

Steps & Lessons on Converting to a Competency-Based Hybrid Model Part 2

Presented by:

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Topics this training will cover:

- A few review questions for everyone
- Stakeholders in the CREATE Project
- Backward Design of a Course
- Aligning the curriculum to employer needs
- What is an assessment model in a course and PLA?
- Examples of Hand-on Assessments & lab exercises
- Examples of Practice Quiz & KAA
- Course Blueprint & managing tasks to do on the Project

Review Question 1

What does CBE stand for?

Review Question 2

What are the two elements of CBE?

- Element 1: _____
- Element 2: _____

Review Question 3

What is an HOA as it pertains to CREATE?

Explain!!

Review Question 4

What is a KAA as it pertains to CREATE?

Explain!!

Review Question 5

What does the term Hybrid mean as it pertains to the CREATE Project?

Explain!!

Review Question 6

Which Instructional Model focuses on seat time?

Traditional or CBE

Explain!!

Review Question 7

Which Instructional Model will have more assessments?

Traditional or CBE

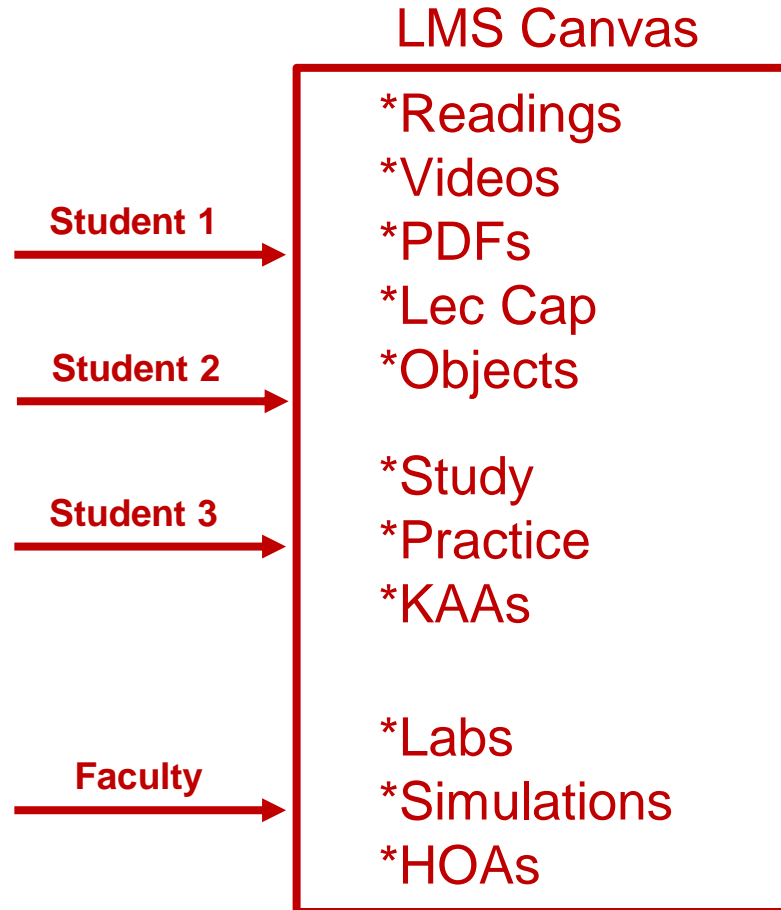
Explain!!

Review Question 8

Why load a PDF of a PowerPoint into Canvas for the students to view, instead of the PowerPoint?

Explain!!

Competency-Based/Hybrid Instructional Model



On-campus class time

Lab Exercises Hands-On Assessment

Lab Packs sold in Bookstore (required)

Faculty facilitates learning

Faculty assesses student skill/knowledge

Self-proctored Online Assessments

What's in it for Me? The Stakeholders Perspective:

- **Students:** Students like the 24/7 access to the course materials, and knowing what is expected of them for the assessments.
- **Faculty:** Faculty like the consistency in the curriculum, and that all materials are developed, so they do not have to spend time preparing for a class. They also like the flexibility of time on campus.
- **Employers:** Employers like the more accessible classes for their employees, and better prepared graduates. They really like the assessment model of student accountability.
- **College:** Increase in enrollment, increase in retention (SSI), and knowing that the other 3 stakeholders are happy.

A Few Lessons Learned cont.:

- Faculty and developers had to become more literate in the digital world, such as:
 - Cloud based applications and storage
 - Internet/browser basics
 - Networking basics (Ethernet, WiFi, 4/5G)
 - Portable devices (phones, phablets & tablets)
 - Powerpoint for a graphics container
 - Using a camera for photos and videos
 - Snagit for capturing portions of computer screen
 - Capture video, produce and upload to YouTube

Aligning the Curriculum to Employer Needs

Topic Outcomes:

- How does Terra currently engages employers
- Explain the three types of employer engagement
- Explain the purpose of an Industry SME group
- Determine how to obtain and validate competencies

Engaging Employers

- How does the Technology division at TSCC engage employers?
- Accrediting bodies like a comprehensive employer engagement strategy.
- Purpose of an Advisory Board
- Purpose of an Industry Roundtable
- Purpose of a Focused Industry Visit

Importance of an External SME group

- SME stands for Subject Matter Expert
- 4-6 of these SMEs should be identified to vet information through as part of the development process for CREATE
- It is important to have all knowledge and skills development, align to the workplace
- This will be done through validated competencies, and measurable outcomes

Meet with the SME group:

- Send information 3-4 days ahead of time in email
- Plan on meeting no more than 45-60 minutes
- Do not give them a blank piece of paper
- Do not give them more than 2-3 pages of information to review
- Give them immediate feedback on the meeting – within 1-2 days
- Make sure you communicate the next steps

What is an Assessment Model?

