Tiering & Compacting

facilitated by Lisa Van Gemert

let's connect!

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TIERING

5 Steps to Tiering (according to Lisa):

1. Select the activity (concept, skill).
2. Decide what you will differentiate for (readiness, interest, product skill).
3. Create activity that is high level.
4. Clone the activity along the ladder (see possibilities chart below).
5. Match the version to the students (Which students will do which tier?).

COMPACTING

8 Steps to Compacting (according to the University of Connecticut):

1. Identify your objectives
2. Decide how to pretest
3. Decide who to pretest
4. Pretest
5. Eliminate practice, drill, or seat time for students who already know it.
6. Streamline instruction for students who can learn it more rapidly
7. Enrich or accelerate students in steps 5 & 6
8. Keep solid records

TIERED INSTRUCTION POSSIBILITIES CHART

Differentiate the…	Possibilities (in top to bottom order of most-to-least complex)
Size of group	1. Independent work (note: for GT students, work in pairs or groups may actually increase rigor, complexity, and/or challenge) 2. Pairs or triads 3. Small groups (view the *Grouping without Fear* slidedeck and get the handout at http://bit.ly/LVG-grouping for more info) 4. Teacher directed
Resources (quantity)	1. Multiple, self-discovered 2. Multiple, teacher-supplied 3. Limited or single, self-discovered 4. Limited or single, teacher-supplied
Resources (complexity)	1. Multi-media or requiring citation, self-discovered 2. Multi-media or requiring citation, teacher-supplied 3. Text only, above grade level 4. Text only, at grade level
Process	1. Assignment takes place over an extended period of time AND has many steps AND has rapid pace 2. Assignment takes place over an extended period of time AND/OR has many steps AND/OR has rapid pace 3. Assignment takes place over a typical period of time, does not have many steps, and is completed at a typical pace
Teacher Support	1. No questions after initial introduction 2. Restricted number of questions 3. Unlimited questions
Complexity of Thinking	1. Use of Psychomotor or Affective sections of Bloom's in addition to: 2. Creation, Evaluation or Analysis levels of Bloom's (new) 3. Application, Comprehension or Knowledge levels of Bloom's (new) (Print revised Bloom's diagram at http://bit.ly/rev-bloom. Find resources for other domains at bit.ly/bloom-psychomotor & bit.ly/bloom-affective)
Choice	1. Menu of opportunity is given (*see* books by Laurie Westphal for menu ideas) 2. Teacher directs
Product	1. Advanced skills needed 2. Real world application (including web-based publication) (these two may overlap) 3. Standard, on-level

Remember: Just a few will do! You don't need to adjust every component.
Even one is often enough!

Ideas from the University of Connecticut

1. Assess, Find, or Create Student Interests

Students should select topics in which they have an intense interest. In some cases, teachers may have to spark an interest by introducing new fields of study or extending the regular curriculum; the Interest-A-Lyzer and scheduled speakers can also motivate students to pursue interests.

2. Conduct Interviews to Determine Interest Strength

Teachers should try to ascertain, through face-to-face interviews, how deeply committed students are to their interests. For example, if a youngster likes journalism and wants to produce a school newspaper, the student might be asked these questions:

1. How long have you been interested in journalism?
2. What sources have you contacted to learn more about the subject?
3. Have you ever tried to publish a class or neighborhood newspaper? Why or why not?
4. Have you ever visited your local newspaper?
5. Do you know anyone else interested in this topic?
6. If I can help you find either books or people to talk to about your project, do you think it might give you some good ideas?
7. How did you become involved in journalism?

Posing these questions will reveal if the student has seriously considered the amount of time independent study entails, and how to go about producing a unique product.

3. Help Students Find a Question or Questions to Research

Most educators have little difficulty recognizing "families" of interest: scientific, historical, literary, mathematical, musical, athletic. Problems arise, however, in fine tuning a broad area, and defining a specific interest as a research question. The majority of teachers are not experienced in asking the questions about some fields of study. Yet, this part of the process is critical. How it is handled will determine whether a student starts on this work. Given that, teachers can help students secure the "how to" books or resource people that routinely probe these important questions. Students who want to ask the appropriate questions about problem focusing in anthropology, for instance, must begin by looking at the query techniques anthropologists apply.

