

they probably need to spend considerable learning time on extension activities. If they refuse to do the assigned work but get high grades on quizzes, tests, and other assessments, they need differentiation. However, if they are actively engaged in learning and appear to be struggling to learn for much of the time, the activities you are already using may be adequate and less differentiation may be needed.

This chapter presented two ways to manage differentiation for math and other skill-based areas: the Learning Contract and Math Achievement Teams (MATS). The main difference between these approaches and others you may have used in the past is that students who become eligible for differentiation aren't allowed to race through the grade-level assignments. Instead, they are required to wait until you instruct their group or the rest of the class on those topics. Students must also follow specific working conditions to remain eligible for differentiation.

Sometimes we teachers can force our students to do work they know they don't need, but they can make us wish we hadn't forced them. They respond with sloppy, careless, or messy work, turned in late or not at all. We fight back, sending notes home on a regular basis, but it's a losing battle. If you've been looking for a better way to motivate your students, try the methods described in this chapter. You'll need to do some preparation, but once a system is in place, it will practically run itself. Your reward will come as you watch your students perk up and willingly engage in challenging work.

REFERENCES AND RESOURCES

See also pages 197–198.

Books

- Block, J. Richard, and Harold Yucker. *Can You Believe Your Eyes? Over 250 Illusions and Other Visual Oddities*. Philadelphia, PA: Brunner/Mazel, 1992.
- Gardner, Martin. *More Perplexing Puzzles and Tantalizing Teasers*. Mineola, NY: Dover, 1988. One of many books of puzzles and brainteasers by this popular author.
- Overholt, Jim. *Math Wise! Hands-On Activities and Investigations for Elementary Students*. West Nyack, NJ: Center for Applied Research, 1995.
- Thompson, Frances M. *Hands-On Math! Ready-to-Use Games & Activities for Grades 4–8 and Hands-On Algebra! Ready-to-Use Games & Activities for Grades 7–12*. West Nyack, NJ: Center for Applied Research, 1994 and 1998. Two books in a very popular

series that teaches math in ways that appeal to kinesthetic learners and helps kids understand mathematical concepts.

Extension Activities

AIMS Education Foundation, Fresno, CA, (888) SEE-AIMS (www.aimsedu.org). Hands-on integrated math-science activities.

The Calculus Page (www.calculus.org). Links to problems, sample exams, classroom demonstrations, competitions, online tutorials, tools, and more. The managing editors are faculty members in the mathematics department at the University of California in Davis.

Creative Publications, Alpharetta, GA, (888) 205-0444 (www.creativepublications.com). I can unequivocally recommend their general catalog as well as Dale Seymour's catalogs (see below) as the best sources of math extensions materials around.

Dale Seymour Publications, Pearson Learning, Parsippany, NJ, (800) 526-9907 (<http://plgcatalog.pearson.com>). Resources for K–12 math, science, and language arts.

ETA/Cuisenaire, Vernon Hills, IL, (800) 445-5985 (www.etacuisenaire.com). Source for Versa-Tiles, cuisenaire, and other hands-on materials for math, science, and reading/language arts.

Highline Advanced Math Program (<http://home.avvanta.com/~math>). Math enrichment for grades 5–7. Also has activities for Math Olympiad competitions.

Marcy Cook Math, Balboa Island, CA, (949) 673-5912 (www.marcoocookmath.com). Materials that extend Standards and Problem-Based Learning.

Marilyn Burns Education Associates, Sausalito, CA, (800) 868-9092 (www.mathsolutions.com). Marilyn's goal is to eliminate math-phobic behaviors in all persons and to provide exciting math activities. Ask about her in-service courses, workshop sessions, and publications.

Math Channel, Montpelier, VT, (800) NUMERAL (www.mathchannel.com). Activities created by Rachel McAnallen ("Ms. Math").

The Math Forum (www.mathforum.org). Located at Swarthmore, this "online math education community center" features interactive projects, links, learning materials, and an online library. Example: MathMagic! (www.mathforum.org/mathmagic), developed by Texas math teacher Alan A. Hodson, engages student teams in online problem-solving dialogues.

Suntex International Inc., Easton, PA, (610) 253-5255 (www.math24.com). Publishers of the 24 Game and other products to use for math extension.

Learning Contract — Example 2

Name _____

Topic Ancient Egypt

Resources:

Print and Internet resources are listed here by the student before beginning the activities.

Rules I will follow while working on this contract:

1. I will keep a log of my work each day.
2. I will come to class with materials needed to work on my learning contract activities.
3. I will not disturb others.

