

# 03 Active learning strategy

ACTIVE LEARNING STRATEGY 03

# Team Paper

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# THE STRATEGY

## TEAM PAPER (WITH A GOOGLE DOC)

The Team Paper activity is an active learning strategy that utilises small groups to discuss an issue or subject and then large groups to debrief and disseminate the learning evenly throughout the class. This activity is ordinarily performed in a classroom using large A2-sized sheets of paper (Durham College, 2018). However, a digital twist has been applied here with the paper being replaced by an online collaborative document using Google Docs (Google Sites, 2018).

The 'Team Paper' activity combines small group work, large group discussion and writing, which fosters learning in the middle and higher levels of the cognitive learning domain (Cranton, 2000). The Team Paper activity is an effective strategy to help students understand complex concepts and contributes to higher levels of cognitive learning as defined by Blooms taxonomy (Bloom, 1956).

The activity requires students to discover information about a concept. This is achieved

through a combination of learning and experience from both small group discussion with their peers and large group discussion guided by a facilitator. One of the best learning environments for fostering critical thinking is within a social setting, where learning can be demonstrated and reinforced while arguments are expressed through speech and writing (Brookfield, 2012). The Team Paper activity encourages learners to practise and utilise critical thinking skills in such a setting.

The classroom design may not always be suitable and fixed furniture/equipment may present additional challenges when attempting to foster small group work in our classrooms. This chapter, therefore, includes a description of how the Team Paper activity can be implemented using both a paper-based approach in a small, group-work-friendly classroom and also a digital alternative, for when classroom settings are unsuitable.

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## RESOURCES

### PAPER-BASED VERSION:

- Colour markers
- A2- sized paper
- Tape
- Wallspace

### DIGITAL VERSION:

- Web-enabled classroom with a PC or mobile device for each student
- PC and projector to display the completed Google document

# WHAT YOU CAN DO TOMORROW

The paper-based version of the Team Paper activity can be implemented almost immediately. All that is needed is the material listed earlier and some wall space for students to display the outcomes employing the following steps:

Divide the class into small groups of 3–4 students each, giving each group an A2 sheet of paper and a variety of colour markers.

The facilitator introduces the topic to be discussed, followed by a series of questions. Students work silently, writing their responses to the topic on their group's A2 sheet using bullet points.

Having completed the silent exercise,

the group discuss what they wrote as individuals and add any other ideas that arise from the group conversation.

After the small group discussion is over, the chart papers are posted throughout the classroom and the students will perform a 'poster walk' to view other groups' results.

The class reconvenes as a large group to debrief (identify key points and clarify misconceptions) and explore underlying principles pertaining to the topic.

## FULL IMPLEMENTATION

As mentioned in the introduction, sometimes the available classroom may be unsuitable for small group work activities. The paper-based version of the Team Paper activity needs a surface area large enough to place an A2-sized sheet of paper and enough room for 3–4 students to gather around the paper. The image below (Image 1) is an example of a typical computer lab and, as can be seen, it has no usable desktop surface area. In this situation, the access to computers enables a digital approach. This strategy could also be applied with students who have access

to smart phones as the Google Docs app will work on any such device.