4. Formulate a Written Plan

Once students have brainstormed a question, they should draft a written plan for researching it. Many teachers employ contracts with students, while others prefer journals or logs,

5. Work with Students to Locate Resources

For advanced content and methodological aid, teachers should direct students toward "how-to" books, as well as biographies and autobiographies, periodicals, atlases, letters, surveys, films, phone calls and personal interviews. Librarians and media specialists should also steer students to sources beyond references encyclopedic.

6. Provide Methodological Assistance

In this step, the emphasis shifts from learning about topics, to learning how one gathers, categorizes, analyzes, and evaluates data. The teacher's role, then, is to show students how to identify and obtain the resources that explain how to properly investigate their topics. Guidance at this phase almost guarantees that students will be first-hand investigators rather than reporters. Clearly, the caliber of instruction students receive here will differentiate their projects from those of their peers.

7. Help Students Choose a Question

Students can often decide, at this point, which question or area they want to research. In addition, many begin to investigate their topics.

8. Offer Managerial Help

Managerial assistance means that we help students secure the information they need. Teachers can set up interviews with public officials, gain access to laboratories or computer centers, transport youngsters to college libraries, and help distribute questionnaires or other printed pieces. At this stage, the student emerges as the leader and expert, while the educator assumes a more supportive role.

9. Identify Final Products and Audiences

A sense of audience is integral to students' concern for quality and commitment to their tasks. With that in mind, teachers should lead students to appropriate audiences and outlets for their work. Teachers should also stress the impact creative efforts can have. Students should be aware that a job well done can bring more than individual expression and personal satisfaction; it benefits others by changing how they think or feel, or enhancing the quality of life in other, more tangible ways.

10. Offer Encouragement, Praise, and Constructive Criticism

Almost every endeavor can be improved through revision, rewriting or closer attention to detail. Teachers must convey this fact to students, as they review the youngsters' projects with a sharp, yet sensitive eye. For their part, students should feel that the

teacher's greatest concern is helping them achieve excellence, and that constructive feedback is vital to the process.

11. Escalate the Process

Oftentimes, bright students resort to simple or unimaginative research methods because they have not been taught more advanced ones. Educators can change this by guiding students to do high level work. Teachers, media specialists, and librarians can assist students in phrasing their questions, designing research, gathering and analyzing data in an unbiased way, drawing conclusions, and communicating their results and make this more challenging process for high potential students.

12. Evaluate

Students always want to know how they're being "graded." However, we strongly discourage the formal grading of independent projects, since no letter grade, number or percent can accurately reflect the knowledge, creativity, and commitment students develop during their individual study. Feedback for students can be sought from professionals in the field, adult mentors, or intended audiences.

Nonetheless, evaluation and feedback do promote growth, and should be used. The ideal process is a two-way street: it actively involves students and familiarizes them with the evaluative procedures. To help students appraise their own work, we suggest a short questionnaire, such as the one below:

1. How did you feel about working on the project?
2. What did you learn through your study?
3. Were you satisfied with the final product? In what ways?
4. How were you helped with your project?
5. Do you think you might like to undertake another project in the future? Do you have any ideas what that project would be like?

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Sample Tiered Lesson Plans

Example 1:

Subject:	Mathematics
Grade:	1
Standard:	Numbers and Operations
Key Concept:	Students understand and represent commonly used fractions such as 1/4 and 1/2.
Generalization:	Students will be able to illustrate how fractions represent part of a whole.
Background:	Fractions (halves/thirds) have been introduced and illustrated by the students with pictures. Materials: Paper circles, squares, rectangles, triangles
Tier I:	Using paper circles (pizza) and squares (sandwich), students in pairs determine how to share the food equally and illustrate by folding the paper. Have two pairs determine how they can share equally with four people. They can cut the parts and stack them to see if they match. Have the quad repeat the process for sharing a Reese's Peanut Butter Cup equally with three people.
Tier II:	Using paper circles (pizza) and squares (sandwich), have students in triads determine how to share the food equally and illustrate by folding the paper. Have two triads determine how they can share equally with six people. Have the group of six repeat the process for sharing a birthday cake with 12 people. In each case, they can cut the parts and stack to match. Have the group start with half a cake and divide equally for 3, 6, and 12 people.
Tier III:	Using paper rectangles (sandwiches) and triangles (slices of pie), have students in pairs determine how to share the food in three different ways to get two equal parts. Have them illustrate by folding the paper. Are there other different ways to divide each shape equally? How many ways are there? Have the pair determine which shapes—circles, squares, rectangles, triangles—are easier to divide evenly and illustrate why with a particular food of their choice.
Assessment:	As the students work, the teacher will circulate among the groups and note the children's abilities to divide materials into equal parts and to recognize and check for equal parts. Can children explain orally how many equal parts there are and demonstrate how they know the parts are equal? It is at the teacher's discretion to determine which children need more in-depth questioning to ascertain mastery of the concept.

