

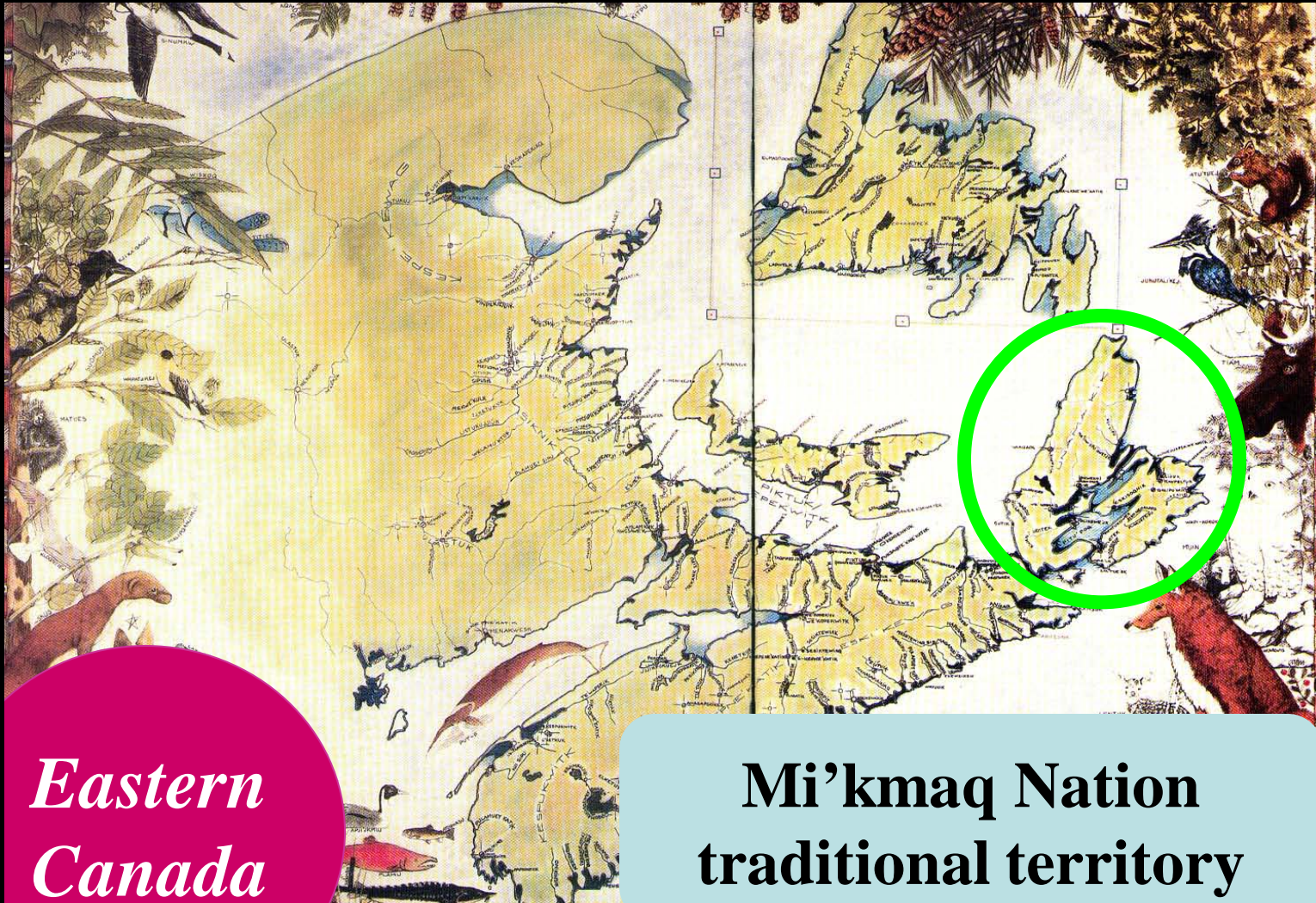
**4th International Conference on Imagination and Education:
Opening Doors to Imagination; Vancouver, BC, 12-15 July 2006**

(text: 10 pp. in Proceedings <http://www.ierg.net/confs/viewpaper.php?id=141&cf=1>)

