AVID for Higher Education

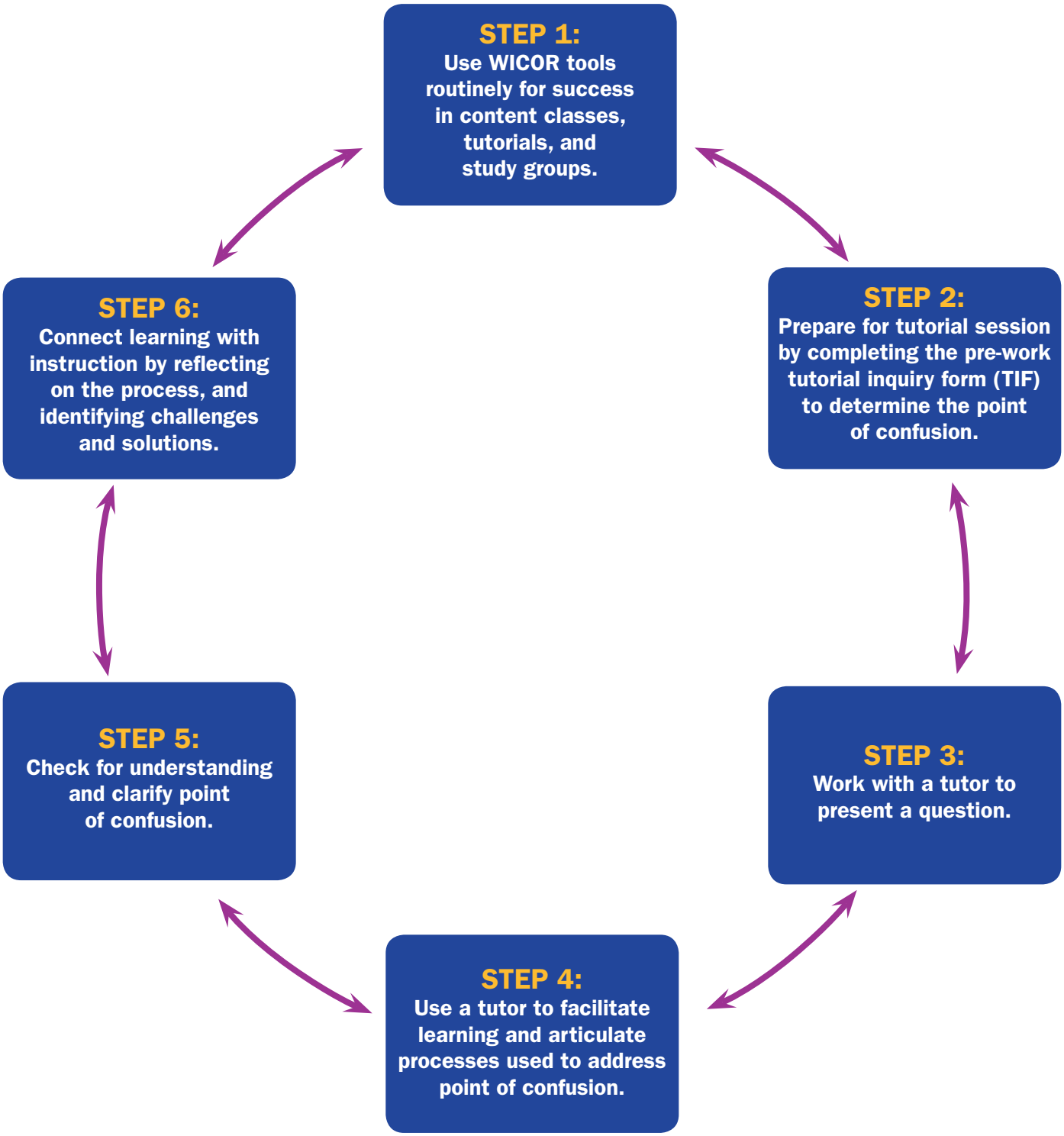
Professional Learning

Inquiry-Based Tutoring in Chemistry

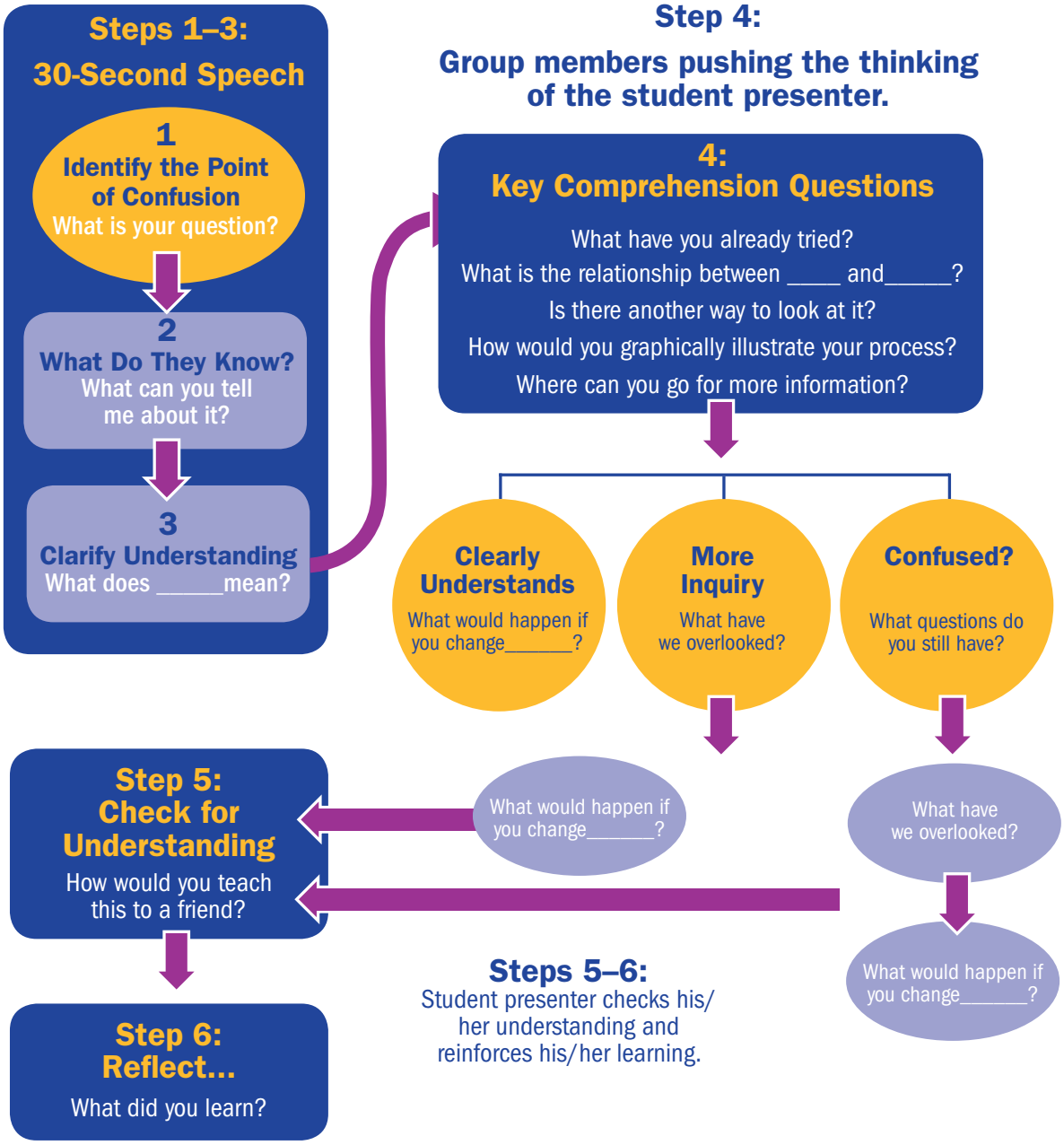
Handouts

Table of Contents

The AVID for Higher Education Socratic Tutorial Process



Inquiry Learning Process
Aligned with the 6-Step AHE Socratic Tutorial Process



Adapted from Comparison by Andrew Churches at http://edorigami.wikispaces.com/Bloom%27s+Digital+Taxonomy and http://ww2.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

The 30-Second Speech
Student Presenter Protocol

Study group sessions provide a forum for students to practice public speaking and presentation skills in a safe and supportive environment. Once a student has completed the pre-work inquiry and identified a point of confusion question for the study group session, it is important that they initiate a discussion through a 30-Second Speech. Students need to know how to present their question in a way that will create engagement, inquiry, and critical thinking with group members.
Students should refer to the pre-work completed on the Tutorial Inquiry Form (TIF) and give the 30-Second Speech to the study group before the group members begin the critical thinking/inquiry process.
The steps for presenting a question are as follows:

