SATEC @ W.A. Porter C.I.
Technological Education Rubric

1 Thinking Achievement Category -- Processing Skills

The Ontario Technological Education Curriculum documents (2009) and Ontario's "*Growing Success*" (2010) both emphasize "Processing Skills" as a key aspect of the Thinking Achievement category. This includes translating and interpreting information, analysing a situation, synthesizing (generating) a solution, evaluating results and other reasoning and conclusion-forming processes. Refer to Figure 1 below – *Seven Core Thinking Skills*. We first "sense" the input that we receive. After processing, we synthesize output.

Thinking – The use of critical and creative thinking skills and / or processes. The Student...				
	50-59% (Level 1)	60-69% (Level 2)	70-79% (Level 3)	80-100% (Level 4)
Use of processing skills (**e.g.,** *analysing and interpreting information, reasoning, generating and evaluating solutions, forming conclusions*)	uses processing skills with limited effectiveness	uses processing skills with some effectiveness	uses processing skills with considerable effectiveness	uses processing skills with a high degree of effectiveness

Table 1: Rubric: Processing Skills in the Technological Education Curriculum, Grades 9-12 (2009)

NOTE: Limited / Some / Considerable / High Degree of... Effectiveness is explained in Table 2 below.
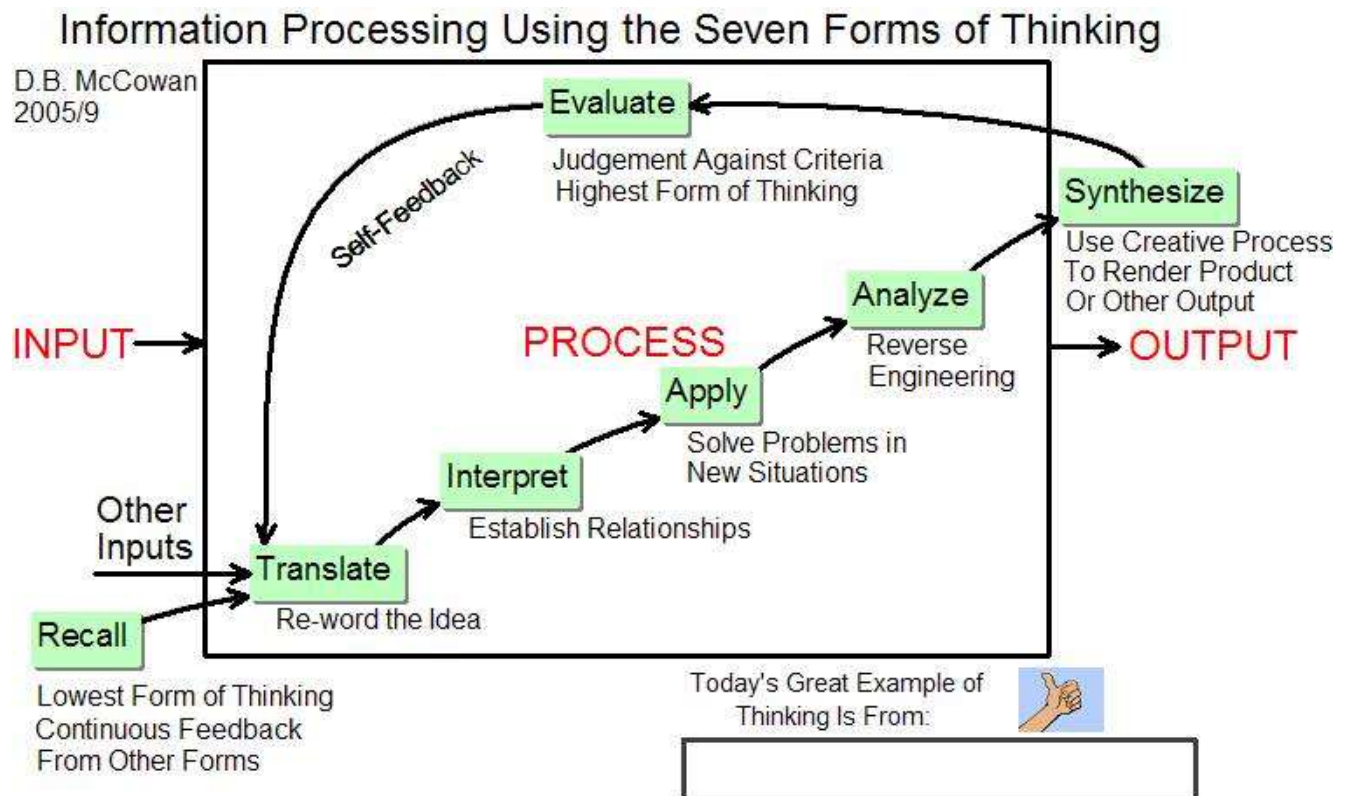