- Traditional technical courses typically uses a written/online assessment for the course.
- In a Competency-based course, the faculty must verify the student learning (both knowledge & skills) through a KAAs and HOAs
- The assessment model verifies that a student get credit for a course, either by taking the course, or by a PLA. The assessment should be the same.

What is Prior Learning Assessment?

- A PLA process should be in place in your division, so students with prior learning can get credit without taking a course.
- Portfolios were popular for quite a while, but could be somewhat subjective.
- A credit by examination could be created based on the assessment model of the course the students want credit for.
- Faculty should be the evaluators in a PLA process

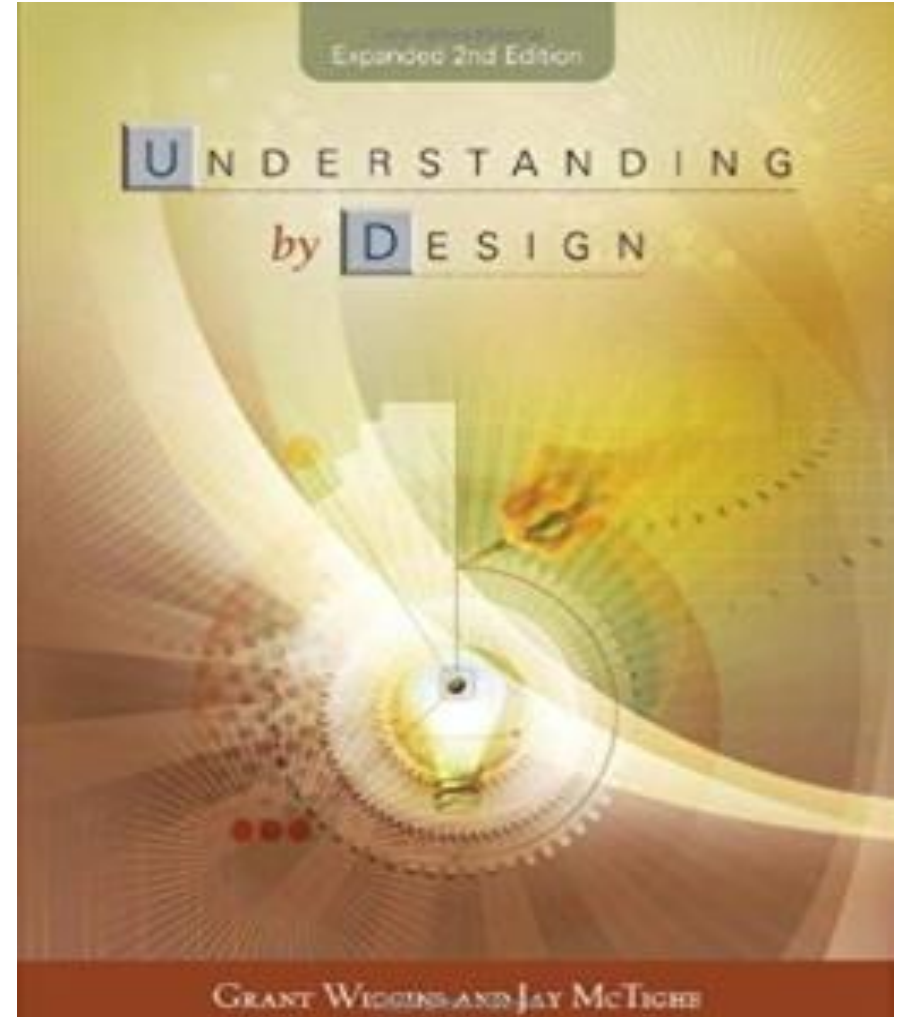
Backward Design

Topic Outcomes:

- Explain the reverse design process of a course, and the employer engagement during this process
- Explain why it is important to start at the end of the course, and build it backwards
- Explain how the competencies and outcomes are created through the reverse design process

Understanding by Design, 2nd edition, by Grant Wiggins & Jay McTighe is the book and process that everyone working within the CB realm references.

The focus of the book is to start with what the student must be able to do at the end of the course, and build from there.



What should they be able to do/know when they are done with the module?

Identify desired results.

How will I measure or assess what they can do or know?

Determine acceptable evidence.

