid, floral, foul, fragrant, fresh, fumes, herby, malodorous, musty, perfumed, pleasant, pungent, smoky, spicy, sweet
touch	ache, agony, bruised, bumpy, cold, constricted, corrugated, crackly, cramp, crisp, dry, firm, fluffy, furry, fuzzy, gritty, grooved, hard, hot, icy, itchy, loose, lumpy, massage, moist, mushy, numb, oily, painful, pat, pinch, pins and needle, plump, prickly, pummel, ridged, rough, rubbery, satiny, scaly, scratchy, silky, slap, slippery, smack, smooth, soft, sore,

touch cont.

spongy, stroke, swollen, tickly, tight, velvety, warm, waxy, woolly, wrinkly

Weather Words

breezy, bright, cloudy, cold, cool, fog, hail, humid, mild, mist, overcast, rain, sleet, snow, storm, sunny, thunder and lightning, warm, windy

Ten Modalities for Learning

1. **Concrete:** using or manipulating objects in the real world.
2. **Verbal:** related to the use of language for accessing, assessing, processing or expressing learning. There are two main aspects to the verbal modality: oral and written.

3. Symbolic: related to any symbols either recognised or developed to represent something else. Examples are road signs, letters, numbers, the table of elements. Students can create their own symbols to represent information or understand the symbols in their daily life and curriculum.

4. Pictorial: relates to images that are representative of reality, such as life-like drawings or photographic materials. Pictorial is differentiated from graphic below because pictures are less abstract and more accessible than graphic formats. Graphic formats may have some symbolic elements that have to be learned.

5. Figural: relates to anything to do with form or shape.

6. Graphic: relates to drawings that may or may not include easily recognisable representations of information. Examples are line drawings and graphic organisers. The drawings are more abstract than pictures and may include some elements of what it is representing. Or it relates to a representative way to encapsulate complex information in an easily absorbed format, for example, graphs, diagrams, models

7. Digital: refers to any use of digital devices and may include many other modalities. Digital technology enables students to combine many modalities quickly and easily and it requires a particular kind of technological skill and know-how.

8. Kinaesthetic: refers to capturing information in movement. This can be single movements and sensation captured through the senses or a complex sequence of movements. Movement and sensation are harnessed as a vehicle for complex communication (embodied cognition).

9. Representational/metaphorical: refers to the ability to develop an idea or concept that represents some aspect of an object, relationship or abstract concept. It usually makes it easier for the learner to comprehend the complexity of something else through something that is known or understood.

10. Imaginary: relates to the ability of the mind to explore new ideas or knowledge. This can be a fairly simple or an extremely complex mental construct for learning and problem-solving.

There are many languages of learning and play.



Play Ideas and Equipment

Home Corner

Furniture:

bed
bookcase
chairs
cot cupboard
divider sink
stove table

Props:

bed clothes
dolls
dress-up items
empty grocery
containers play
money pots and
pans scale
tea set
wooden people

Imaginary Play

Themes

castle
cultural
cultural celebrations
fairy tale
fire station hair
salon
home/kitchen
medical
office police
school shop
superheroes
transport

Outdoor Play

A-frames
balancing beams
baskets
brooms buckets
climbing rocks
cooking utensils
digger trucks
fabric
fixed climbing,
swinging, flying fox,
etc.
large building blocks
musical chimes
platforms
PVC piping
rakes sandpit
scrapers see
saw spades
watering cans
woodwork equipment

Sports and Activities	Recycled and Decorative Materials	Construction and Table-Top Toys
balls bean bags big blocks cycles hockey hula hoops lengths of rope natural materials parachute quoits skipping ropes skittles soccer walking stilts	bottles cardboard boxes cardboard cylinders dowel sticks jars lengths of fabric lengths of timber natural materials plastic containers rubber timber offcuts various manufacturing offcuts wishing stones	blocks DUPLO® games gears LASY LEGO® matching and sorting Meccano® puzzles sequencing stickle bricks tessellation What's in a Square

Social, Emotional and Cultural Concepts and Skills

Self-care and home skills

Dressing, bedtime, bath time, mealtime, pet care, travel and commuting, play, cooking and baking, setting the table, building and construction, setting up and packing away.