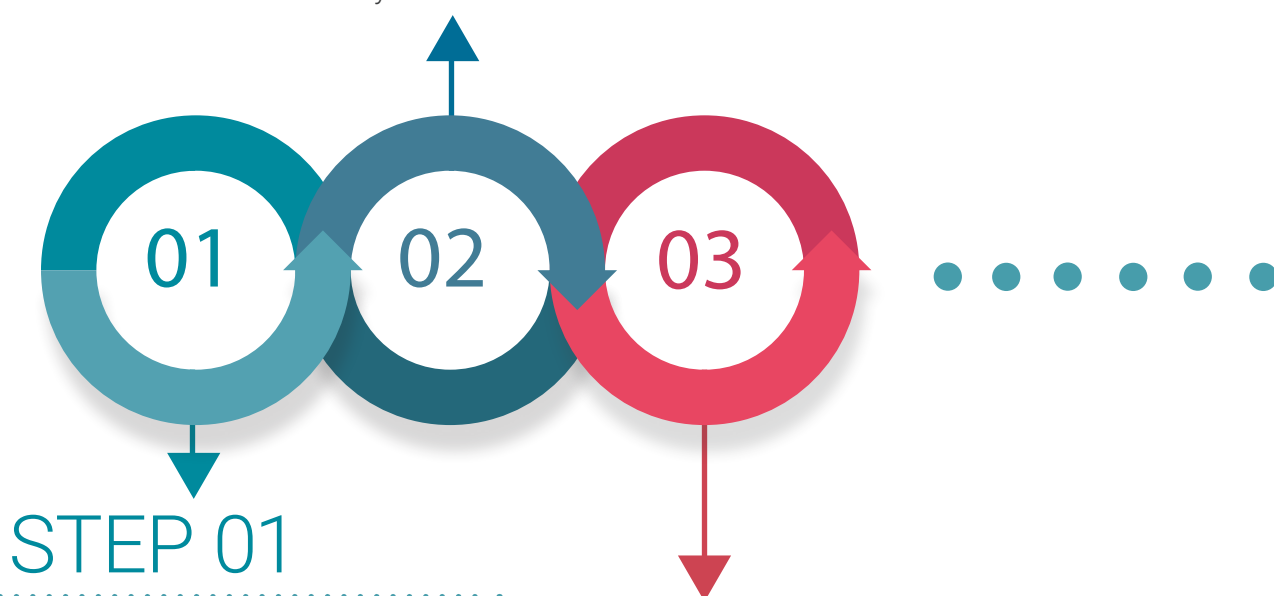
With Google Docs, everyone that accesses the online document can enter information at the same time and can view what others have entered instantaneously. The document created is effectively a digital version of the A2 poster that students would create in the classroom-based activity. The document exists in the Google Cloud and is accessible from any web browser on any device.

# STEPS FOR IMPLEMENTATION

## STEP 02

### PRESENT THE ACTIVITY AND FORM GROUPS

Refer the students to the posted link to Google Docs and ask the students to open the document on their computers or devices. Introduce the topic and explain the activity (see the Team Paper Template for sample instructions). Break the class into small groups to begin the activity.



## STEP 01

### PREPARATION

**Decide on a Topic:** Decide on the topic that needs to be discussed. The Team Paper activity is useful for complex concepts that are difficult to differentiate. Globalism versus globalisation is a good example of two different areas that students typically presume are the same.

**Create document in Google Docs:** For guidance, see the Team Paper Template at the end of this chapter and a link to the Google Docs help page in the Resources section.

**Post the Google Docs Link:** This can be done on the overhead projector during class or as a link in the Learning Management System (LMS).

## STEP 03

### SILENT INDIVIDUAL RESPONSES – 5 MINUTES

Students individually and silently enter responses to the exercise topic into the area assigned to their group (see Team Paper Template instructions section for more detail).