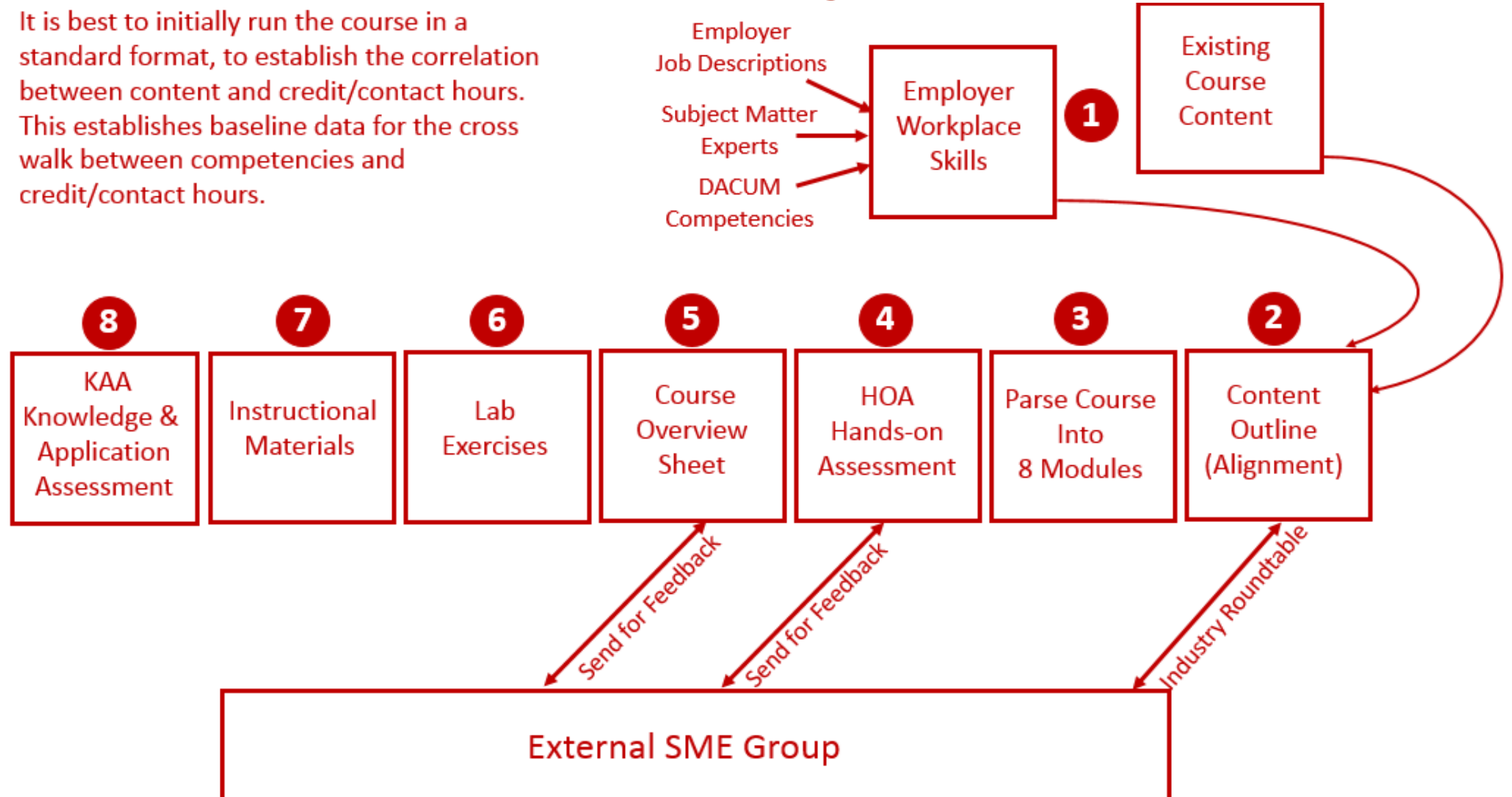
How do I prepare the student?
Readings, Labs, PPT/PDFs, Videos, Simulations, etc.?

Plan learning experiences and instruction.



Reverse Design

It is best to initially run the course in a standard format, to establish the correlation between content and credit/contact hours. This establishes baseline data for the cross walk between competencies and credit/contact hours.



Creating Hands-On Assessments & Lab Exercises

Topic Outcomes:

- Explain the purpose of a Hands-On Assessment
- Describe the elements that go into an HOA
- Create an HOA for a module
- Explain the purpose of a Lab Exercise/Procedure
- Describe what elements go into a Lab Exercise

Purpose of the Hands-On Assessment

- The purpose of the HOA is so a student can demonstrate mastery of a learning module to the faculty.
- An HOA is much more than just putting something together, or adjusting a machine. The faculty will ask the student questions on the topic, similar to what a student will experience in an interview.

Elements of a Hands-On Assessment

- The student does a task specified by the HOA for the faculty. This task must be related to the tasks performed in the workplace.
- Interpret workplace documentation (P&ID diagrams)
- Faculty asks student questions from the lab exercises and the KAA
- Many times the student must also troubleshoot a circuit, or a machine

Workshop Participant Exercise #1

- Identify a course that you teach at Terra State
- Create a short Hands-On Assessment (3-5 tasks)
- How will you prepare the students to pass this Hands-On Assessment?

The purpose of Lab Exercises:

- The purpose of a lab exercise is to guide the student through a learning process that will develop their knowledge & skills for the workplace.
- Lab exercises are performed in teams of 2-3 students (though they are assessed individually), for the purpose of developing small group communication skills, and teamwork. Students have to solve problems together, and practice the HOA on each other, thus developing actual skills they need in the workplace.

Lab Procedure 4.1: A.S. Automatic Return Circuit and Flow Control

A student lab exercise, or lab procedure (same thing) is a directed/guided learning experience for the student.

Questions about the learning within the lab exercise, should be asked in the Hands-On Assessment (HOA)

Upon completion of this lab procedure, the student should be able to:

1. Download the simulation file from the Message Center in Sakai, in the Virtual Machine.
2. Open the simulation file in Automation Studio, and start the simulation
3. Identify and explain the purpose of each component on the pneumatic print
4. Explain the basic operation of the pneumatic circuit
5. Explain the purpose of using flow control valves in an automatic circuit
6. Determine which flow valve affects the extension and retraction of the cylinder
7. Predict the pressure that would be measured at any port in the circuit