Figure 1: Seven Core Thinking Skills (Derived from Bloom's Taxonomy)

2 Rubric for Effectiveness of Information Processing – Quality of Thinking and Depth of Understanding

Use the following rubric to get a sense of the difference between a "Novice" and a "Master" -- the "Quality" of thinking that you put into a design document or oral presentation for example. In general, work and effort by a "**Novice**" will look simplistic, rushed or trivial, typically using only the lower thinking skills (Recall / Translate). Work by a "**Master**" will look professional and as though driven by a desire for quality and a quest for public acclaim. Using the higher thinking skills – Analyze, Synthesize and Evaluate – will make the student more of a master. A "**Master**" always delivers work on time and of a consistently high and value-added quality. A "**Master**" proudly and carefully stores evidence of learning and achievement. A **Master** will always self-assess his or her work and have it thoroughly peer-assessed by another knowledgeable person. A **Master** will always reflect and generate a list of ways to improve in a 'version 2' or in a similar situation in the future. Work & behaviours may be at even less than "**Novice**" level – e.g. minimal effort, plagiarized, careless.

Rubric for Effectiveness of Information Processing -- Developing Core Thinking Skills for Innovation **Basic Understanding of a Concept(s) -- Quality of Thinking -- Novice vs. Master** **The Evidence (written, verbal, visual) shows that the student...**				
	"Ideas" **Level 1** **<60%**	**"Connections"** **Level 2 --** **Novice** **60% to 69%**	**"Extensions"** **Level 3** **70% to 79%**	**"Critical Reflection"** **Level 4 -- Master** **80% to 100%**
Evidence supporting the depth of thinking and the effectiveness of information processing skills that must be demonstrated	-Simply **Recalls** the definition or textbook explanation of a concept without being able to explain any further -Note: Plagiarism results in a mark of 0 when the evaluation situation is open book	-**Translates** the definition into own words -**Interpret**s -- shows a connection with at least one other concept and describes their inter-relationship -eg Shows the concept within a simple hierarchy or tree of related concepts -eg Translates a set of data in a word problem into a graph or table or some other simple valid model	-Complies with Level 2 and most of the following... -**Applies** previous knowledge of the concept in a new previously unexplained situation -**Analyses** a system in which that concept "operates" -- describes connections with several other concepts within that system -Considers the "bigger picture" -- where does this concept "fit into a particular application in technology" and gives some idea of the role and value of that concept within the system -Analysis of the system is logical, rational and structured or -Analysis of the system is unique or off-beat, yet very reasonable and convincing -**Synthesize**s a good example to illustrate understanding and **Application** of the concept within a system context	-Complies with Level 3 and most of the following … -**Evaluate**s own understanding against criteria, including his / her own criteria -identifies weaknesses in own understanding; asks oneself several value-added questions -proposes areas for improvement in a next version -proposes and explains alternative or other models of understanding the concept such as parent / child relationships with other concepts -includes a visual Mind Map showing action words linking concepts together -shows profound appreciation of the concept in the context of one's own career goals -uses or at least proposes other creative ways to show understanding and extensions of own thinking -- such as design of an experiment or demonstration

Table 2: Rubric for Effectiveness of Processing Skills

3 One of McCowan's Laws of Learning – Refer to "Recall" Core Thinking Skill

You already know much more than you think you know.