Figure 4.1. **Tiered lesson in mathematics: Tiered in content according to readiness**

EXAMPLE 2:

Subject: Language Arts/Book Reports

Below Grade Level	Diorama Book Report Students will do different illustrations and paragraphs on paper and glue them into their box after completion. All inside sides are used except the inside top. Back - students illustrate the setting of the book and write the book title on the picture. Side - students illustrate the main character. Side - students illustrate their favorite scene. Bottom - students summarize the plot in paragraph form.
Grade Level	Paper Bag Book Report Use a lunch size paper bag and have students create a written plan for their report, including 5 items to go on the inside as well as what will be on each part of the outside. Inside - students will collect and put in 5 things that describe parts of the book. Front - students write the title, author, and publisher. Back - students illustrate their favorite scene. Side - students summarize the plot in paragraph form. Side - students describe the main character.
High Achievers	Folder Book Report Use 14 x 11 inch paper, preferably heavier paper, and fold it into a folder. On each side students will describe a part of the story in a different way. Front - students illustrate any picture to describe the book. Inside - students summarize the plot in paragraph form. Inside - students describe and illustrate the main character. Back - students critique the book and forward their recommendation.

EXAMPLE 3:

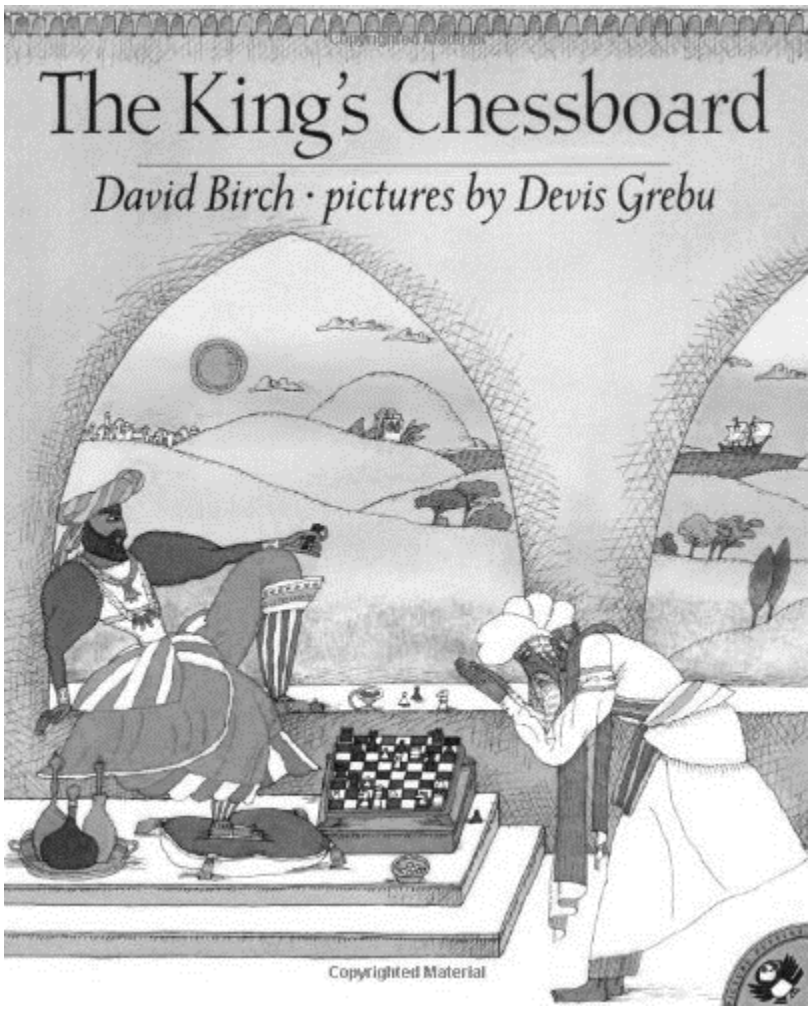
Grade 6 -- Mathematics

Concept: Patterns
Key principle: There are rules that govern patterns.