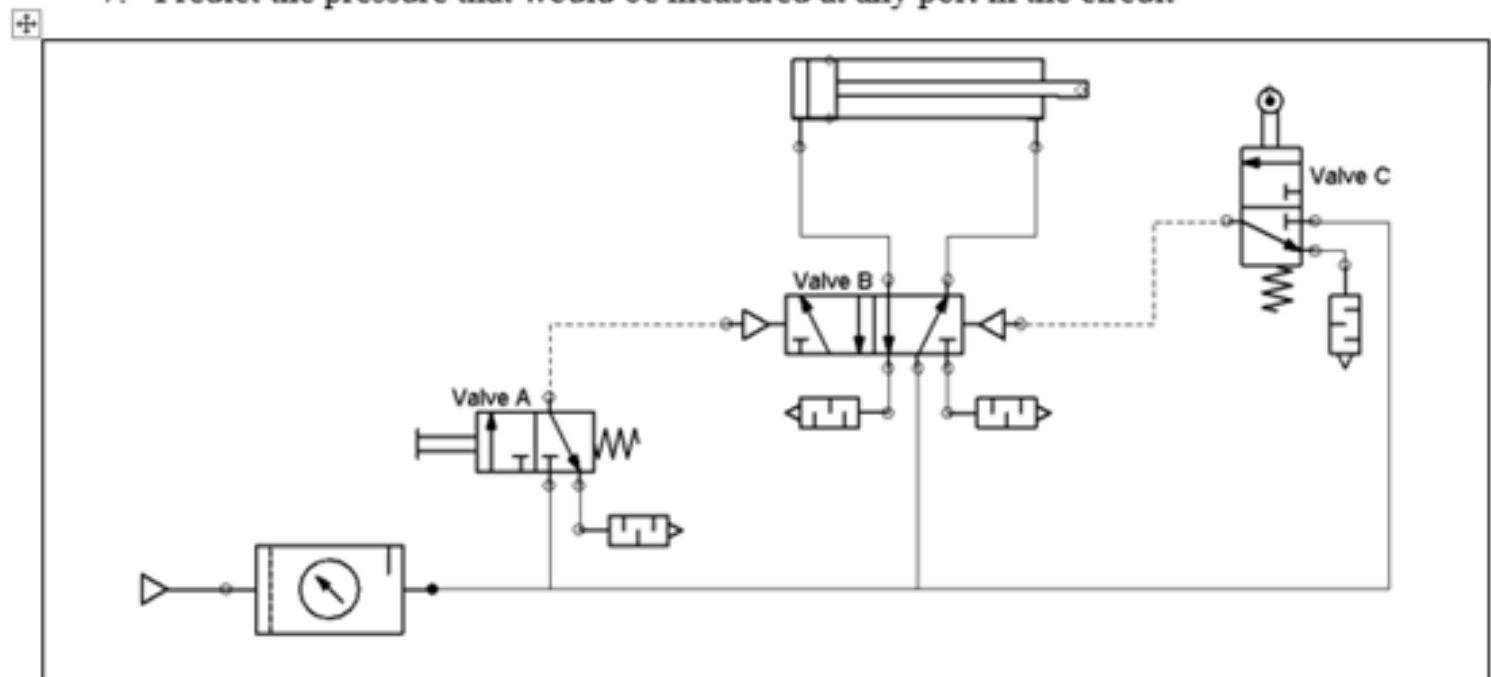


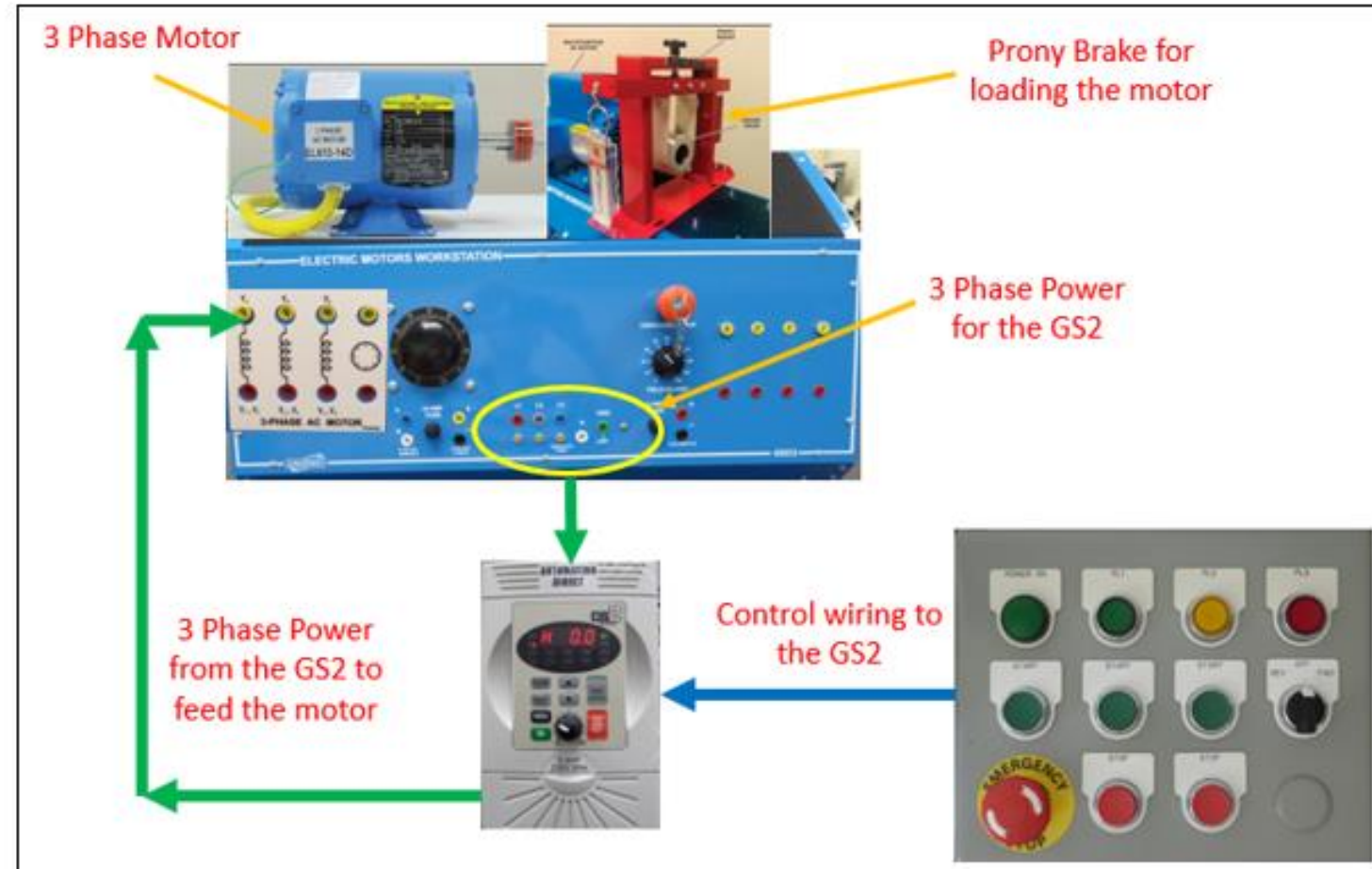
Figure 1. An Auto Return circuit, Lab 4.1 Circuit 1.