I will show what I have learned by: (Bloom's Taxonomy verbs)

*Describing a typical day for a student in Ancient Egypt

*Illustrating a what a village along the Nile River looks like

*Summarizing the different roles and jobs the poeple had in Ancient Egypt

**Designing a typical Egyptian Pyramid

**Critlquing the pros and cons of Egyptian embalming methods

**Analyzing similarities and differences between Ancient Egypt and the USA

I will do this by: _____ (date)

Student _____

Teacher _____

* Bloom's Taxonomy lower level objectives

** Bloom's Taxonomy higher level objectives

Name _____

Topic _____

Resources:

Rules I will follow while working on this contract:

I will show what I have learned by:

(Bloom's Taxonomy Verb)

(Bloom's Taxonomy Verb)

(Bloom's Taxonomy Verb)

I will do this by: _____ (date)

Student _____

Teacher _____

How to Write Tic-Tac-Toe Student Activities

Tic-Tac-Toe activities are user-friendly and easy to write. Use this format for any grade level and with any subject or content. Follow the steps below as you learn to write both activities and assessments using this format.

- ___ 1. Decide on a major theme, focus or topic for the student activities. This may be in conjunction with a certain unit of study, or it may be generic, such as a spelling Tic-Tac-Toe that could be used with spelling words for several weeks.
- ___ 2. Look at your state standards in one or more subject areas to give you a focus for the activities you will write.
- ___ 3. Start writing as many activities as you can think of that correlate with the standards and/or topic. Write each activity on separate small Post-it® notes.
- ___ 4. Place the Post-it® notes with the activities on a blank Tic-Tac-Toe grid in any order. You will find a blank form on page 77 and on the *Activities and Assessments CD*.
- ___ 5. Check the configuration of the activities on the grid. Move the Post-it® notes around until you get the student choices in appropriate positions so that no matter which way students choose, they will be doing the variety of activities you desire.
- ___ 6. You may want to categorize the activities according to Multiple Intelligences, Learning Modalities, Learning Styles, Bloom's Taxonomy, subject areas, etc. Look for many different examples in the Tic-Tac-Toe grids in this book.
- ___ 7. When you have all activities in the desired order, write or type them onto a Tic-Tac-Toe grid.
- ___ 8. If you develop a Tic-Tac-Toe and decide some of the activities in it are too difficult or too easy for some of your students, substitute a more appropriate activity or activities as needed. Many times you will only need to change one or two activities out of the nine to make a more difficult or less difficult version of the Tic-Tac-Toe. You could end up with tiered Tic-Tac-Toes, all of which focus on the same topic but with slightly different activities.
- ___ 9. Write an easy-to-understand checklist of assessment criteria for each of the activities. Put the criteria into a Tic-Tac-Toe assessment grid, with the criteria corresponding to the number of the activity. Include points as desired. You will find a blank form to use on page 78 and on the *Activities and Assessments CD*.
- ___ 10. List standards covered on the Tic-Tac-Toe form itself or on a separate page.

Tic-Tac-Toe for Student Choice Activities

1.	2.	3.
4.	5.	6.
7.	8.	9.

Name _____ I chose activities # _____, # _____, # _____.

Date _____ Due date _____

How To Write Tiered Lessons And Units

Writing tiered lessons and units can be challenging. Below are some steps to guide your planning. Use the blank Tiered Lesson form on the next page on the *Activities and Assessment* CD to write your own Tiered Lesson or Unit.

- ___ 1. Establish which standards, objectives, knowledge or skills all students need to know at the end of this lesson or unit. Use your state's standards documents to guide you.
- ___ 2. Think about activities you have done with students in the past to reach these standards or objectives. Make a list of all you can think of.
- ___ 3. Add more activities to your list as you brainstorm with other teachers or get ideas from the textbook or other resources.
- ___ 4. Decide which of these are appropriate learning activities for all students. These will become your whole class activities.
- ___ 5. Some of the activities on your list will most likely be easier than others. Put an indication of the level or tier you think each activity might be. Consider your class and decide on how many levels you need to have. You usually will have two or three levels, but occasionally you may have four levels.
- ___ 6. Think about ways to expand or extend the easier activities so they will be challenging for higher ability students and ways to simplify the more difficult activities so that your struggling students can do them successfully.
- ___ 7. Look carefully at your list of activities. Many times you will have more activities than your students could possibly do given the amount of time you have for the unit. Decide which activities are essential and which could be eliminated if necessary. You may want to save a few of the activities to use with students at any level who finish their work before others.
- ___ 8. Check again to make sure all activities will lead to students learning and mastering the standards and objectives.
- ___ 9. Make certain that activities at all levels are engaging and interesting. Nothing discourages achievement faster than students thinking that the other group is the one with the fun, interesting or enjoyable activity while the learning activity they have been assigned is not.
- ___ 10. Write your unit or lesson plan using the Tiered Lesson Plan form found on pages 151-152. You can also find this form on the *Activities and Assessment* CD.
- ___ 11. Plan daily lessons based on your Tiered Lesson or Unit plan.
- ___ 12. As you would with any lesson or unit, gather supplies and resources needed to do the activities.

Tiered Lesson Plan: Unit Planning Form

**Objectives
or
Standards**

- 1.
- 2.
- 3.
- 4.

Whole Class Activities

Assessment

Level 1 Activities

Assessment