

# Constructive Chaos

Using Flexible Grouping In Middle And High School To Meet The Needs Of Every Student

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U.S. Department of Education • Teacher to Teacher Initiative • Supporting Success



# Outcomes for Session

- Understand a mechanism for successfully differentiating any science class.
- Recognize the various ways to differentiate the science classroom.
- Create a framework for differentiating your own class.



# Relevant Research

- Tomlinson, C. (2001). How To Differentiate Instruction in Mixed- Ability Classrooms. ASCD. Alexandria, VA.
- Chapman, M. (1995). Designing literacy learning experiences in a multiage classroom. *Language Arts*. 72. 416.
- Gentry, M. & Owen, S. (1999). An investigation of the effects of total school flexible cluster grouping on identification, achievement, and classroom practice. *Gifted Child Quarterly*. 43. 224.

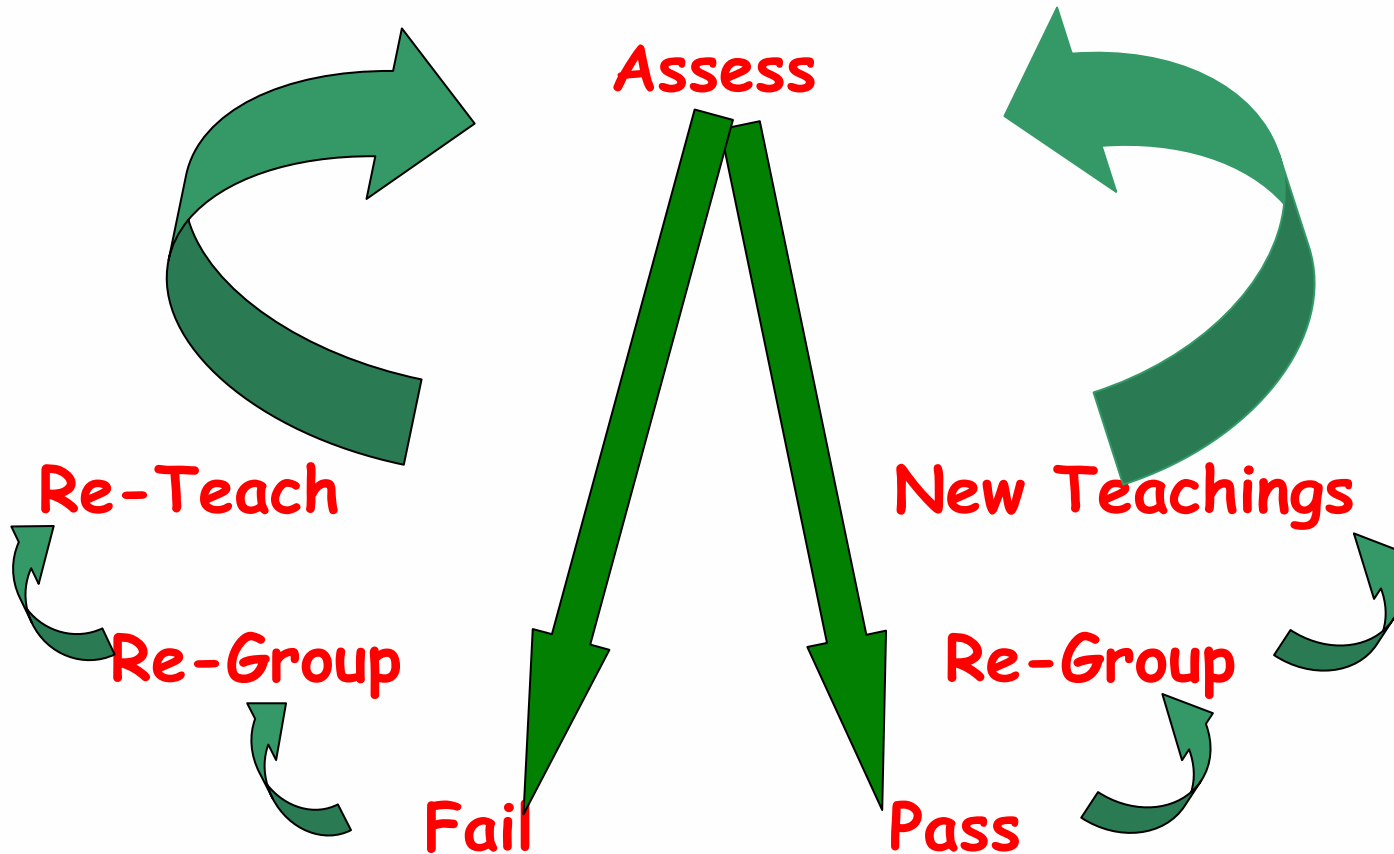


# Evidence of Success

- Taught chemistry since 1993.
- Taught traditional pedagogy until 1997.
- 20% failure rate.
- Began using flexible grouping to differentiate in 1998.
- In those six years, 4.6% failure rate. 40/860 students.
- Students are required to take chemistry to graduate from high school in Hamilton County.



# Flexible Grouping Model



# Student Motivation

- No one is allowed to fail.
- If students are absent they are not hurt.
- Teacher does not have to grade homework.
- You always get homework.
- Students do not cheat.
- Students become motivated because there is always hope and they experience success.
- Works well in heterogeneous classes.



# How To Begin

- Use data
  - Teach normally for the 1<sup>st</sup> unit.
  - Students who do not pass, do not continue on to the next unit.
- Differentiate through flexible groups.
  - Group students who passed into smaller groups together.
  - Group students who have not passed yet into smaller groups based on where their difficulties lie.



# Flexible Grouping

- Have assignments/activities ready for the groups who passed.
- Have re-teaching assignments/activities ready for the groups who did not pass.

Example: If the 1<sup>st</sup> unit was on measurement and 18/30 students passed.

The 18 that passed could be placed into 5 groups of 3 or 4.

The 12 who did not pass could be placed into 3 groups of 4.