Upon completion of this lab the student should be able to:

1. Wire the power and control circuit of a GS2 VFD
2. Configure the parameters on the GS2 to meet drive operational specifications
3. Interpret the display information on a GS2 drive
4. Load the motor of a GS2 to see the operation of the drive under load
5. Recover the GS2 from a fault condition
6. Wire in pilot lights to the relay outputs of the GS2 and define their operation

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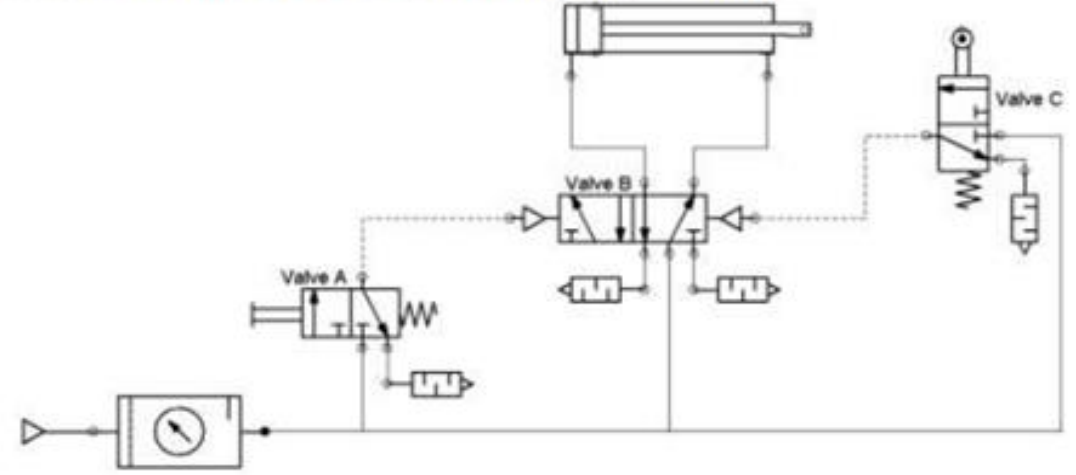
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Hands-On Assessments (HOA)

Example of an HOA

- Build an operational circuit from an electrical print
- Explain the operation of the circuit to the instructor
- Demonstrate the knowledge on an electrical print
- Predict the operation of a circuit based on certain criteria
- Troubleshoot a faulty circuit

A Hands-On Assessment in a Fluid Power course

_____	7.	<p>Assemble this circuit in the lab, and make it operational.</p> 
_____	8.	Demonstrate the operation of the circuit to the instructor.
_____	9.	Explain the operation of the circuit to the instructor.
_____	10.	Explain to the instructor what the pressure reading should be on the blind side port, when Valve A is actuated.
_____	11.	Explain to the instructor what the pressure reading should be on the rod side port of the cylinder, when Valve C is actuated.
_____	12.	Troubleshoot a fault the instructor will put into the circuit, after a brief absence of the student.

A Hands-On Assessment from Industrial Electrical II

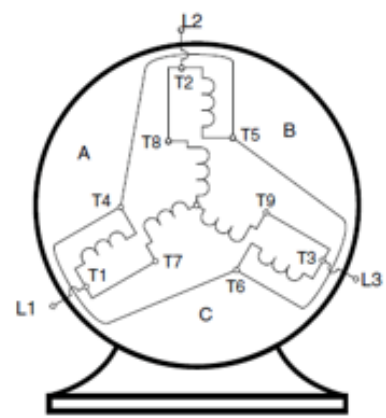
Student Name: _____ N# _____ Date: _____

This hands-on assessment requires that each student successfully demonstrates each of these tasks to the instructor's satisfaction. There is no grade for this assessment.

