Professional Development Situation: Training

Skill Focus: Managing Groups during STEM

Time Required: 90 minutes

APPLYING STRATEGIES FOR GROUP MANAGEMENT IN STEM

Participants will plan an activity with Tangrams to learn to manage groups during STEM.

Agenda

Welcome—5 minutes
Introduction—20 minutes

- Supporting Participation Vignettes

See the Skill in Action—10 minutes

- Contributing to Youth Behavior and Learning video-based learning module

Hands-On Learning—40 minutes

- Tangrams Activity Planning

Conclusion—15 minutes

Materials

- Computer with Internet connection
- Projector and speakers
- Flip chart paper and markers
- Pens for participants
- One copy of Supporting Participation Vignettes for each participant
- Contributing to Youth Behavior and Learning video-based learning module
- One copy of Tangram Template for each participant
- One copy of Tangram Challenges for each participant
- One copy of Lesson Plan Template for each participant

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Before the Session

- **Read this training guide** to become familiar with the content and allow time to personalize the activities to best suit your presentation style. Watch all videos and read informational materials.
    - *Italics indicate text that can be read aloud or emailed to participants.*
- Send reminder email about the training. Determine if any participants require accommodations (sight; hearing; etc.).
    - *The next professional development opportunity to enhance our STEM skills will be on DATE at TIME at LOCATION. Our focus for this session will be "Managing Groups during STEM." Let me know if you require any accommodations to participate in the training. I am happy to answer any questions you have and look forward to seeing you at the workshop. I can be reached at CONTACT INFO.*
- Gather all materials needed for the training.
- Develop a list of possible questions participants might have during the training. Create potential responses to be explored through informal conversation. Review any key terms or ideas that may be unclear.
- On the day of the training, test the audio and video equipment.

Training Outline

Welcome (5 min)

- Greet participants as they arrive. Make sure everyone feels welcome and comfortable.
- Introduce yourself and the focus of the session: "Managing Groups during STEM".
- Ensure participants are aware of the locations of restrooms facilities, refreshments, etc.

Introduction (20 min)

- Have participants make a name tent or nametag if they don't know each other already.
- Invite participants to share a story from their group management journey.
    - *Almost every educator has some kind of struggle with group management. Think about something that recently went wrong during one of your activities. How could group management solve that problem? Share this with a partner.*
    - ***Note***: *participants might be embarrassed to share these; try to support everyone so that they don't feel judged. You can even give an example from your own practice to help everyone feel like it's okay to talk about problems they're facing.*
    - *Group management is a lot like oxygen; you don't notice it unless there's not enough of it.*

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- Ask participants to thank their partners for sharing their worries with each other.
- Pass out one copy of the [Supporting Participation Vignettes](#) to each participant.
  - *You and an elbow partner are going to read each of the three vignettes and answer the questions below it: 1) What is wrong in this situation, and 2) what can be done to help youth gain access and participate more deeply in this activity?*
  - *Optional: You can split up the vignettes and jigsaw them (with each person or pair taking a different vignette) if you have less time for this activity.*
- Give 10 minutes to work.
- Facilitate a large-group discussion about the vignettes. Possible responses are below:
  - *Stories 1 & 2. The youth and the facilitator are both adhering to common yet problematic gender bias in STEM. Even from a young age, girls often step back and allow boys to do the majority of STEM work. In this situation, one might ask the facilitator if they notice differences in how they treat girls and boys, and offer to share what you noticed.*
  - *Story 3: There are many strategies for helping youth who are marginalized by the language they speak. First, group youth who speak the same language together so they can communicate about their ideas and help each other understand your instructions. You can also give youth a whiteboard or paper for drawing their ideas. It is really important to teach youth how to ask each other for their ideas, so it can be helpful to ask all youth to take time to ask their partners to explain their thinking to each other.*
- Allow an opportunity for participants to ask questions and share with a partner.

See the Skill in Action (10 min)

- Cue up the [Contributing to Youth Behavior and Learning](#) video-based learning module.
  - Watch this staff person facilitate a STEM activity with youth. Watch for the strategies she uses to support youth and encourage developing a STEM identity.
- Show the video.
  - *What strategies does Annette use to manage youth engagement?*
  - *Management is about supporting learning. Control is about making adults feel comfortable. What do you see in here that supports management? Does anything feel like it's more "control-focused?"*
  - *Annette asks youth to raise their hands. Do you agree that this is a good strategy for managing behavior? (Responses will vary; a more efficient way to value all students' ideas in a short time is to have them do a turn and talk; hand-raising is one way to build a polite environment where youth can speak one at a time,*

although it doesn't necessarily encourage critical thinking or authentic discussion)

- *How does Annette help all youth participate? How could she adjust her strategies so everyone gets to share their thinking?*

- Re-watch the video if necessary.

