

Broken Squares Exercise

(Developed by Dr. Alex Balevas, 1973)

Purpose

The exercise is intended to give insight into how we tend to look at situations and solve problems. Group members will also discuss how this relates to actual problem solving on the job and how it is important to maintain situation awareness.

Importance

Working together as a team to get a job done and maintaining situation awareness are critical parts of performance. When team members are weak in these skills, it can get in the way of accomplishing a task. This exercise helps participants think about behaviors that get in the way of successful team performance.

Description

The Broken Squares Exercise introduces participants to problem-solving skills and the importance of situation awareness in an informal, entertaining, and interactive way. You can play with large groups, and the game usually has between 10-15 participants.

One of the most meaningful ways to illustrate the value of effective problem solving and situation awareness is to have participants demonstrate it. Separate participants into two to three teams. Give every team member a set of puzzle pieces. The goal is for the team members to put the pieces together so that every person has a square in front of him or her. Team members must work together, yet are restricted in how they may communicate with one another.

The game is not over until every team has put together all their squares. The facilitator then leads the group in an interactive discussion about behaviors that got in the way of winning, behaviors that helped the team win, how this relates to real life problem situations, and the importance of situation awareness in the exercise.

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Learning Objectives

The learning objectives for this exercise are to:

- Demonstrate the importance of situation awareness
 - Identify behaviors that get in the way of winning and behaviors that help the team win
 - Understand the link between this exercise and real-world problem solving situations.
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Setup

For this exercise, you will have to create the puzzle pieces in advance. There are three different groups of puzzles: puzzles for a five-person team, puzzles for a six-person team, and puzzles for a seven-person team. Determine how many people you will have on each team so you know which group to prepare.

Tip: For longer-lasting puzzle pieces, you can trace the pattern onto thin plastic such as plastic report covers.

Use the patterns provided at the end of this unit to prepare the puzzle pieces. Trace the patterns onto paper and cut out the pieces. You will need to prepare a set for each team. For example, if you plan to have two groups of five, you will need to prepare two sets of puzzles – for a total of 10 puzzles.

Resources

For this exercise, it is helpful to have:

- Sets of puzzle pieces for five-, six-, or seven-member teams (depending on the size of the group). The facilitator will need to prepare these ahead of time using the patterns in this unit.
 - A flip chart or overhead projector.
 - A table for each team to use as a workspace.
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Duration

55 minutes total:

- 5 minutes for Step 1
 - 5 minutes for Step 2
 - 20 minutes for Step 3
 - 5 minutes for Step 4 (Optional)
 - 20 minutes for Step 5
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Method

The five steps for presenting the Broken Squares Exercise are:

1. Divide the participants into groups
2. Introduce the game and the rules
3. Begin the game and enforce the rules
4. Give assistance to last group(s) working on the puzzles (This step may not be needed)
5. Lead a group discussion on lessons learned

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Step 1 - Put into groups

You can play the game with groups of 5, 6, or 7 depending on the size of the class. You can play with two groups of 7 if there are 14 participants or you can play with three groups of 5 if there were 15 participants. If there are players left over, they become observers along with the facilitator. Explain to the observer(s) that their role is to help the facilitator make sure the rules are followed.

Have each team sit at their own table. Make sure everything is off the tables so they can pass puzzle pieces to each other.

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Step 2 - Introduction and Rules

Present an overview of the game.

Sample dialogue:

We will be playing a game designed to help you gain insight into how we tend to look at situations and solve problems. I will now go over the rules of the game, so listen carefully.

Say the following:

The Objective is to win. The way you win is for each team to assemble five (or six, or seven depending on team size) equal size squares, one in front of each person. The game is over only after all teams have completed the exercise.

There is one envelope per player. The pieces may or may not make a square and some transfer of pieces may be needed.

The Rules are:

1. No talking – total silence
2. You cannot request a piece – no signaling
3. Do not grab a piece from someone else
4. Only work on the square in front of you
5. You may offer one piece of your puzzle at a time to another group member. The piece changes hands only if the person to whom you offer them decides to accept.