Gross and fine motor skills

Pick up food and objects, use cutlery, use crockery, lift body, roll, sit, crawl, bounce, balance, walk, run, hop, skip, jump, roll, slide, climb, swing, hang, alternate movements fluidly, pinch, clasp, lift, cut, paste, carry objects, arrange materials, hold and use painting, drawing and writing implements, roll (e.g. plasticine and clay), stack objects and balance objects.

Social and cultural concepts

Identity, self, other, people, humanity, relationship, emotion, friendship, family, culture, society, religion, love, respect and inclusion.

Social interactions

Greet others, make eye contact (if culturally appropriate), engage in conversation, take turns, see things from another's point of view, help others, accept help from others, be cooperative, be collaborative, be aware of what is happening in the environment, take care of another, self-regulate behaviour, self-regulate emotions, move beyond the need for instant gratification, engage in rites of passage, share in cultural events, understand roles and rituals in different cultures, religions and ethnic groups.

Emotional intelligence (EQ)

Understand emotions, name emotions, understand others' emotions, name others' emotions, develop self-talk strategies to withstand negative emotions, develop a routine/strategy for dealing with conflict, be empathetic, be sympathetic, understand boundaries, respect boundaries, understand the consequences of behaviours, deal with the consequences of behaviours, learn to separate the person from the behaviour, understand that no emotional state is permanent, predict emotional impact, and accept that emotions are part of life.



Curriculum Areas to Explore

Arts and crafts:

- Drama
- Puppetry
- Mark making
- Interpret images and artworks
- Design and execute 2D and 3D products
- Understand space and spatial relationships
- Understand time and temporal relationships
- Understand materials and how they may be used
- Organise marks and/or ideas on page or canvas
- Interpret and investigate gesture and body language
- Learn about motion, posture and the interpretative dance.

Science and nature:

- Electricity
- Magnetism
- Properties of air
- Carry out experiments
- Energy and combustion
- Growth and development
- Life cycles of animals and plants
- Observe and record information

- Develop and test hypotheses
- Melting, freezing and evaporation of water
- Food processes during baking and cooking
- Physical properties of matter, e.g. glue dries hard
- Biological processes: breathing, nutrition, digestion
- Modes of communication: digital, wireless, internet
- The senses: processes of sight, hearing, touch, taste, smell
- The brain: thinking, imagining, creating, connecting, learning, etc.

Mathematics:

- Counting
- Estimate
- Measure
- Graph
- Build patterns
- Add and subtract
- Divide and multiply
- Number knowledge
- Collect and sort materials
- Make groups and sets
- Understand terminology
- Understand symbols
- Explain relationships
- Geometric shapes and attendant knowledge
- Understand grouping symbols for equations

- Represent the ideas in numerical, spatial, concrete and other ways
- Apply/transfer mathematical procedures as listed above.

Verbal literacy (this includes oral speech and written language):

- Listen to sounds
- Identify sounds
- Talk in single words
- Combine words
- Use sentences
- Identify words and match them with real world equivalents
- Identify words with what is known but is not immediately present
- Identify words with what is neither known nor immediately present using imagination
- Listen to stories
- Monitor the sequence and plot
 - Understand stories
 - Tell stories
 - Remember and relate experiences
 - Understand similarities and differences
 - Identify causal relationships
 - Predict events and routines
 - Visualise

- Follow conversations
- Recognise that a book uses language of image and word
- Know that images and words have meaning
- Recognise written words
- Read words and sounds
- Identify images
- Understand images
- Read sounds
- Read words
- Read sentences
- Read full texts
- Read stories
- Identify characters
- Identify relationships between characters
- Follow the plot
- Follow the argument of structure of a text
- Distinguish what is more and less important
- Understand the chronological aspects of the narrative
- Understand analogies
- Understand what is implicit in the text
- Understand how the text is organised
- Understand different formats of text

Thank you for taking the time to read my book and download these lists. I hope you find them useful.

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