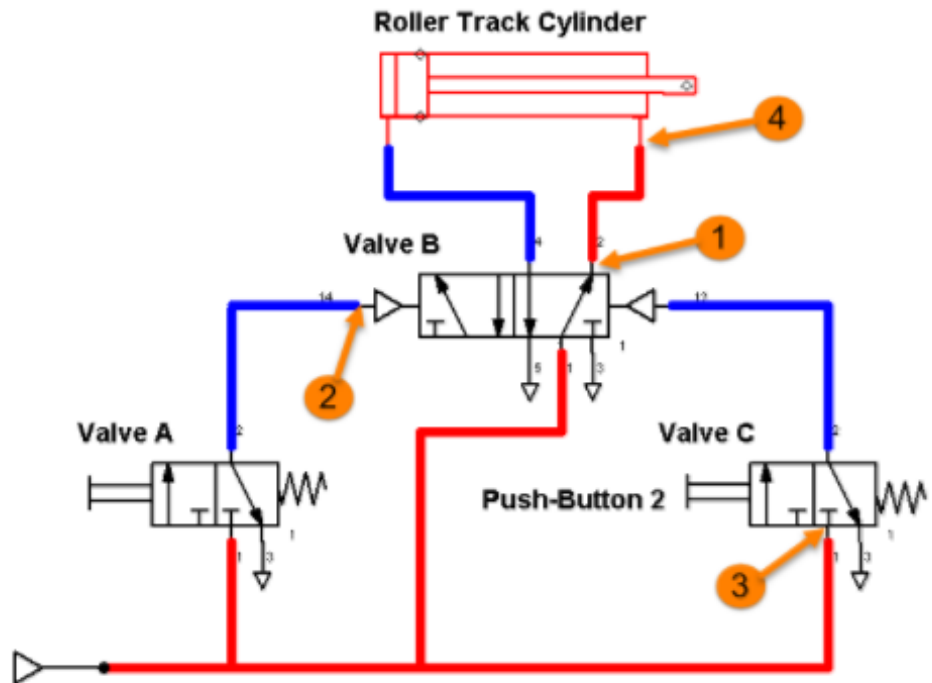
Prior to taking this assessment, the student must pass (minimum of 80%) the Knowledge and Application Assessment.

The student cannot proceed to the HOA for the next module without completing this HOA.



Check	#	Skills Task
_____	1.	Wire a 9 lead dual voltage three phase motor 
_____	2.	Interpret the nameplate data on an AC three phase motor
_____	3.	Reverse the rotation of a three phase motor
_____	4.	Troubleshoot the power circuit of an industrial motor branch circuit

Which one of the following answers would explain what could be wrong, if in this 90 PSI circuit, the user measured 90 PSI at the port designated as #1, and 0 PSI at the port designated as #4?

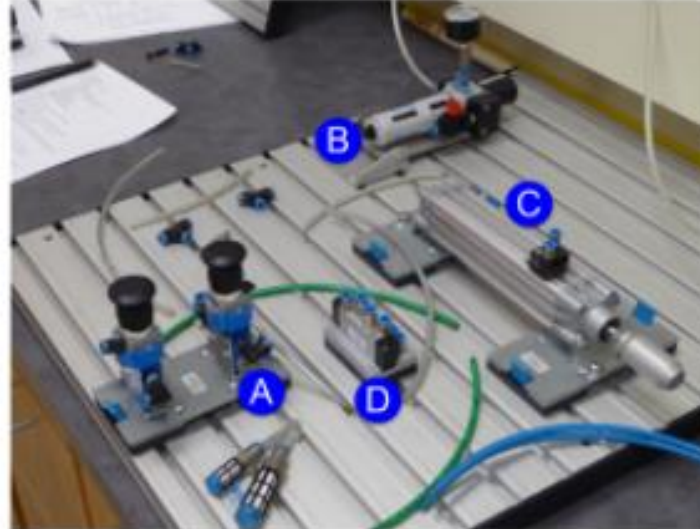
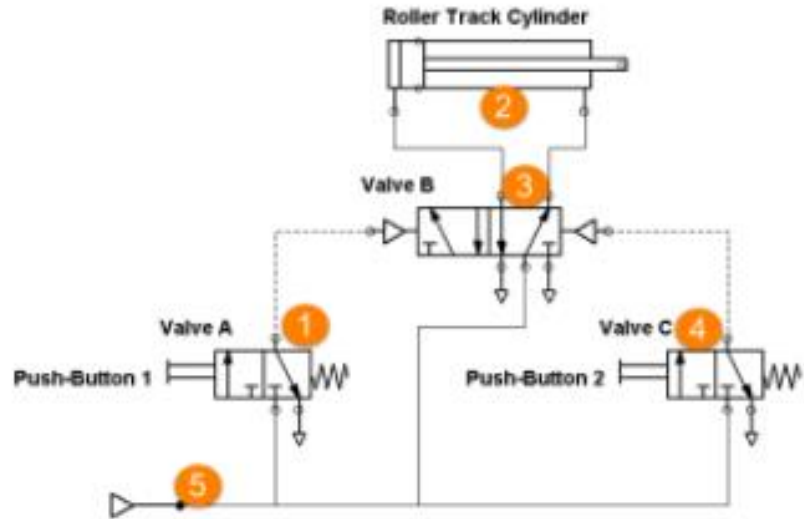


A sample question in a KAA for Fluid Power

- A. The directional control valve is stuck in the default position
- B. The spring return is broken on Valve C
- C. The exhaust port #3 is not porting to atmosphere
- D. The air hose between #1 and #4 is plugged

Answer Key:D

Based on the pneumatic print on the left side, the object with the number "3", would correlate to which device on the training board (right side of graphic)?