You may want to repeat the objective and the rules at least once. If students ask questions, do not give any additional information besides the objective and the rules. Do not discuss strategy or allow the teams to discuss strategy. Read the entire list of rules at least twice. After reading the rules, hand out the packets to each table and distribute envelopes to each player.

Make sure no one opens their envelope until you have told them to do so.

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Step 3 - Begin Game & Enforce Rules

Make sure the participants do not talk.

Instruct the participants to begin.

Sample dialogue: *Before you begin, please make sure you have all the pieces out of your envelope. The numbers on the back of each piece are so we can get the pieces back into the correct envelopes at the end of the game. Finally, you will need all of the pieces at your table to correctly solve the problem; there will no pieces left over.*

When your team is finished, raise your hands and we will check your solution and give you further instructions. If there are no more questions, please open your envelopes and begin the game. Make sure you have taken out all the pieces.

Ensure that the rules are being followed by observing each of the groups. After 5-8 minutes, begin to read the following clues, one at a time, to the group. Repeat each clue twice before going on to the next clue. Don't hurry through the clues.

- Hint #1: Rather than looking at what someone else can do, look at what you can do within the rules.
- Hint #2: Sometimes when I think I have my act together, I really don't.
- Hint #3: If you think the hints do not apply to you, they probably do.
- Hint #4: Sometimes I have to give the game away in order to win.
- Hint #5: Sometimes I have to risk taking an action even though I am not certain of what I am doing.
- Hint #6: Sometimes I need to stop and look at the bigger picture in order to see the obvious.

After all the hints have been given, walk around the room and give the clues again when relevant. For example, if a team member has a square put together incorrectly, stand close to the participant, and repeat Hint #2.

It is important that you pay attention to the game being played. What are the behaviors that you see occurring? Those are the behaviors that need to come out in the debriefing. Some behaviors you may want to look for are people: keeping together a square that is incorrect, sitting back and folding their arms once their square is complete, hoarding pieces, getting frustrated, or breaking the rules

Tip: It is important to memorize the puzzle solutions beforehand. You need to have the solution in your head so you can help the participants and give the appropriate clues.

As each team finishes, have them QUIETLY replace the pieces in the correctly numbered envelopes, maintain silence, and observe the others. Remind them from time to time that the game is not over until all teams have completed the exercise.

Sample dialogue: *Please place your puzzle pieces back in the correct envelopes and remember to observe the rules of the game since it is still going on. This means no one should be talking except me.*

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Step 4 - Provide Assistance

Frustration is a normal part of the game. This step is optional.

Only use this step if participants have been struggling for 20 minutes.

If there are one or two groups still working on the puzzles and frustration has built up, approach the group and offer the following information.

Say the following: *We can offer assistance but all members at the table must agree that they are willing to accept assistance. If anyone at the table does not agree to accept assistance, it will not be given.*

If everyone agrees to accept assistance, provide the following information.

Say the following: *If pieces are passed toward a proper solution, those of us observing will give positive feedback; if you receive no feedback following a move, that will indicate a non-positive move toward the solution.*

Step 5 - Debrief the Game

Tip: You should spend the most time on Question 3: How does this relate to problem solving in your squad/platoon/company? Keep coming back to this question throughout the debrief.

There are five major sections to the debrief. They do not have to be completed in the order presented.

Section 1: Discuss questions in small groups.

When all teams have completed the exercise, ask each team to return to their tables and discuss the following questions which you have written on the board or flip chart in advance:

1. What did it take to win?
2. What behaviors got in the way?
3. How does this relate to problem solving in your job?

Have each team assign a spokesperson to take notes to share with the rest of the group.

Section 2: Facilitate big-group discussion about questions.

Tell the participants that they are now going to share their answers with the entire class. Ask the following questions to the group:

What did it take to win this game?

Listen for things such as: Trust, a willingness to accept or give help, looking beyond "my square" to the bigger picture.

What kinds of behaviors did you observe or exhibit yourself that got in the way of your team winning?

Listen for things such as: Unwillingness to give up pieces or break up a completed square, not looking at each other's pieces, trying to take the game over, not listening to hints.