As a result of this learning experience, students should be able to:

- Know (facts) -- Exponents, exponential growth, particular number patterns (powers of 2, squared numbers)
- Understand (principles) -- Patterns can be generalized, and mathematicians can use symbolic language (algebra) to describe patterns efficiently and in general terms
- Do (skills) -- Organize a search for patterns using a t-table

Today's experience:
This learning experience is designed to engage students in problem-solving situations that involve searching for meaning in patterns and organizing information about the patterns to enable them to figure out the rules underlying the patterns.



The lesson begins with a whole class activity that includes the following assignments.

Read aloud *The King's Chessboard* (a story in which a wise man solves a problem for his king and asks as his reward that he receive one grain of rice on the first square of a chessboard and that the amount be doubled every day for the next square until all squares have been used.) Stop throughout the story so students can use their calculators to figure out the number of rice grains that have accumulated.

Discuss with students how mathematicians reading this story would have the urge to translate this information into numerical form and then play with it to see if there is something happening that can be described mathematically.

Using data from the story, introduce the t-table as an organizing tool to help students think, recognize, and predict patterns. Students and teacher discuss the pattern in the table and write a verbal rule for the pattern. ("It doubles each time.")

Introduce the idea of exponents as an efficient way to show the pattern. ("It doubles every time" becomes 2 squared). Discuss the idea that mathematicians want to be able to make a general statement about the pattern they see, turning verbal rules into symbolic language of algebra, and how the t-table helps you see the pattern more easily.

Have students write an exit card to explain how the principle in The King's Chessboard works.
The learning experience continues with a set of tiered activities using another problem to provide opportunities for students to look for meaning in patterns using t-tables as an organizing tool.

Teachers assign students to one of three groups based on readiness. All three groups:

- Solve the same problem.
- Must produce a t-table.
- Must write a description of the process they followed to discover the pattern.
- Must write a description of the pattern itself, using either words or symbols.

The Locker Problem
A school has 1,000 lockers and 1,000 students. The students decide to have fun one day, so they take turns opening and closing the lockers, according to the following plan:

- The first student opens every locker.
- The second student closes every second locker.
- The third student opens every third closed locker.
- The fourth student closes every fourth open locker.
- The students continue in this manner until all 1,000 students have had their turn.

When all the students are finished, which lockers remain open?

Students work in pairs or individually (their choice) on the assigned version of the Locker Problem.

Group 1:

- Two-color counters are provided for physically modeling the open/closed sequence.
- Students receive a graphic that lets them record the open/closed position for the first 16 lockers.
- Students receive a t-table with appropriate column headings for recording information about which lockers remain open.

- Students must write a description of what they did to discover the pattern and describe the pattern in words.

Group 2:

- Students receive a graphic so they can record the open/closed position for the first 16 lockers.
- Students must produce a t-table, and no format is provided.
- Students must write a description of their process and describe the pattern in words.

Group 3:

- Only the problem is provided (no graphic, no formatted t-table).
- Students must produce a t-table.
- Students must write a description of what they did to solve the problem and must provide the generalized, algebraic rule.

After students have completed the problem, the whole class discusses how they thought about solving the problem, the tools they used, and their varied ways of solving it. Then students select from one of two homework assignments -- one requires solving another problem that involves a pattern, t-table, and exponents, the other has students develop such a problem.

Note: Adapted from unpublished teacher materials provided by Carol Ann Tomlinson, University of Virginia.

General Resources:
http://differentiationcentral.com/resources.html
Tiered Lesson Plans: http://bit.ly/tiered-lessonplans & http://bit.ly/tiered-lessons (K-5 only).