

The Two Dimensions of Positive Interdependence



Positive Interdependence is a powerful principle. **Putting positive interdependence in place can make the difference between success and failure in the classroom.** By understanding positive interdependence and how to apply its power, we can improve class climate, bolster learning, and develop our students' interpersonal skills. Positive interdependence promotes a cooperative and caring learning community in which students work together, are supportive, and encourage each other to learn and succeed. Negative interdependence creates an unfriendly, competitive, or even hostile learning environment in which classmates are at odds with each other. **Positive interdependence encourages participation and teamwork** in the classroom and prepares

students for the modern workplace where ability to work well with others is the single most important employability skill. Despite the power of positive interdependence to improve many educational outcomes—knowingly or not—many teachers create situations of negative interdependence. Understanding positive interdependence gives us the power to make learning more enjoyable and effective.

What is Positive Interdependence?

Positive interdependence has two dimensions: one related to the word “positive” and the other related to the word “interdependence.” **The word *positive* refers to a positive correlation of student outcomes; the word *interdependence* refers to situations in which students need the help of their classmates.** Having a positive correlation among outcomes puts students on the same side; they encourage and help each other. Interdependence goes a step further and makes the contribution of one necessary for the success of another, so students need each other to do well.

Dimension 1: Positive Correlation of Outcomes

The word “positive” in the phrase “positive interdependence” has its origin in studies of the effects of situations in which there is a positive or negative correlation of outcomes. A positive correlation exists when outcomes go up or down together. To understand the notion of a positive correlation of outcomes, think of two mountain climbers tethered together. One is below the other. If the climber above gets a good grip and advances, it allows her to better help the climber below — gains for one result in gains for the other. If the climber below advances, it makes the job of the climber above easier.

Positive correlation does not refer to positive outcomes; it refers to the relation among outcomes. This is a source of confusion for some educators who confuse “positive correlation” with “positive outcomes.” In fact, negative outcomes may be an example of a positive correlation. For example, in our example of the tethered mountain climbers, if either slips, they both lose. **To determine if there is a positive correlation, the question is not whether outcomes are positive but rather whether outcomes go up or down together.**



This is what we mean when we say outcomes are positively correlated — they are tethered; they go up or down together. Because their outcomes are positively correlated the climbers experience themselves as the same side; each hopes for the gains of the other. A positive correlation creates cooperation.

A negative correlation exists when our outcomes go up or down in opposite directions. For example, if the two mountain climbers were racing to the top, advances by one decrease the probability of a win for the other. They are on opposite sides and do not hope for the gains of the other. A negative correlation creates competition.

Understanding and analysing for positive interdependence is very helpful in understanding classroom dynamics. Whenever we set students in a situation in which there is a positive correlation of outcomes (your doing well helps us both finish our task or reach our goal), they encourage each other to do well and readily coach and help each other. **Students are friendlier, caring, and the overall classroom tone is enhanced.** Students feel their classmates are on their side. Conversely, a negative correlation leads to competition; students feel pitted against their classmates. The result: less peer encouragement and peer tutoring.

Let's contrast situations of negative and positive correlation of outcomes as they play out in classrooms:

Negative Correlation of Outcomes: Example 1

We grade on a curve and predetermine there will be only four A's in the class. Two students are both hovering between an A and a B in the class. Student 1 hopes Student 2 didn't study, has a bad day, or for some reason scores poorly. Why? **Without intending we have set students against each other:** failure of one is potential success for the other; success of one diminishes the likelihood of success for the other. We have set up a situation of negative interdependence. Students in that class will not encourage and help each other. They actually set up peer norms against achievement, calling the high achiever a "teacher's pet," "brown-noser," "geek," or "nerd." The high achiever decreases the chances of the success of others so students develop norms against achievement.

Negative Correlation of Outcomes: Example 2

We visit a primary classroom. The teacher asks a question of her class. A handful of students wave their hands to be called on. We call on one. With deflated body language and facial expressions, the others lower their hands. They often register a mini protest, making sounds of disappointment. **If the student who was called on begins to miss, the others become animated, raising their hands, happy to have a second chance to be called on.** Again, without intending, we have set up a situation of negative interdependence. Students actually hope for the failure of their classmate — it is the only way they will have an opportunity to shine. The success of one means the failure of the others in this little competition for teacher attention and approval.

