**In the Classroom 74**
# Additive Grading: Increase Engagement With This Gaming Hack

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**Stan Skrabut:** Well, thanks for taking the time to listen to this podcast, it certainly means a lot. I know you could be doing other things, and you probably are, but you're also hanging out with me and I really appreciate it. Right now, in Western New York, it is a beautiful sunny day. Pool is ready, I may even take a dip in it a little bit later but absolutely gorgeous day.

This week we're going to explore a grading system that I commonly use in my classroom; it's called additive grading. What is additive grading? Well, basically, students start at zero and they have nowhere else to go but up. They never lose points in the class, they're always adding points to get to the grade that they desire. Let's take a little bit of a deep dive in this whole concept of additive grading.

Typical grading approach. According to Rob Stellar in his article, What Is *Additive Grading*? *Increasing Student Engagement By Grading Backwards,* which I have a link in the show notes, the typical grading system in schools has students starting off with 100% average which slowly gets lower and lower as the student receives anything less than a hundred on any assignment tests, what have you? This system is subtractive. As a student achieves anything less than perfect, they are punished with a decrease in score. A subtractive grading system punishes his students for taking risks and stifles creativity. That comes from Rob Stellar.

I totally agree that have you ever been in a class and students know their grade is starting to dip and they ask you, what could they do extra to increase their grade? Well, I never have because I never set up the conditions where they needed to ask me about extra credit. Everything is baked in my class in order for them to add and keep increasing their grade or their score until they get the grade that they want.

With subtractive grading, students can only go down then they need extra points in order to raise their grade. They want to do something extra in order to get a higher grade. The additive grading is the other way around; students start at zero, the only place they go is up.

This is my grading approach. I use this approach called additive grading; it's also known as backward grading or reverse grading. In order for students to attain the grade they desire, they have to accumulate points. Depending on what the class is, I know one particular class they have to get 1,500 points. But I have like 2,300 points available so they get to pick and choose which points they want.

I picked this strategy up from the book, *The Multiplayer Classroom*, by Lee Sheldon, and I have a link to that in the show notes also, and I have used this strategy for entire classes as well as different segments of the class. I will use it typically for discussions or attendance, hands-on activities, those types of things, and like I said, it could be for the whole class that they have to attain so many points. They get to choose. If they don't want to attend the class face to face, it's up to them but I will, normally, if they attend the class, I will give them points. If they attend all the classes, I give them extra points. The same with discussion. My discussions typically run a week. They can earn points for that week up to a certain amount of points and then if they don't want to participate, that's up to them and if they participate in all the discussions, they get extra points.

I've baked a lot of these things into my classes and the feedback that I get on my course reviews has been very positive. Students tend to like how I've set up the courses. It allows them a lot of flexibility to work the course into their schedule but for undergraduate courses, especially first-year students, there's a little bit more hand-holding and it's not something that I like to do but I find it necessary to help them develop into these self-directed learners. I always try to play with that a little bit too and I talked about that in a previous episode and I will make sure that once again, I link that into the show notes.

My hands-on activities leverage gamification elements, game-based elements. The activities are grouped into clusters. Students earn additional points when they complete a cluster.

Each of the grading activities is a go no go criteria which means once a student successfully masters it, they get the points. If they have not, I provide feedback, kick it back, and students are free to resubmit but if they get a zero on the assignment, typically it's either zero or all points, I don't provide anything in between. It's either you mastered it, you got to the level that I want you to or not. I will award points based on that. If they get zero points, their score does not ever go down. It just did not go up. All they have to do is resubmit, improve upon the product with the feedback that I provided, and they will move up.

This is very much in line with specification grading which I talked about in Episode ITC 31. Go check that out and I think it's a better way to grade because they have to get to a satisfactory level before they get the points. They have to master the item that you want them to work on before they get the points. There's no sense pushing a student forward if they haven't mastered that concept. With this additive grading, students have to earn X amount of points in order to get to the coveted A or a hundred percent. But maybe they don't want to earn the full A maybe they're satisfied with a C. We have students that are satisfied to get the C because it's not in their major, a lot of other reasons and that's fine, but this tells them what the cutoff is. Where they can get the score and then if they want, they can go pursue other things. That's entirely up to them.

When I use additive grading for the entire class, everything they do, counts to the final grade, whether they attend or not, whether they participate in discussions or not, whether they do the activities or not, everything is included in those points. I may

set a bar at 2000 points or 2 million points or whatever I want and they just have to keep working in order to get that. Then it's up to you to figure out what those points, how much that's worth to your class. For example, if attendance is important to you, make it painful. Make it 10% or 20% of that total points and then divvy them up accordingly to how many weeks that you have in a class. If my hands-on activities tend to be more valuable, I think they're more valuable exercises, that block of instruction, I make it worth a lot more in the total point design.

The big thing is, is everything that they do is they are going forward. Because there is regular and constant positive feedback, students tend to repeat this positive performance. Grad students that I worked with, students who are not used to being unsuccessful, are having no problem being unsuccessful in my class. That they will try an activity, they don't meet the standards, I kick it back. They will go fix it, sometimes multiple times, and those are the things that they actually noted. In the feedback, they would talk about those things where they struggled but in the end, they learned it and they were very appreciative that they just didn't get moved on in spite of the fact that they didn't know something.

In my classes, I have two deadlines. For discussions, the discussions are only open for a week as far as earning points; they can discuss longer if they want but just for earning points, it's only open for a week. For the activities or as I call them quests, the last day of class is the deadline. With 15 weeks to complete work, I do not accept submissions past the deadline. I make this very clear from the beginning. I keep tabs on them and I let them know what their progress is throughout the class but when it comes to the last day of class, that's it, I cut it off then. I tell them to take into account Murphy's law. The fact that somebody will get ill, the fact that somebody may pass away, the fact that they may get stranded in the wild winters of Wyoming. Whatever it is, I let them know to plan for it and build their schedule accordingly. So far, this really hasn't been a problem.