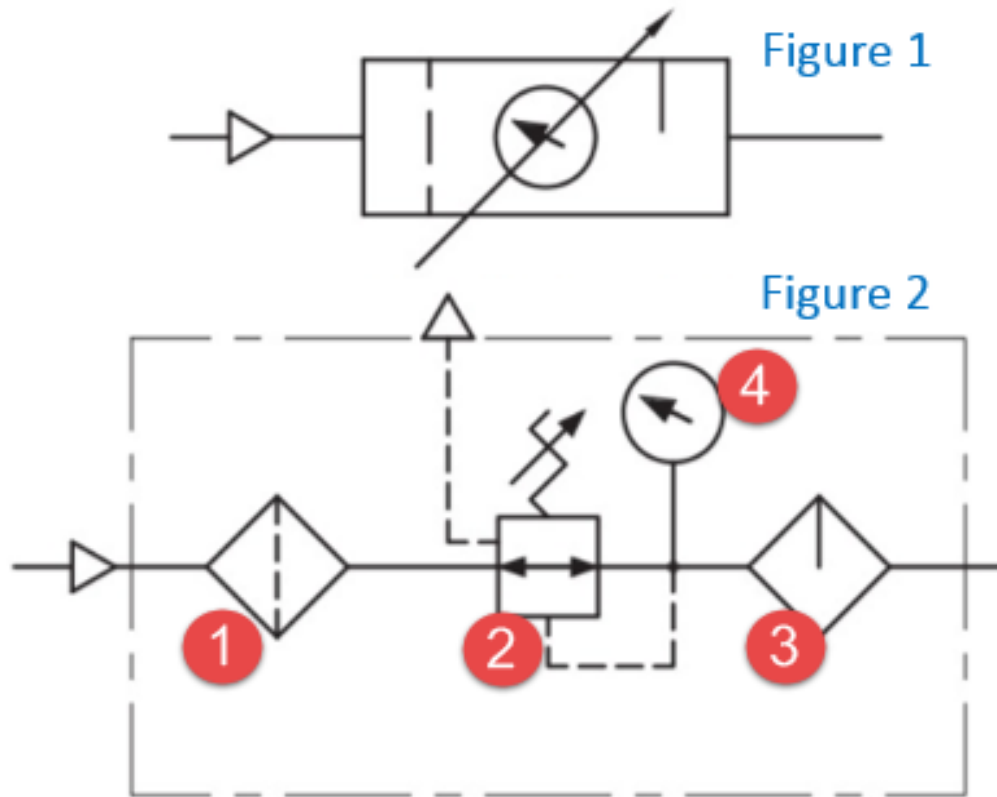


- A. A
- B. B
- C. C
- D. D

Answer Key:D

**A sample question in
a KAA for Fluid Power**

Which components in Figure 2, would be inclusive of the conditioning unit in Figure 1?