# Flexible Grouping

- The “passed” group moves on to the next unit.
- The “not passed yet” group, is re-taught by the teacher and allowed to re-test.
- Once the “not passed yet” group passes, they are re-grouped in with the other students (flexible grouping).



# New Instruction

- Everyone is introduced to new material.
- My philosophy on this.
- After new material is taught, students are split into their flexible groups to work.



# Put Units on Wall

## Ionic Bonding (New unit)

1. Pre-assessment on atomic theory.
2. Textbook Activity Guide literacy strategy for pages 34-36 in text.
3. Lab on bonding.
4. Lab report due on lab.
5. Quiz #1
6. Using the plastic models, show bonding ratios of the atoms listed on the board.
7. Tic Tac Toe Board
8. Written test.

## Measurement (Old unit)

1. Measure the items located on the stations lab. (Teacher re-teaches difficult/problem areas). Students self-check answers.
2. Take quiz for understanding.
3. If students pass quiz, re-take a different test over the same material.



# Managing the Groups

- Students are re-grouped daily. Sometimes they are back with the same group and sometimes they are with different people.
- Groups are determined based upon where they are in the unit.
- List names of students on a large sign and where they are to sit prior to the start of class.



# Grouping Chart

<u>Table 1</u>	<u>Table 2</u>	<u>Table 3</u>	<u>Table 4</u>
John	Sue	Calvin	Kelvin
Mary	Kanesha	Tommy	Elvira
Tony	Antonio	Avery	Dean
Melvin	Janie	Adam	Rhonda

This chart changes daily. Hang it on the wall.



# Grouping Students

## Ionic Bonding

1. Pre-assessment on atomic theory.
2. Textbook Activity Guide literacy strategy for pages 34-36 in text.
3. Lab on bonding.
4. Lab report due on lab.
5. Quiz #1
6. Using the plastic models, show bonding ratios of the atoms listed on the board. Each model must be checked off by teacher.

For example, all students working on # 2 are together and all on #6 are working together.



# Instruction

- Teach new material to the fastest moving groups.
- This may be done whole group where everyone listens and does activities together, or may be done in small groups based upon student needs.
- After new material is introduced, students may pick up in their groups and continue working.