Step	Description	Might Sound Like . . .
1	Read your question generated from your point of confusion to your study group.	My question from my pre-work is . . . My question from my point of confusion is . . .
2	Share what you know about your question.	The academic vocabulary I needed to know to do my pre- work and to write my question is . . . What I know about my question is . . .
3	Share your pre-work.	Last night I was able to complete . . . This is as far as I was able to do it on my own . . .
4	Share your point of confusion.	My point of confusion is . . . What I don't understand is . . .
5	Ask your study group members to begin the questioning process.	What questions do you have to assist me in understanding my point of confusion?

Resource from *AHE Socratic Tutorial Support Guide*

Bloom's & Costa's Levels of Thinking Comparison

LEVEL	COSTA'S	BLOOM'S	VOCABULARY WORDS LEVELS OF THINKING		
Higher Order Thinking Skills HOTS	**OUTPUT (Level 3)** **Applying Information:** Applying and evaluating actions, solutions and connections made in order to predict	**Creating:** *Can the students:* • Create/generate new ideas, products or points of view • Combine ideas/thoughts to develop an innovative idea, solution or way of thinking	Assemble Build Construct Create Design	Develop Devise Formulate Imagine Invent	Make Plan Produce Write
		Evaluating: *Can the students:* • Justify a stand or decision • Judge the value of an idea, item or technique by creating and applying standards/criteria	Appraise Argue Check Critique Defend Detect	Forecast Generalize Hypothesize If/Then Judge Predict	Select Speculate Support Test Valuate Value
	PROCESSING (Level 2) **Processing Information:** Making sense out of information; processing the information gathered by making connections and creating relation-ships	**Analyzing:** *Can the students:* • Distinguish between the different parts • Explore and understand relationships between the components/parts	Attribute Classify Compare Contrast Criticize Deconstruct Differentiate	Discriminate Distinguish Examine Experiment Infer	Integrate Organize Outline Question Sort Structure
		Applying: *Can the students:* • Use the information in a similar situation • Apply learned concepts, strategies, principles and theories in a new way	Carry out Choose Demonstrate Do Dramatize	Employ Execute Illustrate Implement Interpret	Operate Schedule Sketch Solve Using
Lower Order Thinking Skills LOTS	**INPUT (Level 1)** **Gathering Information:** Identifying and recalling information	**Understanding:** *Can the students:* • Explain ideas or concepts • Understand information provided	Classify Complete Describe Discuss	Explain Identify Locate Paraphrase	Recognize Report Select Translate
		Remembering: *Can the students:* • Recall or remember the information • Recognize specific information	Define Duplicate List	Memorize Recall Repeat	Reproduce State

Daws, T., & Schiro, P (2012). *AVID tutorial guide: Creating rigorous tutorials to increase student achievement in academic classes.* San Diego, CA: AVID Press.

Science Content-Specific Questions

Level 1	Level 2	Level 3
• What information is provided? • What are you being asked to find? • What formula would you use in this problem? • What does _____ mean? • What is the formula for...? • List the... • Name the... • Where did...? • What is...? • When did...? • Describe in your own words what _____ means. • What science concepts does this problem connect to? • Draw a diagram of... • Illustrate how _____ works.	• What additional information is needed to solve this problem? • Can you see other relationships that will help you find this information? • How can you put your data in graphic form? • How would you change your procedures to get better results? • What method would you use to. ? • Compare and contrast ____ to _____. • Which errors most affected your results? • What were some sources of variability? • How do your conclusions support your hypothesis? • What prior research/ formulas support your conclusions? • How else could you account for...? • Explain the concept of... • Give me an example of...	• Design a lab to show... • Predict what will happen to _____ as _____ is changed. • Using a science principle, how can we find...? • Describe the events that might occur if... • Design a scenario for... • Pretend you are.. • What would the world be like if...? • What would happen to _____ if _____ (variable) were increased/decreased? • How would repeated trials affect your data? • What significance is this experiment to the subject you are learning? • What type of evidence is most compelling to you? • Do you feel ____ experiment is ethical? • Are your results biased?