In situations of negative interdependence, peer norms turn against achievement and students actually fear appearing too smart. Being helpful to a classmate is not only a distraction, but it also hurts a student's chance of success. Situations of negative interdependence are responsible for some of the biggest problems in classrooms. Students who feel they cannot win in the competitive game find it easier to rationalise than admit



their feelings. Rather than, “I don’t want to let people know I can’t do well,” they say, “This task is dumb and I won’t do it.” Negative interdependence thus creates a subclass of losers in the competitive game, disaffected students who often become discipline problems. In contrast, if we place students in situations where a contribution of one helps another, peer norms support achievement. Students who don’t know how to do something do not hide that, they ask for help and help is readily forthcoming. The result: with plenty of mutual support, encouragement, and tutoring students who otherwise would be within-class drop-outs are now playing the game and doing well.

Let’s take two examples of a positive correlation for achievement:

Positive Correlation of Outcomes: Example 1

Students are placed in pairs and are instructed to take turns writing their responses to review questions. **Each student hopes the other knows the content; that will help them both reach their goal of creating a good list.** The contribution of each helps the other. When consistently placed in situations where there is a positive correlation among outcomes, students hope their classmates have mastered the content. Placing student in situations where there is a positive correlation of outcomes releases two powerful forces: peer encouraging and peer tutoring.

Positive Correlation of Outcomes: Example 2

Students are placed on teams and their team goal is to make a graphic organizer of the unit content. Their organizer will be posted in the class with their names on it. One student comes up with a good idea. How do the other students feel? They are pleased because the contribution of one helps the others achieve their goal — an organizer that helps them conceptualize the content and which makes them proud when posted for their classmates to see. When we place students in situations where the contribution of one helps the others, students feel themselves to be on the same side and encourage and help each other do well. Doing well brings students positive peer recognition. **A student who might have been called a “teacher’s pet” in the competitive classroom, in the cooperative classroom becomes a leader appreciated by fellow classmates.**

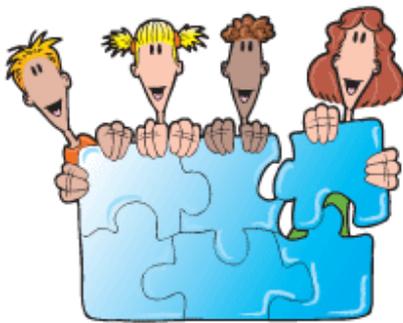
Situation	Correlation	Outcome
Grade on a Curve	Negative Correlation	Hoping others do poorly
Call on one student	Negative Correlation	Hoping the called on student misses
Take turns writing answers	Positive Correlation	Hoping partner knows answers
Teams make graphic organisers	Positive Correlation	Hoping teammates are creative

Positive Correlation: Necessary but not Sufficient!

A positive correlation of outcomes is not sufficient to ensure good cooperative learning. In our example of the team assigned to make a graphic organiser, not all of the conditions of true cooperative learning have been met. To ensure gains for all students the teachers has to do more than assign students a common goal. The common goal creates a positive correlation of outcomes, placing students on the same side, but it does not ensure a contribution from each student is necessary for task completion. In fact, unstructured group work is most often characterised by unequal participation and unequal learning gains. Unstructured group work often results in "hogs and logs."

A positive correlation of outcomes alone does not even mean that students will necessarily learn from each other or even work together. For example, if we tell four students in our class that they cannot work together, but that their individual test scores will be summed and posted as their team score, we create a positive correlation among their outcomes: Any student doing well will raise the team's score. The students would hope each person on their "team" did well even if they could not work together at all. A contribution by one student, helps the others reach their goal — in this case a top team score. For students to learn from each other there has to be more than merely a positive correlation of outcomes.

A positive correlation of outcomes (any contribution by one helps others) also does not mean that students need the help of others to succeed. In our mountain climber example, each climber could make it to the top on their own; they do not need the contributions of the other, but merely find the contributions of the other helpful. In our graphic organiser



example, one student in the group could have done the graphic organiser on their own. All of us have been in a group where one or a few took over and others took a free ride. The task could be completed without a contribution from each student. In the example of the pair of students answering review questions, each student in the pair could have answered independently. When there is a positive correlation among outcomes, students find the contribution of others helpful, but not necessary. **For contributions of each to be necessary for the gains of others, for students to need to work together, there has to be**

something more than just a positive correlation among outcomes — there has to be interdependence.

Dimension 2: Interdependence

The second word in the term "Positive Interdependence" has us focus on how much students need the contribution of others in order to succeed. **To create interdependence, we place students in situations in which they cannot reach their goal without the contributions of others;** the contribution of one is necessary for the success of the other.

Interdependence occurs when no one can be successful without the contributions of others; help is necessary. It is not hard to structure for interdependence. In the example of the team graphic organiser the teacher might **assign each student a different part of the task** (generating the items, generating the frame, drawing the organiser, reporting on the learning). For the team to do well, each student must do his/her part well.