# Grading

- Grade as you normally would.
- When students have not completed assignments, do not put a grade in the grade book for them.
- Once the assignment or assessment has been completed, a grade may be entered.
- I only grade what students show me they KNOW and what they can DO!
- Show them their grades daily.





# Grading

- Variety of papers to grade nightly.
- Easy to get papers graded & returned quickly.
- Must keep tests and quizzes after going over them.
- Create multiple tests/assessments.



# Grading

- Re-test grade is what student makes.
- The object is to learn.
- Only failures may re-take.
- Debatable philosophy.



# Homework

- I do not grade most homework.
- Answers are posted on the wall & students self-reflect.
- Homework should be about practice and checking for understanding.
- Homework and all other activities must be completed before students can test.



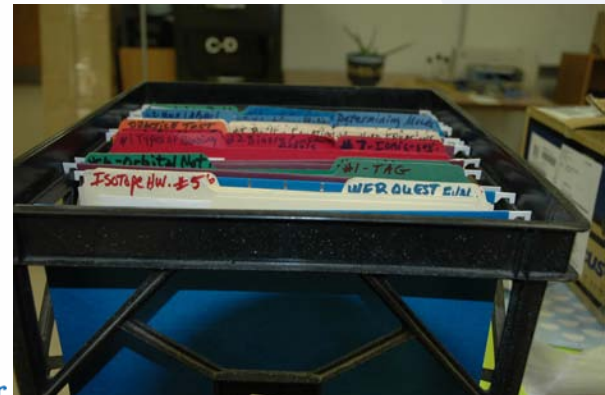
# Planning

- Huge up-front planning required.
- All units must be thought through carefully.
- Think backwards using essential questions.
- Write your objectives for the unit, then determine how you will assess them.
- Plan your teaching strategies, assignments & activities to assure students learn.



# Planning

- Have all materials ready for any new unit prepared before students begin.
- Prepare labs that can be set up at stations and can be done safely in class.
- For dangerous or difficult labs, allow the entire class to go to lab together regardless of where any particular student is.
- Re-stock daily.



# Testing in Class

- When students feel ready to test out of a unit, they let me know & I move them to a testing table.
- All activities in the unit must be completed prior to testing.
- 100% homework.
- 100% lab reports.



# Testing In Class

- When administering written tests or quizzes create testing tables or testing areas.
- The only students who are sitting at testing tables/areas are those taking an assessment.
- I have students put a “board” in front of them so I do not forget they are testing.
- If you can give students feedback immediately in class, do it.



# Lab Reports

- All labs require a lab report.
- All lab reports must be re-written until students get at least a “B”.
- Once I have found 3 mistakes on a report, I stop grading and return it for a re-write.





# Managing the Chaos

- You may have as many as six different activities occurring at any one time.
- As the teacher, you must command control of the class.
- Keep your ears/eyes attuned to the entire class at all times.
- If you hear off-task conversations, you must address it immediately.
- Let students know “all conversations must be about science”.



# Managing the Chaos

- Wean students away from depending upon you for everything. (Ask 3 before you ask me)
- When you can not get to a table to help a student, you have “experts” all around you in the form of students who have passed those units.
- Take advantage of Vygotsky’s zone of proximal development.



# Teacher's Role

- Introduce new material using engaging strategies.
- After new material, students begin to work at their specific tasks.
- Teacher as coach.
- You are free to sit at individual tables and help students.
- Students will ask you questions at a table who would never speak up in front of the class.



# Attendance

- When students are absent, it does not matter.
- They pick up where they left off.
- If they are too far behind, they must spend some extra time with the teacher.
- In urban schools, attendance & keeping up is an issue.



# Contacts

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# Implementation Activities

## Practice the Model

- Give audience an assessment on measurement.
- Everyone who passes it will move to specified locations.
- Everyone who fails it will move to other locations.
- The passing group & failing group will be taught new material.
- After the instruction, the passing group works on their own following the unit objectives.



# Implementation Activities

- I re-teach the failed group & they re-test.
- If they pass, they are re-grouped with the other students.
- Practice is conducted and the “audience” checks their own work on the wall.
- When they are ready to test, they let me know.



# Flexible Grouping Model