**Imagination in the natural
sciences:
pattern recognition,
transformation and expression**

**Sana Kavanagh, BSc, MES (in progress)
Cheryl Bartlett, PhD, CRC in Integrative Science
Murdena Marshall, BEd, MEd, Mi'kmaq Elder**





*Eastern
Canada*

**Mi'kmaq Nation
traditional territory**

map image: Native Council of Nova Scotia
Mi'kmaq Language Program
Artist: Michael J. Martin

Cape Breton – Unama'ki

CAPE BRETON
UNIVERSITY



4 year
science
program

*Eastern
Canada*

**Mi'kmaq Nation
traditional territory**

map image: Native Council of Nova Scotia
Mi'kmaq Language Program
Artist: Michael J. Martin



The central dilemma of science education today is the teaching of science from only one cultural perspective, and in an incomplete and non-connected manner.

Gregory Cajete, PhD, Univ. of New Mexico



Toqwa'tu'kl Kjiijitaqnn Integrative Science



Artist Basma Kavanagh



Toqwa'tu'kl Kjiijitaqnn Integrative Science



Artist Basma Kavanagh

science education
strength in diverse approaches

PATTERN CONCEPTUAL FRAMEWORK



vigour

WEAVING



rigour

UN-WEAVING

IMAGINATION...

PURELY
INNER?



PATTERN CONCEPTUAL FRAMEWORK

IMAGINATION...

between OUTER
and INNER?



and INNER and OUTER?