## STEP 04

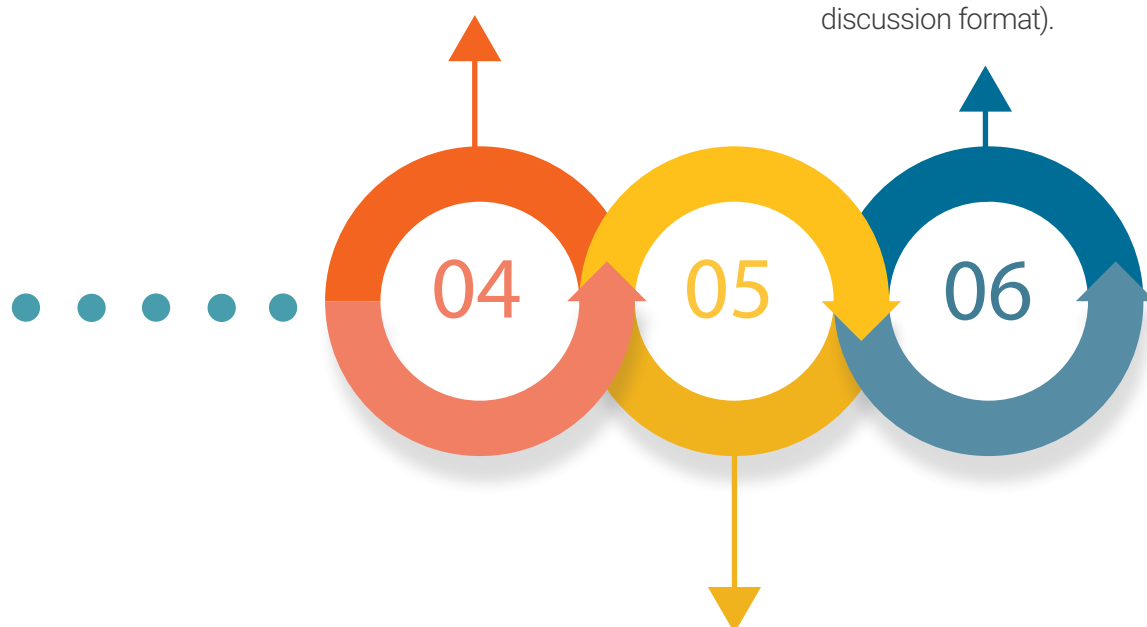
### SMALL GROUP DISCUSSION 10 MINUTES

Students gather together in their groups around one computer screen displaying the document and discuss entries made in their response area on the document. The group then have an opportunity to enter any additional points that may arise from the discussion.

## STEP 06

### SOLUTIONS

Display the completed Google Doc on the projector screen and discuss the results as a large group. This provides an opportunity to identify common themes, summarise overall results, and ensure that the activity has managed to address the learning required for the topic (see Image 2: Sample document on Google Docs of a large group discussion format).



## STEP 05

### DIGITAL POSTER WALK - 5 MINUTES

The small group session is followed by a digital 'poster walk' whereby students get an opportunity to view what the other groups entered into their group response areas.

# OVERCOMING PUSHBACKS

## STUDENTS RESIST SMALL GROUP WORK

Students often shy away from working in groups and may express a preference for less active learning strategies. A simple reminder of the relevance of team-based scenarios in industry is often all that is needed to encourage students to engage in group

work. For example, industrial mechanics rarely work alone, as the complexity and size of industrial equipment is such that a team of tradespeople is often necessary to diagnose machine problems.

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## CASE STUDY

### INTRODUCTION

A digital 'Team Paper' activity was conducted with a class of 40 second year mechanical technician students in preparation for apprenticeships. Their duties as apprentices involve repairing industrial equipment and, as a result, they need to understand the difference between many industrial maintenance terms. These students do not have any industrial experience with machinery, but they have worked on various pieces of equipment in the lab or workshop as part of their school work. The digital version of the Team Paper activity will use the experience the students have gained with the lab equipment to aid understanding of industrial maintenance terms.

#### 1. PREPARATION

The maintenance terms 'reliability' and 'maintainability' are two complex topics that are difficult to differentiate. In this case, the students were asked to explore these topics in the context of machines that they have

worked on in their shop classes. A document was created on Google Docs (based on the Template provided at the end of this chapter) requiring each small group to enter reliability and maintainability suggestions suitable for a specific piece of machinery. The students accessed the link to the document through the LMS.

#### 2. PRESENT THE ACTIVITY

The instructions (see Image 2: Sample Google Doc) for the activity outlined on the first page of the Google Doc were discussed as a large group. The class was then divided into ten small groups of four students each. Each of the ten small groups were assigned one of the ten machines listed in the document. Each of the ten different machines had a text box where students entered reliability suggestions and a text box where they entered maintainability suggestions (see Image 3: Examples of Student Entries).

### 3. SILENT INDIVIDUAL RESPONSES

As per the instructions, the students took 5 minutes to silently and individually enter maintainability and reliability suggestions for their group's specific machine. The students could see what the other students were adding instantaneously.

### 4. SMALL GROUP DISCUSSION

Upon completion of the individual activity, each small group was asked to gather around one computer screen. The small groups were given 10 minutes to discuss their collective suggestions and make any amendments or additions to their machine's text boxes on reliability and maintainability as needed.

### 5. DIGITAL POSTER WALK

When the ten-minute small group discussion was complete, the students were asked to take 5 minutes to 'walk' around and view the other groups' reliability and maintainability suggestions for their machines within the online document.

### 6. LARGE GROUP DISCUSSION

The entire class reconvened to discuss the findings as a group. The discussion was framed around the questions outlined in Item 4 of the Instructions section of the document (see Image 2). This ensured that the students' suggestions aligned with the experts' suggestions for reliability and maintainability.



