

CTE Lesson Plan Template

Lesson Title: FLOWCHARTS		Lesson #-9
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Occupational Area: DRAFTING TECHNOLOGY		
CTE Concept(s): FLOW CHARTS - CATEGORY & CLASSIFICATION		
Math Concepts: LIST PROCESSING ALGORITHMS - DATA ANALYSIS		
Lesson Objective:	To design a flowchart using a list processing algorithm	
Supplies Needed:	Whiteboard, Drafting Supplies, Notebook, Calculator,	

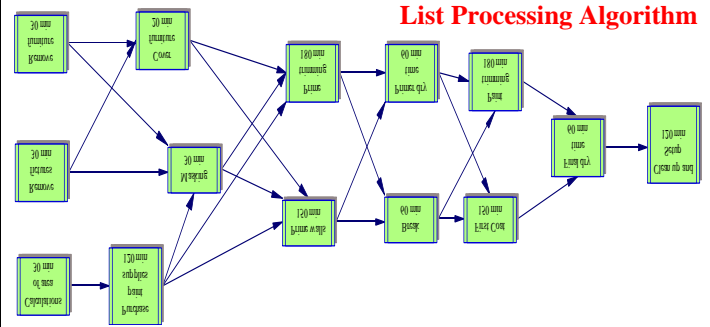
THE "7 ELEMENTS"	TEACHER NOTES (and answer key)
<p>1. Introduce the CTE lesson.</p> <ul style="list-style-type: none"> • What is a flow chart? • How would you use a chart to organize the painting of your room? • Which math process applies to this problem <p><u>Vocabulary:</u> design process, flowchart, tables, units, list processing algorithm, task, processor, area, masking</p>	<p>ELICIT:</p> <p>It's a graphic organizer.</p> <p>To list the important tasks needed to paint your room.</p> <p>A list process algorithm of measurement associated with constructing a flow chart</p> <p>DEFINE:</p> <p>Flow charts are defined as a visual representation describing the process used to plan stages of a project.</p> <p>Processor: anything that is able to accomplish tasks (i.e. machines and people).</p>
<p>2. Assess students' math awareness as it relates to the CTE lesson.</p> <ul style="list-style-type: none"> • How are flow charts used in drafting? • What is a list process algorithm? • What are the advantages of using charts in your design process planning? • Reevaluate the list the tasks we created earlier, which are need to accomplish the painting of a room 	<p>Flow charts are commonly used in drafting, engineering projects & presentations to help the designer and audience visualize the process, or to find flaws in the process.</p> <p>The list process algorithm is:</p> <ul style="list-style-type: none"> • Assign the first available task to the first available processor. • When a processor becomes available, we set it to work on the first task in the priority list which is ready. Ready means all tasks which needed to be completed before we started this task are done. <p>They help you visualize and organize the process needed to complete a project and efficiently use resources</p> <p>Students rework the guided list of tasks and establish the processors</p>

3. Work through the math example embedded in the CTE lesson.

Class will brainstorm the list of tasks needed to paint the room

Assign the task indicators in no particular order (i.e., T1, T2, T3...)

Draw the flow chart



4. Work through related, contextual math-in-CTE examples.

Determine how much time is needed to repaint your room.

Create the processor scheduling time table

Calculate the total time needed

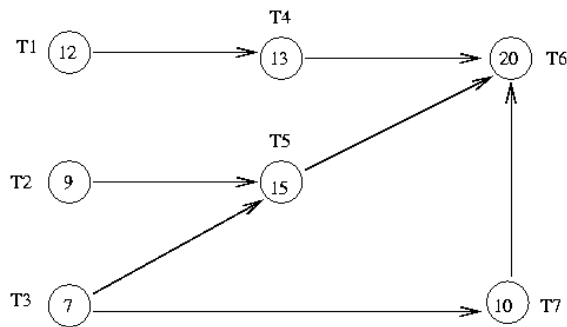
THE REPAINT CHART SCHEDULE

Person 1	T1	T3	T5	T6	T7	T9	T11	T13	T14
Person 2	T2	T4			T8	T10	T12		
	30/	60/	80/	150/	180/	330/	360/	420/	570/
							600/	660/	780/

5. Work through traditional math examples.

Use the list processing algorithm to schedule these tasks on two processors using the following priority lists:

- T1, T3, T7, T2, T4, T5, T6



Solution

Here is the list processing algorithm:

- Assign the first available task to the first available processor.
- When a processor becomes available, we set it to work on the first task in the priority list which is ready. Ready means all tasks which needed to be completed before we started this task are done.

For the priority list T1, T3, T7, T2, T4, T5, T6 we get the following schedule:

	0	12	21	36	56
Processor 1	T1		T2	T5	T6
Processor 2	T3		T7	T4	
	0	7	17	30	56

Note that for this schedule, we could not start T6 on processor 2 once T4 was completed since T6 required T5 to be complete.

6. Students demonstrate their understanding.

CREATE A LIST PROCESSING FLOW CHART FOR THE FOLLOWING PROBLEMS ON THE WORK SHEET

Chart time needed to create an architectural set of drawings

WORKSHEET ASSIGNMENTS:

STUDENTS WORK THROUGH THE ATTACHED WORK SHEET FOR THE FOLLOWING PROBLEMS

1. Chart time required for you to get ready for school from wake time to going out the door
2. Two people are preparing a meal and the process needs to be charted using the list process algorithm
3. Create a chart of your robotics team design plan to build a task robot for TSA competition.