PATTERN CONCEPTUAL FRAMEWORK

natural



ideal



abstract

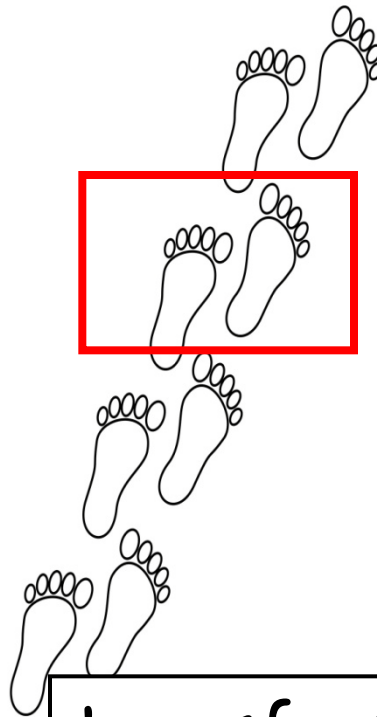
PATTERN CONCEPTUAL FRAMEWORK

natural



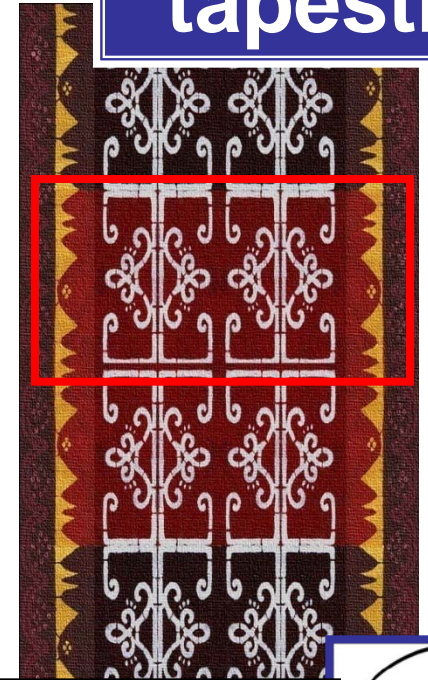
recognize
pattern

ideal



transform
pattern

abstract



express
pattern

tapestry



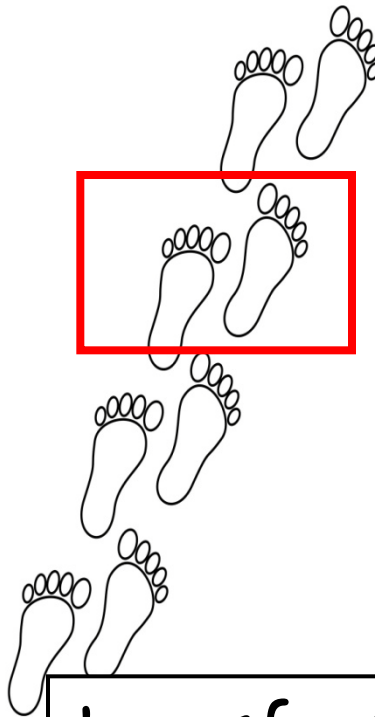
PATTERN CONCEPTUAL FRAMEWORK

natural



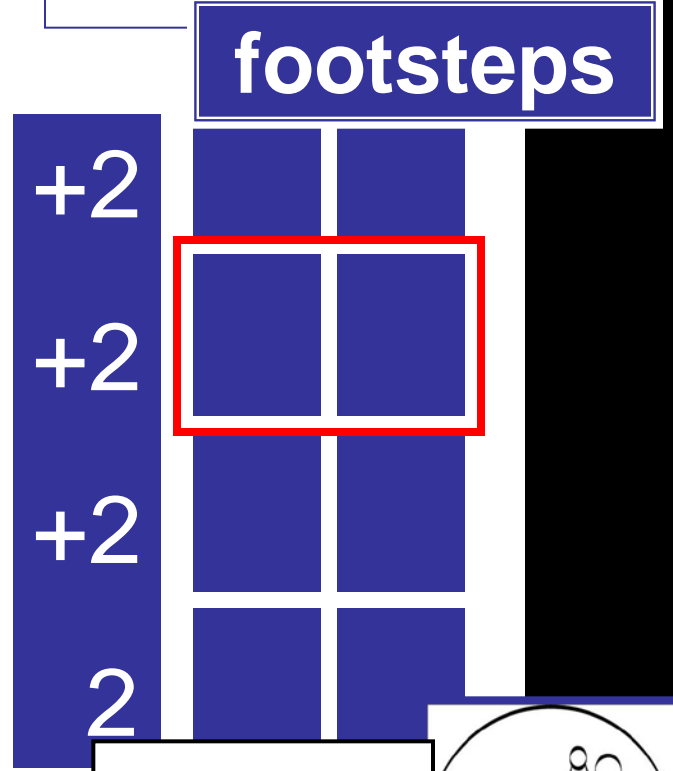
recognize
pattern

ideal



transform
pattern

abstract



express