Interdependence for What?

Learning situations differ in the type of interdependence they create. How much and what type of interdependence there is depends on how we structure the learning task. Let's examine Timed Pair Share as an example. In Timed Pair Share, students are in pairs and each student in turn shares with her partner for a specified amount of time while the other just listens. The structure is designed primarily to allow each student to verbalise her/his thoughts (to exercise and develop Brocca's area of the brain, encoding thoughts into words). In Timed Pair Share there is a positive correlation among outcomes: A good idea from one helps the other learn or think. Students find themselves on the same side, hoping their partner has interesting or useful ideas. There is also interdependence for task completion (the students need each other to get through the steps of the structure). There is not, however, interdependence for developing one's thinking. Students can actually complete a Timed Pair Share without listening to each other at all! We might hope that students are listening to each other and developing their ideas based on their partner's ideas, but we have not structured their interaction to ensure that will happen.

Often it can be quite sufficient to give each student an opportunity to express his or her own ideas. If however, we want them to help each other in idea development, we will have to do more than a simple Timed Pair Share. **We can easily tweak Timed Pair Share to ensure that students listen to each other and give each other useful feedback. All we have to do is include feedback response gambits.** For example, after the first person shares, depending on the content, we can ask the second person to give feedback using different response gambits, such as,



“Your best idea was....”

“Your most descriptive phrase was....”

“What I would like to know more about is....”

“Your most convincing argument was....”

“Your strongest support for your hypothesis is....”

“The most interesting part of your story was....”

By focusing not just on interdependence for task completion (getting through the steps of the structure), but also on interdependence specific types of learning, we strengthen the learning tasks we provide students.

Let's take a second example: RoundTable. In a RoundTable there is one piece of paper; the paper literally goes around the team's table. For example, each student in turn adds an item to a list the students are generating. There is a positive correlation: Students find the contributions of each helpful and so hope their teammates have good ideas. There is also interdependence for task completion: if one student refuses to contribute, the process breaks down and the task cannot be completed. There is not, however, any need among students to discuss or interact over the ideas. Each could busily add their idea without even thinking about the ideas of others.

We can easily tweak RoundTable to create more interdependence and more learning. We can use RoundTable Consensus. **In RoundTable Consensus each student in turn suggests and records an idea, but no ideas can be recorded unless all four teammates give the idea a thumbs up!** Students must all agree the idea is a good one. Because no idea can be recorded without having each student think about and evaluate the idea and because discussions result, more learning occurs. As we focus not just on creating a positive correlation among outcomes, but also on creating interdependence among students, we provide richer learning situations.

When students are interdependent, there is an interaction of ideas so students are pushed to higher levels of thinking.

Ways to Create Interdependence

There are a variety of ways to create interdependence. Match Mine creates very strong interdependence by limiting what each student can see, and by creating interdependent roles. Partners have identical game pieces and are seated on opposite sides of a barrier. One partner (The Sender) arranges her game pieces in a specific arrangement on a game board and must communicate the layout to her partner (The Receiver) in order to make a match. The students are completely interdependent; neither can have success without the contributions of the other. To succeed students must cooperate and communicate well.

The ways to create interdependence include:

- **Turn taking (RallyRobin)**
- **Assigning different necessary roles to each student (Sage-N-Scribe)**
- **Assigning different access to materials to each student (Pair Projects in which one has the scissors and another the glue)**
- **Providing different essential information to each student (Jigsaw Problem Solving)**
- **Limiting the time so that no one person can complete the task alone (Brainstorming)**
- **Increasing the task difficulty so no one person can complete the task alone (Team Project requiring coordination of efforts)**
- **Designing tasks with cumulative contributions (RoundRobin Storytelling: Each teammate in turn adds a sentence to the team story)**
- **Having students teach each other (Telephone, Partners, Jigsaw)**
- **Assigning “mini-topics” for a group investigation/presentation (Co-op Co-op)**

Positive Interdependence: A Two-Dimensional Concept

Positive Interdependence has two dimensions: 1) Is the contribution of one *helpful* to others? 2) Is the contribution of one *necessary* for the success of others? If a contribution is helpful, we have a positive correlation of outcomes. If a contribution is necessary, we have interdependence. To remind ourselves of the two dimensions of positive interdependence we need simply to ask,

Is a contribution by one helpful to others? Is it necessary?

The word *helpful* has us focus on whether or not there is a positive correlation among outcomes; the word *necessary* has us focus on whether or not there is interdependence.

Positive Interdependence	
Dimension	Critical Question
Positive Correlation of Outcomes	Are contributions helpful?
Interdependence	Are contributions necessary?