Hands-on Learning (40 min)

- For this portion of the activity the participants will be *planning* a learning experience for youth using the Tangrams Challenge.
- **Note**: This is not meant to be a role play where one person acts out the role of the child and the other the adult, rather a time to practice and prepare for group management.

Tangrams Planning Challenge

- Form groups of 3-4 staff members.
- Distribute the Tangram Template and list of possible Tangram Challenges to each group.
  - *Your challenge today is to devise a lesson/activity plan using the tangram templates and tangram challenges. You will write out your plan on a piece of paper.*
  - *Optional: Distribute a lesson plan template if you feel your staff need support for this activity.*
  - *Optional: Tangrams may not be appropriate for older youth (past grade 5). Feel free to substitute any activity as participants plan the learning activity and group management strategies to go with it.*
- Participants should answer the following questions about the tangrams activity:
  - *Who will go when? (Who will be the leader? Who will touch the pieces?)*
  - *What materials will you use to make the tangram (foam or paper, something else)?*
  - *What space will you need?*
  - *How will you gather the group to begin the challenge?*
  - *How will you remind the group how much time they have?*
  - *How much time should each person have (keeping in mind the allotted time for the activity)?*
  - *How will you transition between players' turns?*
- Choose two group management strategies to implement alongside the plan. These might be:
  - Roles for youth (e.g., materials manager, project leader, etc.)
  - Time management support
  - Making sure all youth participate

- o   Building a positive environment for everyone to do STEM
- Participants can choose their own strategies to implement, but they should be discussed as a group.
- After the plan has been developed, decide on a time and place to implement the plan.

Debrief

- After completing the challenge, if time permits, use the following questions to reflect on the experience:
  - o   *What are you most nervous about in your plan?*
  - o   *How can we support you to try out this activity?*
  - o   *How will you make sure all youth can participate?*
  - o   *Are these group management strategies helpful for you?*

Conclusion (15 min)

- o   *Look back on the* Supporting Participation Vignettes *and think about the story you shared with your partner at the beginning of the lesson. Are there things you think you could do differently in your facilitation of learning?*
- Encourage participants to make a commitment to try something they learned from the training soon.
  - o   *Write a short "I will" statement on a piece of paper and share it with your partner.*
- Thank participants for their positive engagement and encourage them to get in touch with you if they have concerns or questions.

After the Session

- Within 2-3 weeks of the training, email participants:
  - o   *Thank you for your participation in the recent Click2Science training on "Managing Groups during STEM". I hope you found it useful. Consider meeting with a co-worker, supervisor, or friend to share what you learned. I look forward to continuing our learning at the next session on SKILL/FOCUS on DATE at TIME at LOCATION. Please let me know if you have any questions. I can be reached at CONTACT INFO.*

Want to Earn Credit? Click2Science has teamed up with Better Kid Care to provide continuing education units. Check it out at: http://www.click2sciencepd.org/web-lessons/about

Supporting Participation Vignettes

Story 1

Youth are building a program to get their Lego robot to follow a line. The youth have been instructed to work in teams. However, you notice that the girls are doing all of the documentation and the boys are the ones that are working on the laptops. When one girl offers a suggestion, the boy says "I got it, I want to do it like this." In debriefing, your partner teacher only calls on the boys and even says "good job, boys." The partner teacher doesn't acknowledge the girls beyond saying, "hopefully you will try it out next time."

Think about:

What's wrong here?

What could be done to promote access and equity in this example?

Story 2

A teenage girl is trying to figure out how to fix the design of a bottle rocket so that it goes higher. You see a facilitator step in and fix it for her, saying, "Oh just do this and it will go higher." Meanwhile, you see the same facilitator walk by several boys in the same room who are also struggling, except to them the facilitator gives encouragement: "I'm sure you can figure it out...try a little bit and I'll come back and check on you."

Think about:

What's wrong here?

What could be done to promote access and equity in this example?