pattern



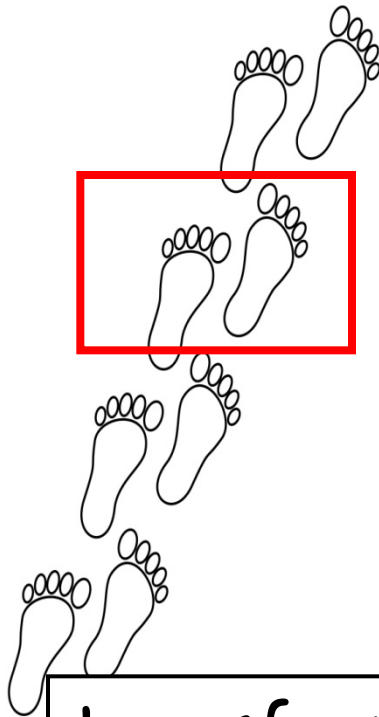
PATTERN CONCEPTUAL FRAMEWORK

natural



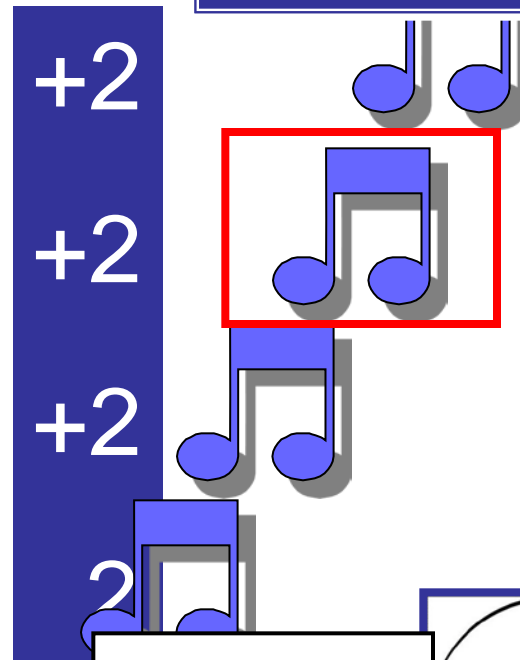
recognize
pattern

ideal



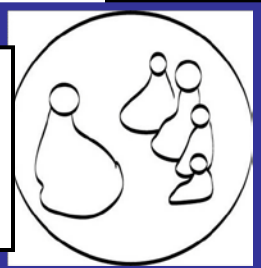
transform
pattern

abstract



express
pattern

music



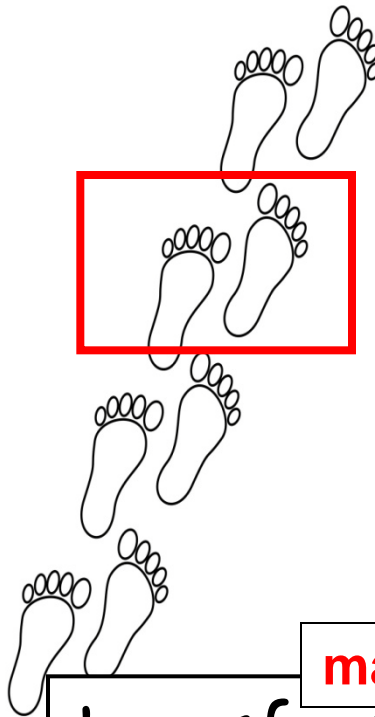
PATTERN CONCEPTUAL FRAMEWORK

natural



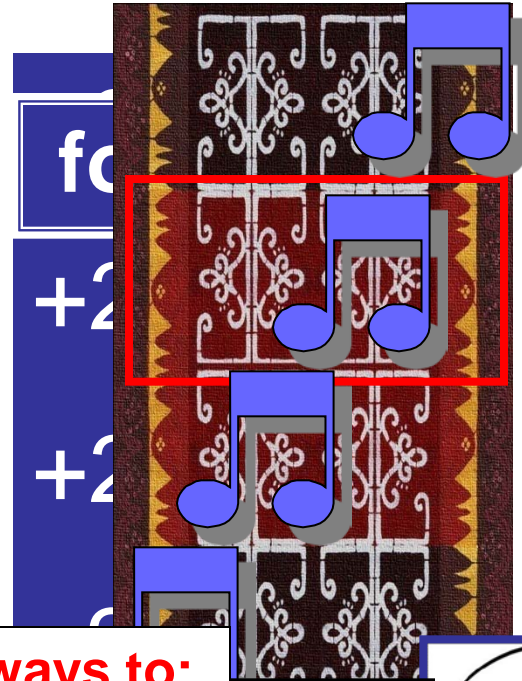
recognize
pattern

ideal



transform
pattern

abstract



many ways to:

express
pattern



PATTERN CONCEPTUAL FRAMEWORK



outer

inner

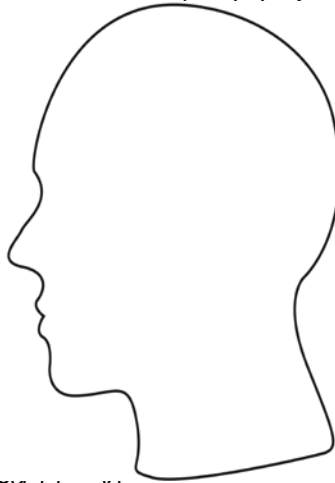
outer

natural

ideal

abstract

encounter



outer

inner

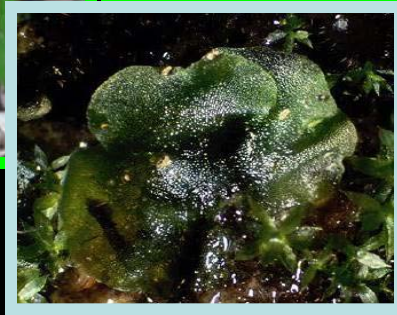
kinesis

personal

cultural

outer

natural



PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



Matteuccia struthiopteris

fiddlehead

crozier

Mtèskmwaqsil

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



Matteuccia struthiopteris

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



Matteuccia struthiopteris

struthio + pteris

ostrich + feather

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



atteuccia struthiopteris

struthio + pteris

ostrich + feather

ostrich
feather

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



ostrich
feather

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



fiddlehead

PATTERN CONCEPTUAL FRAMEWORK

outer

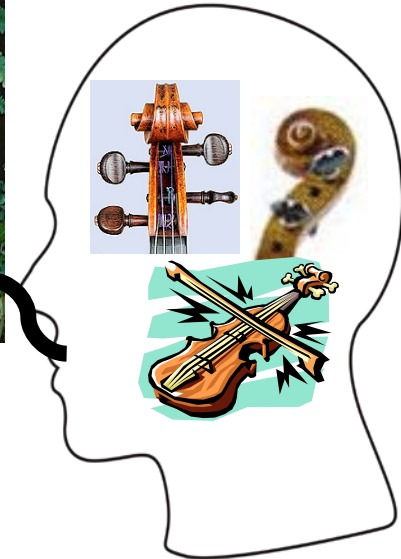
inner

outer

natural

ideal

abstract



fiddlehead

fiddle + head

PATTERN CONCEPTUAL FRAMEWORK

outer

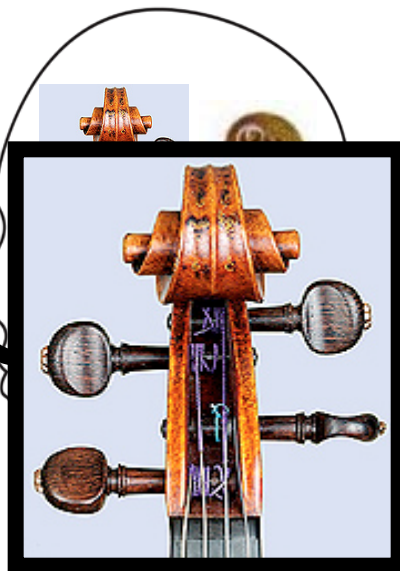
inner

outer

natural

ideal

abstract