There are many times we can accomplish our learning goal without having a contribution be both helpful and necessary. For example, we may want students to generate an oral list to review academic content. We might

from the other in coming up with ideas. Although help is necessary to complete the steps of the structure, none is needed for the academic task and the students do not necessarily even learn from each other. Nevertheless, the structure may be just what we want to create active engagement as students review the content. It is useful for us, however, to examine our learning tasks asking if we have structured for both dimensions of positive interdependence. Often, with a small tweak we can put both dimensions of positive interdependence in place and create deeper learning.

Applying the Power of Positive Interdependence

Unleashing the power of positive interdependence, we can more consistently create an improved class climate, boost academic achievement, improve thinking skills, and foster employability skills.

Class Climate. We can improve class climate through classbuilding, teambuilding, and Silly Sports and Goofy games. Class climate is improved most if contributions from each student are both helpful and necessary for task completion.

Teambuilding. We have students create a team banner, giving them a variety of materials. Without carefully structuring the activity we might end up with one or two students doing the work. If instead we structure so success depends on an important contribution from each student, the students will bond more and feel themselves all to be of more equal status. By structuring for strong interdependence, the aim of teambuilding is better accomplished. [Click here for Kagan's bestselling book on teambuilding.](#)

Classbuilding. For classbuilding we have the class design and complete a school improvement project. We could allow volunteers in the class become a committee to design the project and select volunteers to contribute, or we could structure so a contribution by each student is necessary to complete the project. The aim of classbuilding is better accomplished when a contribution by each is both helpful and necessary. [Click here for Kagan's bestselling book on classbuilding.](#)



Silly Sports. There are over 200 Silly Sports and Goofy Games. Many of the games ensure that a contribution by each participant is both helpful and necessary, producing positive peer relations. Among the many Silly Sports and Goofy Games that structure for contributions by each student are Pair and Square Balances, Knots, Pull-Up Challenges, Body English, Balloon Carry, People Mountains, Imaginary Toss, Mirror Mirror. [Click here for Kagan's bestselling book on Silly Sports.](#)

Academic Achievement

When we apply positive interdependence to academic achievement, we release two powerful forces: Peer encouragement and peer tutoring. If I know your learning or your contribution will help me learn or accomplish my goal, I will encourage you to learn or contribute and will help you do so.

Sage-N-Scribe is an excellent example of a structure designed to create strong interdependence. One student describes how to solve a problem while the other records the solution. The contribution of each is needed by the other to accomplish the goal. Students experience themselves on the same side working together toward a common goal of solving the problems.

There are dozens of cooperative learning structures designed to create strong positive interdependence for academic achievement including, Jigsaw Problem Solving, Pairs Compare, Circle the Sage, Partners, and Same Number Group Presentation.

Thinking Skills

Each of us maintains our own internal database and our own internal way of organizing that data until something from the outside challenges it. When confronted with either new data or a new way of organising the data, we must assimilate and/or accommodate: we must either add the new data to our usual way of organising the data, or we rethink how best to reorganise data.

Situations of positive interdependence are excellent sources of stimulation for thinking and rethinking. A simple example is RoundTable Consensus. Each teammate in turn suggests an idea, but no ideas can be recorded unless all teammates agree. In the process of negotiating agreement, students are forced to add to their internal database of ideas and to rethink their conceptual frameworks.

Debate, Partners, and Jigsaw variations are examples of structures in which each person on a team becomes an expert in a different topic, yet through interdependence they each master all parts. A contribution by each is both helpful and necessary for the success of all of the others.

Employability Skills

Situations of strong interdependence are preparation for the work world of the future. As high technology is used to produce even higher technology the workplace becomes more interdependent. Teams have become the norm in the workplace. As our students enter the work-world they will become members of various work teams and their success will depend on their ability to coordinate their efforts with others. How can they possibly become prepared for that world if they have not experienced situations in which the contributions of each are both helpful and necessary? **By experiencing in school a wide range of situations that create positive interdependence, our students practice and acquire the teamwork and interpersonal skills that are in high demand in the workplace.** They are better prepared for success. Teamwork skills are employability skills. Students learn to listen, take the role of the other, respect others, and meet their responsibilities to the group.



Toward a Better World

As we create situations of positive interdependence for our students, we prepare them to be better community members, better students, better thinkers, better employers, and better employees. **When students experience situations of positive interdependence often enough, their social orientation is transformed from an “against others” to a “with others” orientation.** When those students encounter a new person, they are less likely to ask, “Who is up and who is down; who is better, who is worse?” They are more likely to ask, “How can we work together; how can we enhance each other’s outcomes?” And at that point, we have created a better world.

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