How does this relate to problem solving in your job?

Tip: The participants should be doing most of the talking. Don't worry if the participants do not answer quickly. Give them time to think about the question.

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Listen for: Not looking at the bigger picture of the situation, not listening to what others are trying to tell me, trying to be a hero and do everything myself, not tapping the power of the team, not relying on other team members.

Can you think of a time in your own life when some of these behaviors got in the way of team success?

When was the game over for you?

Many participants respond with the standard answer, “The game was over when all teams had all their squares put together.” Do not be satisfied with this answer. Probe the students further.

Sample dialogue: *Yes, the rules state that the game is not over until all teams put together their squares, however, when did you personally feel like it was over and tune out or stop trying? How does this relate to real life?*

Listen for: Felt like the game was over when my piece was finished, the game was over for me when my team was done. In real life, someone can tune out when their personal task is done even though there are still things they could be doing to support the team mission.

Section 3: Discuss behavior during the game.

Point out key behaviors that you noticed during the game and what they mean. Only point out behavior, never point out individuals. You don't want to put someone on the spot. Discuss two to four of these behaviors. Some examples of behavior and corresponding dialogue include:

- Someone keeping a square together that is not correct (even after Hint #2 is given).

Even though it may have been a square because all sides were equal, it was not correct because it did not fit the criteria of the game. The objective of the game was for all team members to create squares. Sometimes someone else will need a piece that seems to work in your square. How does this relate to real life?

Listen for: You need to look at the bigger picture, just because your part is correct does not mean it fits the team's needs, what seems correct may not be, don't get locked into one solution.

- Someone who sits back and folds their arms and stays out of the game once their square is complete.

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Tip: If you have played Broken Squares as a participant, explain what happened to you during the game or what you learned.

When this happens, the team is now one person short. Does anyone have an example of this in real life? What can this do to team performance?

Listen for: The team may not be able to complete mission, that person may not be aware of what the team is doing.

- Someone hoarding pieces. They may end up with most of the pieces in front of them until they figure out the answer.

What if the puzzle pieces represented information, how would that affect team performance? There are times where this is appropriate when one person needs to understand the situation and make a decision. There are other times when it is best to use the skills of your team. Maybe the person who is hoarding pieces is not the best puzzle solver on the team. Has this happened in your general experience?

Listen for: Team members would not have their own big picture of the situation, team members would be in the dark

- People getting frustrated

What is the source of the frustration? How does frustration get in the way of accomplishing a task?

Listen for: Not being able to talk, people not taking pieces when offered, people not giving me the pieces I need, frustration takes energy away from accomplishing the task

What could we do to prevent those frustrations in real life?

Listen for: Make sure we communicate and not keep people in the dark, accept help or information even when we don't think we need it, keep others informed, let others know when we need information

- People breaking the rules

Is this a part of your culture? What does this look like day to day? How does this affect teamwork?

Listen for: People not doing what they're told, taking shortcuts, you may accomplish the mission but if you break the rules you may not feel good about it or you haven't learned and improved your skills

Section 4: Discuss how the exercise relates to situation awareness.

Explain how the exercise relates to situation awareness. First, ask the participants to say how they think the exercise relates to situation awareness. Then you can summarize with the following:

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Sample dialogue: *One behavior that gets in the way of winning is not sharing pieces. This could be someone sitting back once their square is complete or someone hoarding pieces. The puzzle pieces are like bits of information. In order to win, everyone needs to have the picture in front of him.*

One of the keys to success is to look around the table and see what other people need. Often during an exercise, people tend to focus on their own task and do not think about the team. Sometimes we need to step back and look at the big picture in order to function effectively as a team.

Section 5: Leave the participants with something to think about.

Encourage participants to think about what they have learned and how that will affect their behavior in the future:

Sample dialogue: *The game is both frustrating to some of us and amusing as well. I'd like to suggest that for those who are willing to take a look at their behavior while playing this game, to reflect on it. There are some great lessons that we can learn about our performance and ourselves. For many of us, it could be said that the way we played the game is a mirror of the way we play in the real world.*