fiddlehead

fiddle + head

PATTERN CONCEPTUAL FRAMEWORK

outer

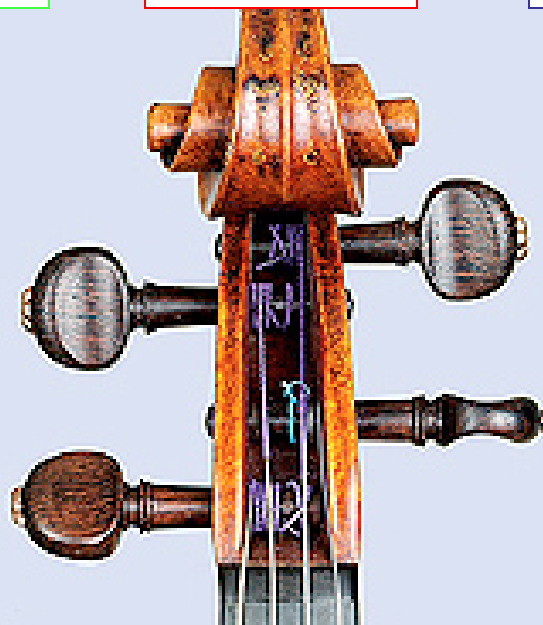
inner

outer

natural

ideal

abstract



fiddlehead

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



crozier

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



crozier

crozier

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



crozier

crozier

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



crozier

PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

natural

ideal

abstract



Mtèskmwaqsil

PATTERN CONCEPTUAL FRAMEWORK

outer

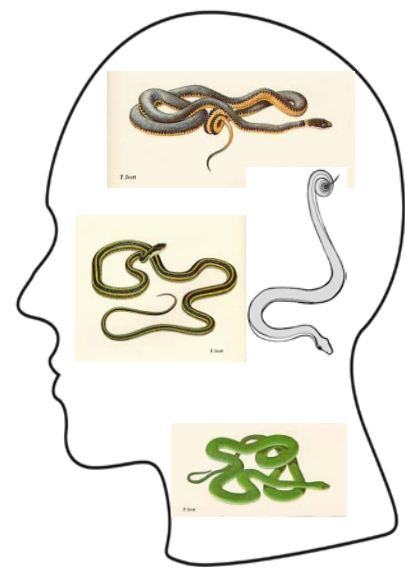
inner

outer

natural

ideal

abstract



snakes bunched

Mtes'km + waqsil

Mtèskmwaqsil

PATTERN CONCEPTUAL FRAMEWORK

outer

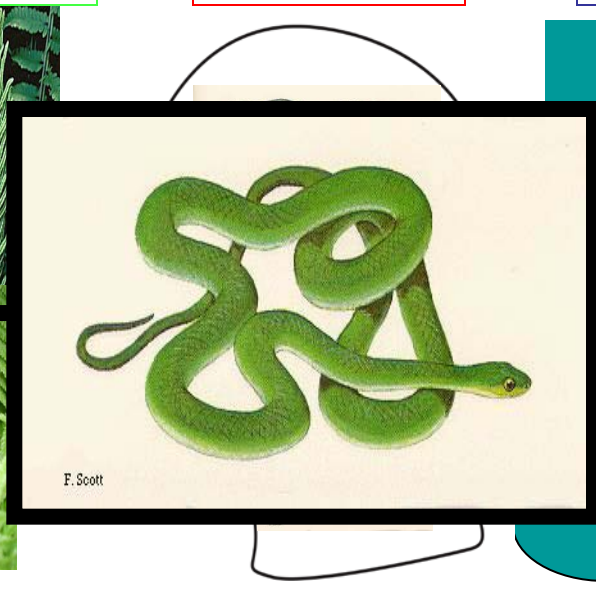
inner

outer

natural

ideal

abstract



snakes bunched

tes'km + waqsil

Mtèskmwaqsil

PATTERN CONCEPTUAL FRAMEWORK

outer

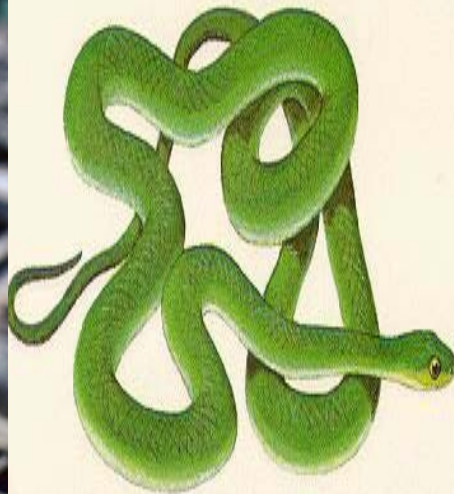
inner

outer

natural

ideal

abstract



snakes
bunched

PATTERN CONCEPTUAL FRAMEWORK

outer

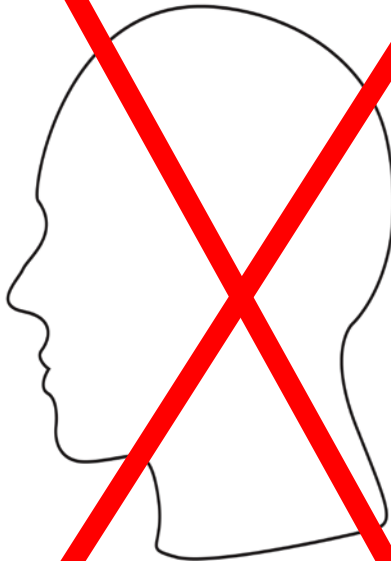
natural



standard
approach
to natural
sciences