STUDENTS SOLVE THE PROBLEM AT THEIR STATION AND PROOF ON THE WHITEBOARD.

- Architectural (P1)
 - Floor plan (T1)
 - Elevations (T2)
 - Roof Plan (T3)
 - Plot plan (T4)
 - Sections (T5)
 - Notes (T6)
 - Schedules (T7)
- Structural (P2)
 - Foundation (T8)
 - Sections (T9)
 - Notes (T10)
- Mechanical (P3)
 - Air-conditioning (T11)
 - Notes diagrams (T12)
- Electrical (P4)
 - Drawing (T13)
 - Notes diagrams (T14)
- Plumbing (P5)
 - Drawing (T15)
 - Notes diagrams (T16)
- Landscaping (P6)
 - Drawing (T17)
 - Notes diagrams (T18)

7. Formal assessment.

SEE THE ANSWER KEY

ANSWER KEY SHOULD HAVE THE FOLLOWING TO CREATE AN ARCHITECTURAL DRAWING SET CHART FOR THE TSA ARCHITECTURAL MODEL COMPETITIVE EVENT:

T= TASKS (SHOULD BE 18 TO 20)

P= PROCESSORS (SHOULD BE 6)

H= HOURS (SHOULD BE 30)

P-1

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

P-2

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

P-3

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

P-4

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

P-5

T-01
H=10.5

T-01
H=10.5

P-6

T-01
H=10.5

T-01
H=10.5

T-01
H=10.5

Rubric for Critiquing Math-Enhanced Lesson Plans

Lesson Title:	Lesson #
Author(s):	

Please check the appropriate boxes in the rubric below. Use comment box to make suggestions/recommendations.

ELEMENTS	COMPLETE	NEEDS IMPROVEMENT	COMMENTS
1. Introduce the CTE Lesson.	<ul style="list-style-type: none"> <input type="checkbox"/> Specific objectives of CTE lesson are explicit. <input type="checkbox"/> Detailed script is provided for introducing lesson to students as a CTE lesson. <input type="checkbox"/> The pulled-out math concept in embedded in the CTE lesson is clearly identified. <input type="checkbox"/> Script is provided to point out the math in the CTE lesson. 	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson objectives are unclear or not evident. <input type="checkbox"/> Little or no script is provided for introducing lesson to students. <input type="checkbox"/> Math concept embedded in the CTE lesson is not pulled-out or made clear. <input type="checkbox"/> Script is not provided to point out the math in the CTE lesson. 	
2. Assess students' math awareness as it relates to the CTE lesson.	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson contains learning activities and/or well developed questions that assess <u>all</u> students' awareness of the embedded math concept. <input type="checkbox"/> Math vocabulary and supporting instructional aids are provided to begin bridging of math to CTE. 	<ul style="list-style-type: none"> <input type="checkbox"/> Script has short list of phrases; no learning activities or questions that support assessment of all students' awareness of the embedded math concept. <input type="checkbox"/> Math vocabulary and/or instructional aids are not provided. 	
3. Work through the math example <i>embedded</i> in the CTE lesson.	<ul style="list-style-type: none"> <input type="checkbox"/> Script provides specific steps/processes for working through the embedded math example. <input type="checkbox"/> CTE and math vocabulary are explicitly bridged in the script, supported with instructional strategies and aids. 	<ul style="list-style-type: none"> <input type="checkbox"/> Steps/processes for working through the embedded math example are incomplete or missing. <input type="checkbox"/> Little bridging of CTE and math vocabulary is scripted; few or no strategies and aids are provided to relate the CTE to math. 	

<p>4. Work through the <i>related, contextual</i> examples.</p>	<ul style="list-style-type: none"> □ Lesson provides a work-through of similar examples, using the same embedded math concept in examples from the same occupational area. □ Example problems are at varying levels of difficulty, from basic to advanced. □ Script continues to bridge the CTE and math vocabulary, supported with instructional strategies and/or aids. 	<ul style="list-style-type: none"> □ Few or no additional examples of the embedded concept are provided. □ Examples do not reflect varying levels of difficulty. □ Little or no bridging of CTE and math vocabulary is evident in the script or supported with instructional strategies and/or aids. 	
<p>5. Work through <i>traditional math</i> examples.</p>	<ul style="list-style-type: none"> □ A variety of examples are scripted to illustrate the math concept as it is presented in traditional math tests. □ Examples move from basic to advanced. □ Script continues to bridge the CTE and math vocabulary, supported with instructional strategies and/or aids. 	<ul style="list-style-type: none"> □ Few or no math problems illustrate the math concept as it is presented in standardized tests. □ Examples do not reflect varying levels of difficulty. □ Little or no bridging of CTE and math vocabulary is evident in the script or supported with instructional strategies and/or aids. 	
<p>6. Students demonstrate understanding.</p>	<ul style="list-style-type: none"> □ Lesson provides learning activities, projects, etc., that give students opportunities to demonstrate what they have learned. □ Lesson ties math examples back to the CTE content; lesson ends on the CTE topic. 	<ul style="list-style-type: none"> □ No learning activities, projects, etc., provide students with opportunities to demonstrate what they have learned. □ Lesson fails to tie the math back to CTE or end on the CTE topic. 	
<p>7. Formal assessment.</p>	<ul style="list-style-type: none"> □ Lesson provides questions/problems that will be included in formal assessments (tests, projects, etc.) in the CTE unit/ course. 	<ul style="list-style-type: none"> □ Example questions/problems are not provided for use in formal assessments in the CTE unit/course. 	