Image 1: A computer lab that is unsuitable for the traditional paper-based Team Paper



# Reliability and Maintainability

## *A Team Paper*

### Instructions

After these instructions, this exercise lists five pieces of equipment (Assets in the CMMS) that you have worked on in some form or another during shop time. I will ask you to form into groups of three and then assign your group to one of the five pieces of shop equipment. Using your past experience in the shop and the definitions of reliability and maintainability, you will:

1. Take five minutes to individually and silently enter at least one improvement that increases the reliability of your assigned piece of equipment and at least one improvement that increases the maintainability of your piece of equipment.
2. After five minutes have elapsed, I will ask your group to gather and discuss what each student entered into the form. One member of your group will enter any additional points that may have arisen from your discussion. The group session will last ten minutes.
3. The group session will be followed by a 'poster walk'. This is a term that applied to the days when we would have completed this activity on flip chart paper. In our case, we will simply look at what the other groups entered as improvement items for their assigned equipment.
4. After five minutes of the 'poster walk', I will post the results on the overhead and we will discuss our results as a large group. We will frame our discussion around the following questions:
  - a. Do we, as maintenance people, have more influence over reliability or maintainability?
  - b. Which of the two terms is more dependent on equipment history?
  - c. Some changes are easier than others:
    - i. Does the change involve other trades?
    - ii. Does the change involve other departments?

### Gorman - Rupp Self Priming Pump

1. How can we make this pump more reliable?

2. How can we make this pump more maintainable?

More machines as needed for each small group ...

Image 2: Sample document on Google Docs from the Team Paper case study.

## German-Rupp Self Priming Pump

### 1. How can we make this pump more reliable?

Remove the v-belts and drive the pump directly  
Oil the pump every day  
Paint the motor blue  
Clean the sight glass

### 2. How can we make this pump more maintainable?

Reduce the number of bolts in the belt guard  
Oil the pump every day  
Put a tag on the oil plug that says what kind of oil to use  
Replace the socket head cap screws with the hex head so that they are all the same

Image 3: : Examples of Student Entries

## CASE STUDY CONCLUSION

The students enjoyed discussing their shared experiences with the shop class machinery. The various pieces of machinery in the shop have unique characteristics that may make them difficult to work with or design flaws that make them difficult to maintain. These characteristics and flaws applied to the

reliability and maintainability discussion. With their workshop experience, the two definitions and the collective wisdom of their small groups, the students produced solutions that met the learning outcomes of the subject matter.

## SUMMARY

One of the best learning environments for fostering critical thinking is within a social setting where learning can be demonstrated and reinforced while arguments are expressed through speech and writing (Brookfield, 2012). Whether the Team Paper activity is performed as a traditional paper-based activity or given a digital 'twist', students are

encouraged to think critically and discover information about complex topics through a combination of: 1) individual experience and learning, 2) their peers' experience and learning, 3) large group discussion, and 4) the facilitator's guided debrief and summarisation.

## FURTHER READING

Development: Durham College CAFE Learning Techniques:

<http://cafe.durhamcollege.ca/index.php/teaching-learning/learning-techniques>

Bonwell, C. C., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom (ASHE-ERIC Higher Education Rep. No. 1). Washington, DC: The George Washington University, School of Education and Human Development

# TEMPLATE

## EXERCISE TOPIC

### *A Team Paper*

## Introduction:

The instructor will ask you to form into groups of three or four. Following these instructions, you will find an area where your small group can enter responses to the topic introduced by the instructor. The instructor will then lead you through a series of timed steps to complete this exercise:

1. **Step 1 - Five Minutes – Silent Individual Responses**
  - a. Individually and silently enter your responses to the exercise topic into the area assigned to your group below. You will see your fellow small group members' responses as they are entered. This is a live document.
2. **Step 2 - Ten Minutes – Small Group Discussion**
  - a. Your instructor will ask your group to gather together and discuss what each student entered into your small group's response area. Your group will enter any additional points that may arise from your discussion.
3. **Step 3 - Five Minutes – Poster Walk**
  - a. The small group session will be followed by a 'poster walk'. This is a term that applied to the days when this exercise would have been completed using markers and flip chart paper. In this case, the instructor will ask that the students look at what the other groups entered into their group response areas.
4. **Step 4 - Ten Minutes – Large Group Discussion**
  - a. After five minutes of the 'poster walk', the instructor will post the Google Doc on the overhead projector and will discuss the results as a large group. This is a time to identify common themes, summarise the results, and ensure that the exercise topic has been addressed fully and correctly.

**Small Group 1:** Enter responses from your group below:

Student responses will be seen here.

**Small Group 2:** Enter responses from your group below:

Student responses will be seen here.

Enter additional small groups depending on class size.