inner

ideal



outer

abstract

Matteuccia struthiopteris

fiddlehead

crozier

Mtèskmwaqsil



PATTERN CONCEPTUAL FRAMEWORK



natural

recognize
pattern

outer

ideal

transform
pattern

inner

abstract

express
pattern

outer

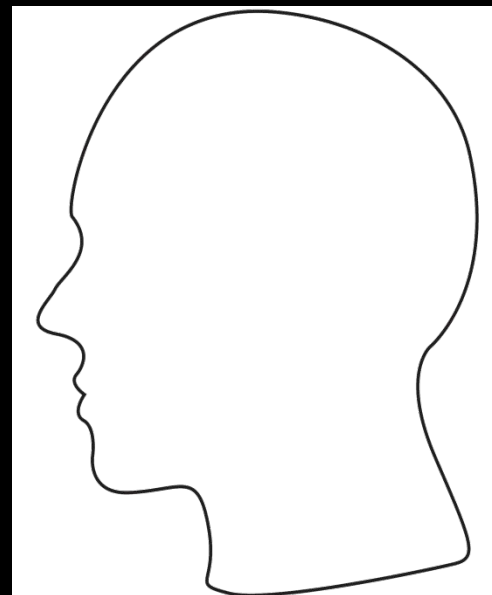


PATTERN CONCEPTUAL FRAMEWORK

think about
thinking

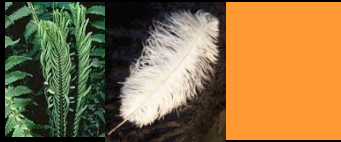
self awareness

metacognition

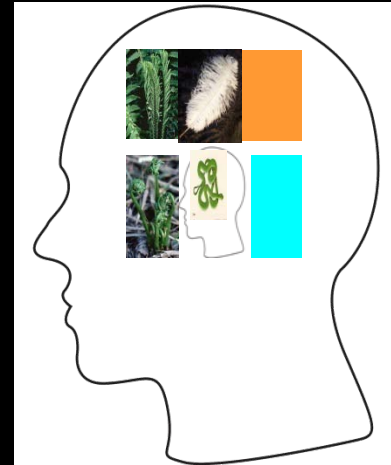




**PATTERN CONCEPTUAL
FRAMEWORK**



**PATTERN CONCEPTUAL
FRAMEWORK**

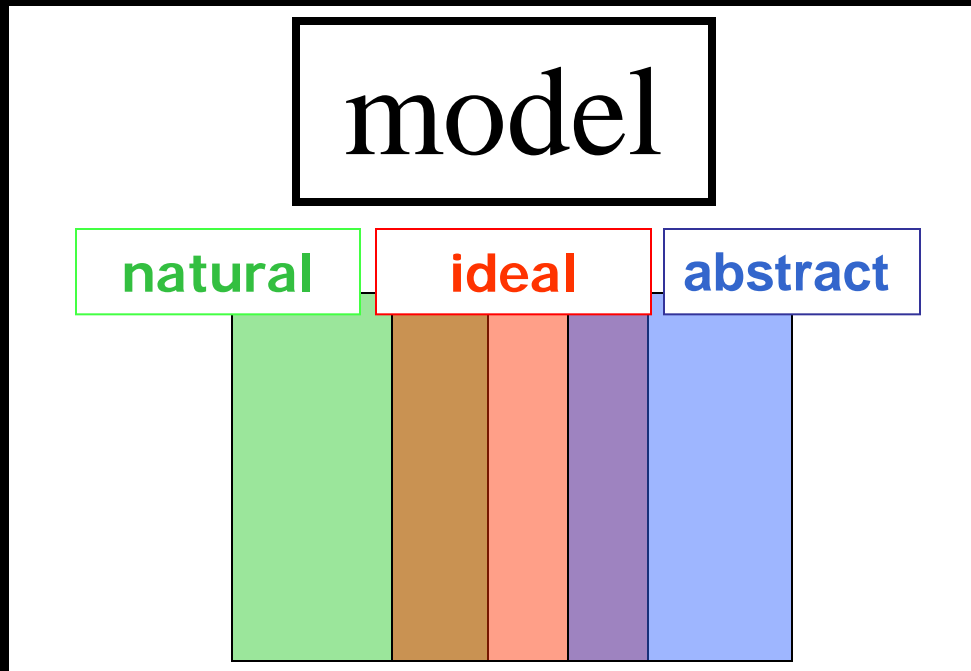




Artist Basma Kavanagh



PATTERN CONCEPTUAL FRAMEWORK



science education
strength in diverse approaches

PATTERN CONCEPTUAL FRAMEWORK



vigour

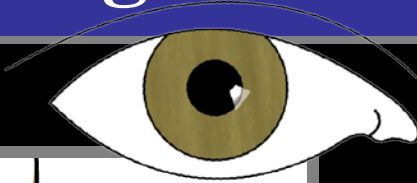
WEAVING



rigour

UN-WEAVING

science education
strength in diverse approaches



vigour

WEAVING



rigour

UN-WEAVING



CAPE BRETON
UNIVERSITY

Mi'kmaq
Elders



Thank You



IAPH

Wela'liog



Canada Research Chairs / Chaires de recherche du Canada
Canada
Social Sciences and Humanities Research Council of Canada / Conseil de recherches en sciences humaines du Canada
Canada