This whole idea of additive grading is really tied to gamification elements. The students need to master the concepts before advancing to higher elements and you can actually tie this, do adaptive learning, to control access to different parts of your course until students have mastered certain things. I talk a little bit more about this in Episode ITC 38, go check that out.

Games also encourage risk-taking. When you fail in a game, you get to try over. If you want the points, you can try different strategies or approaches in order to get the points but if you only get one shot at it, then you take a more cautious approach. I don't think learning happens when you just take the cautious approach, I think learning happens when you get to really get your hands dirty and get messy and work on it from there. The fact that failing is an essential part of learning; when you do not get something right, your brain goes crazy, it gets very active, it wants to know why, it wants to know how to fix that problem.

We need to leverage this part of the brain when it's doing that by allowing them to resubmit. To gain mastery requires practice. This idea of additive grading, if you are strict about it, if you say, "If you don't meet this standard, I'm going to just kick it back and give you feedback," encourages attempts and reattempts when things are not

going to plan. One submission assignments do not encourage that type of learning, students would just set it side and move on. Instead, if you say, "No, this is not successful," they have to go back and work on it, if they choose, to fix it, in order to get that appropriate grade. That's one of the reasons I like it.

The really cool thing about additive grading is, if they get a failing grade, if they get a zero, it does nothing to their grade. From this article, *Gamifying your Teaching: Guidelines for Integrating Gameful Learning in the Classroom,* they say, "The differences that unlike with traditional grading in which the student's overall grade would be negatively impacted by receiving a low score on an individual assignment, with additive grading the result is students don't benefit as much as they might have by earning more points on the individual assignment. In essence, their grade doesn't go down because of a low score, it just fails to go up and make progress towards the level grade they want to work towards in the class."

They don't get penalized but they don't advance if they get a failing grade. They just get an opportunity to redo it in order to move up. Really powerful ways. If you think about gaming, I play a lot of video games, there's times where things don't go well so I get a new life and try it again. But my score doesn't go down, I keep moving up, I keep leveling up but sometimes I just have to do it over and over until I find the secret in order to be successful. Part of that, for some of the games I play, requires going on the internet and seeing strategies that other people have put into play in order to allow me to get past that particular obstacle.

Here are ways that I keep track of this additive grading, this is ways that I try to reinforce this positive performance. I used a variety of different gaming strategies to do this but here is a few that I typically use.

One is a leaderboard. A leaderboard allows students to see where they are in relationship to the rest of the class. Everybody is moving forward, advancing on points. When I update the points, I update the grade book, it will update the leaderboard and it shows what the relationship is. Naturally, they don't see the names of the other students, they just know where they sit in relation. This can be motivating or it can be not motivating. If you have done nothing in the class it could be a little overwhelming if you see your classmates well up in front. But if you're in the middle of the pack and you see somebody just in front of you, you're probably trying to figure out how to get some more points just to move up the leaderboard a little bit. There can be some positive aspects to this.

Another strategy I use is called a burndown chart. A burndown chart is a strategy that I use that comes from software development, specifically Scrum. Scrum is a methodology for program development allowing you to keep on task to do the coding you need in order for the product to come out on time. Our classes are also time-based so they need to earn X amount of points by the time they finish a class. What I do is I use a burndown chart. If five students need 1,500 points and they have to, basically, work their way to the last day of class so that each one of those earn 1,500 points, I will start the burndown chart with 7,500 points, that's 5 * 15, the points that they need. Then the next week it goes down a certain amount, the next week it'll continue down until the last day. As it burn down, everybody should be at zero. In

other words, the difference between the points that they acquired and the points that they need should result in zero, and so this idea of a burndown chart.

Very successful in this last class, everybody was tracking on it. We got to a point about midway through the term where they were at least two weeks ahead on the burndown chart and they stayed that way. All of them had earned all the points they needed with still two weeks to go. For me that was nice to see. This is nice because I will include it in the email messages I send every week and I will have a link to that burndown chart so they can see where their classes as a collective in relationship to where should be and they get a nice visual about that.

Speaking of email messages, each week I will send a message to the class usually summarizing what happened in the class. Then I also let the students know the number of points that they should have accumulated at a certain time. If we're working towards 1,500 points, five weeks into it, they should have accumulated so many points, and I'll let them know that. Then I will also let them know what the range is, what the lowest number of points in the class, the highest number of points, and then also the average. They can look at their points and assess where they are in that grouping. I do this once a week.

Then finally, ways that I move this thing forward in a positive is this idea of resubmit. Students can resubmit activities, quests, assignments, what have you, over and over and over again until they earn the points. In those cases where I do have a deadline, sometimes we're working on a program or a paper and I'm looking for multiple submissions, I do have deadlines there. I treat those little differently, but they can turn in papers before the due date and I will look at them and I will add my feedback and send them back, all the way up until the deadline. Not many students actually take me up on this. It is a strategy that I have used and it's worked out quite well. I'm a huge fan of redoing work or having students redo work until they get it right. I think this really takes me back to my air force days on this competency based learning, that you either knew it and you can do it unsupervised or you could not. That's how I leverage that.

This was a little look at adaptive grading, really starting at zero and everything they do adds points until they get to a certain level that you want in their class. You can work out the percentages to decide what's an A, what's a B, those things, based on the number of points that you have available in your class, that's certainly available. I think it's a positive way to go because it's all additive and you should check it out. Before I let you go, here is a quick plug for my book.