Story 3

You have three newly-arrived immigrant students in your program who don't speak very much. You know that they speak Oromo at home, not English. When it is time to brainstorm solutions to the design challenge, you notice that they say nothing and look almost frightened. What's more, the other students do not acknowledge that the English learners are even present in the group.
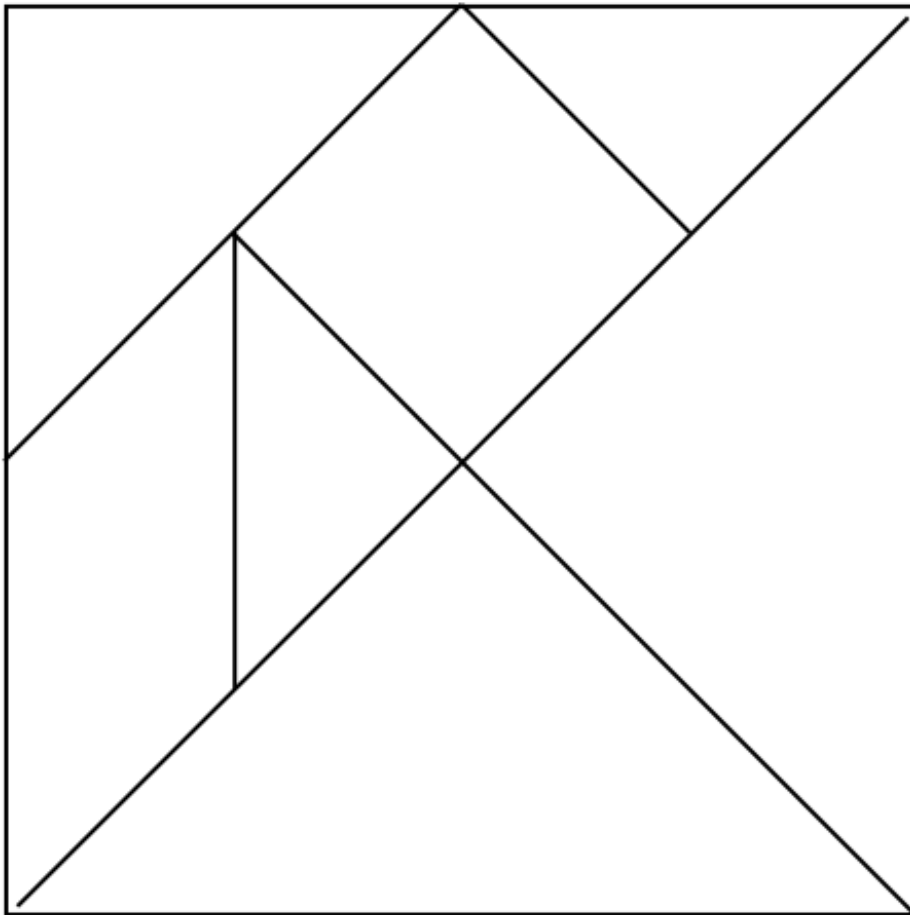
Think about:

What's wrong here?

What could be done to promote access and equity in this example?

Tangrams Planning Challenge

Note: This activity is for adults to use to plan a learning activity for youth. It is not written for youth.

Tangram Template

Tangram Challenges

Create a square using exactly two pieces.
How do you know it is a square?

Create a triangle using exactly two pieces.
How do you know it is a triangle?

Create a square using as many pieces as
possible. How do you know it is a square?

Create a triangle using as many pieces as
possible. How do you know it is a triangle?

Create a parallelogram using as many
pieces as possible. How do you know it is a
parallelogram?

Create a trapezoid using as many pieces as
possible? How do you know it is a trapezoid?

Extended STEM Planning Template

Date:	# of Youth:
Activity Name: I have tried this activity myself ◯ yes ◯ no	Age of Youth:
Describe the space each youth will have to work:	

Attending to Equity
How can you modify this activity for youth from different SES (socioeconomic/financial) backgrounds? How can you modify this activity for youth with learning disabilities? How can you connect this activity with the cultures of your youth?

Learning Outcomes	
STEM Practices After this activity, youth will know how to:	STEM Concepts After this activity, youth will know that:

Lesson Design	
Introduction (Hook) _____ minutes	
	Materials needed for this step:
Activity _____ minutes	

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	Materials:
Reflection _____ minutes	
	Materials:

To-Do List

In the space below, make a list of things to do before you teach this lesson.

Materials to Gather	Things to Prepare