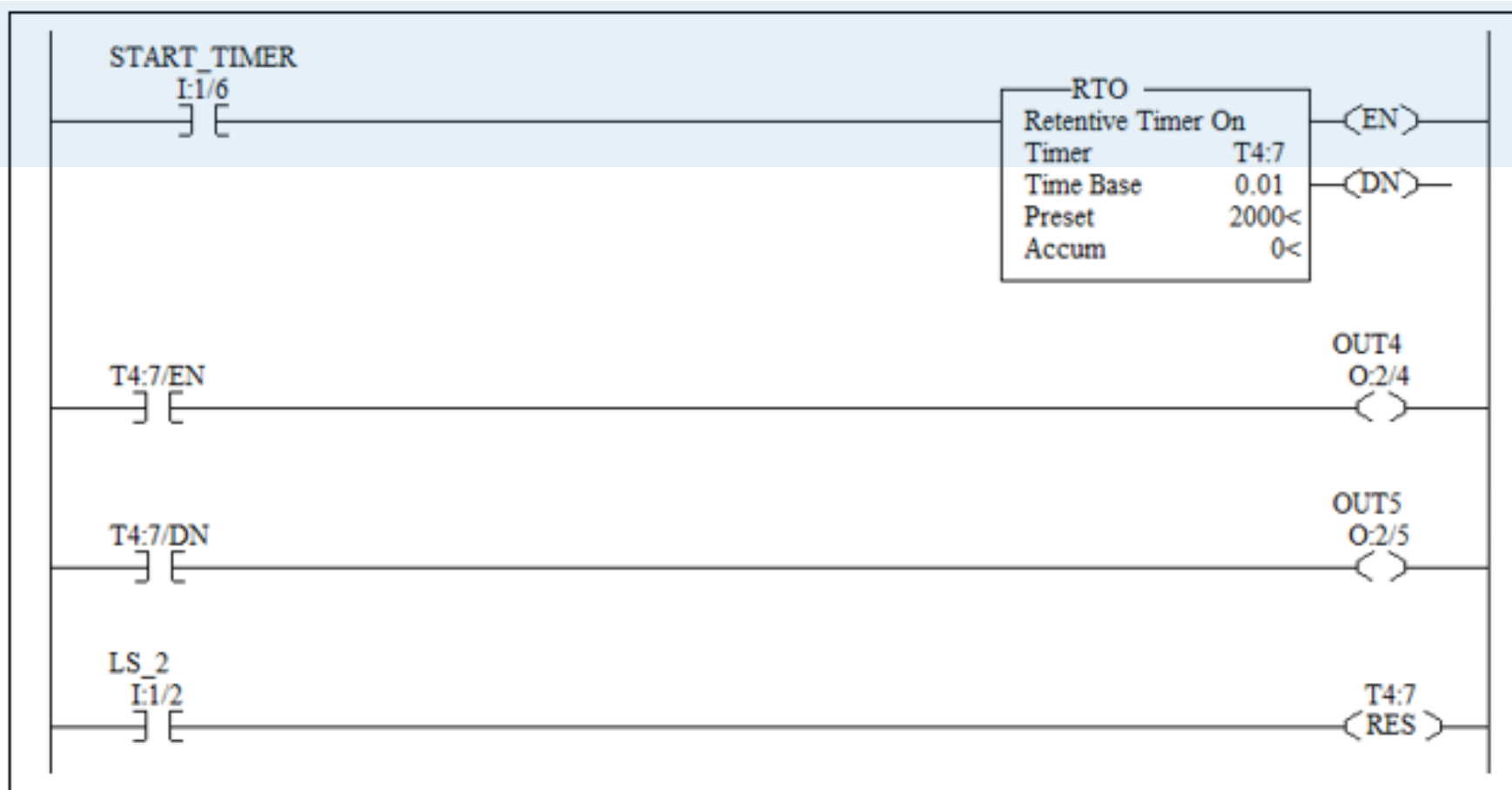


**A sample question in
a KAA for Fluid Power**

- A. 2
- B. 2 & 4
- C. 2, 3 & 4
- D. 1, 2, 3 & 4

Answer Key:D

Practice Quizzes are a Formative Assessment & Learning Tool



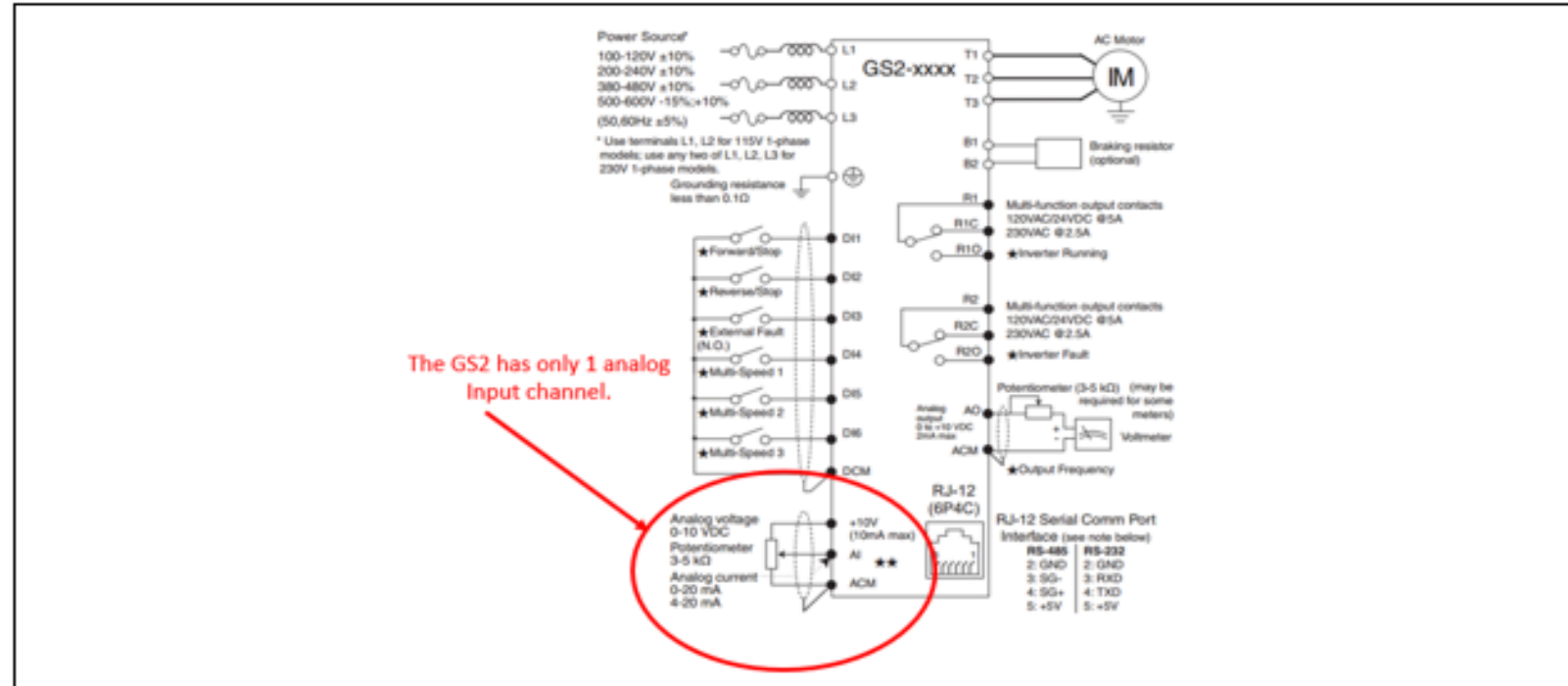
11. In this program, if the START_TIMER input is turned on for 7 seconds, then the input is shut off, what will be the accumulated value?
- 70
 - 700**
 - 7000
 - 0

Explanation: If the timer times for 7 seconds, the accumulated value will be 700. When the input (START_TIMER) is shut off, the accumulated value remains at 700. When LS_2 is actuated, the RES instruction is energized, then the accumulated value will reset to 0.

Practice Quizzes are a Formative Assessment & Learning Tool

1. T F The GS2 has 3 analog inputs to control the speed of the VFD: 0-10Vdc, 0-20mA and 4-20mA.

Explanation: The GS2 has only one analog input. Terminal AI (analog input) is the terminal number, and the ACM terminal is the analog common. If the user wants to use an external potentiometer to control the speed, the potentiometer is wired as shown on the diagram. The signal coming into the AI terminal will be 0-10V. Realize that the user can also control the drive with an external signal that would come from an analog output module from a PLC system. These analog output modules can usually be setup for voltage or current. In this case, the drive could be controlled by 0-10Vdc, 0-20mA or 4-20mA analog signal to control the speed.



A Few Lessons Learned cont.:

- When I designed the HOME4TECHS, the plan was to have the 3 faculty develop their own course. This will not work (too many inconsistencies)
- Online Conference in Madison, WI
- We brought in an Instructional Designer for support
- What does this support person do?

The South Arkansas CC Project:

- New Intro to Technology Course
- South Ark uses Blackboard Ultra for their LMS
- TW Project Lead (Task Master)
- Dean wanted more hands-on in the course
- Blueprint for the course based on input from the faculty
- Roadmap to completion

The End of the Presentation