



An Educator's Guide To DimensionM

Thank you for being a part of Tabula Digita's DimensionM educational gaming community. We know that as your students use our products you will experience the same excitement that we do. There's nothing like watching your students get fully engaged and wanting to learn more!

This guide is designed to help you understand a bit more about how DimensionM products can be used with and by your students. This information is a result of working closely with educators across the nation. We also talked to a lot of students to see what it was that moved them to be so engaged. As with all things learning, this is a work in progress and by no means is this complete. In fact, it will likely never be complete. There are always new ideas and great stories, and we encourage everyone to share those with us so we can share with the rest of the DimensionM community and all students and educators may benefit.

Thanks again, and happy gaming!

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WORKING TOWARDS SUCCESS

As you'll quickly discover, students love DimensionM software. They enjoy using it in school and at home, and they will ask to use it more. But there are a few important things that you can do to ensure that your students get the most out of DimensionM. This Guide addresses many of these things in depth, but we'll start off with a few highlights to keep in mind.

Get Going!

The hardest part of using any new tool is just starting. You have to set up users, get the software installed and ensure everything is working properly, and find time to actually get the students on the computers. And, if you're a non-gamer, you might be weary of having your students work with a tool that you're not excellent at. Fair enough. We understand. But here's the thing: once you get your students going you'll never get them to stop. They will know how to play (or they'll figure it out) and they'll keep wanting to come back for more. In other words, the initial effort will be well worth it! And, for the most part, once all the set-up is done you won't have to worry about any of that stuff again. From there on in it will be all about taking advantage of the opportunities you will find when your students are excited about and engaged with math!

Have a Plan

No matter how you ultimately use DimensionM software, it should be a part of a comprehensive educational plan. The software is not just for students in their free time; it is a tool that you, as an educator, should leverage as students engagement increases. A few things to think about:

- When and how you are introducing the games to your students
- When students can use the games on a regular basis
- How much class time you can dedicate to the games
- What skills are you covering in class, and how those skills align to the games
- Schedule competitions and tournaments, and let students know about them
- Have students understand the plan and how DimensionM factors in to everything else

Set Goals

Goals are important. You set goals for your students all the time, and they set goals for themselves. The gaming world is really all about reaching the next goal, be it a higher score, finding a hidden treasure, getting to the next level, beating an opposing team or player or beating your own high score. Some goals to consider as you integrate DimensionM into your students' educational plans:

- By when will you have all of your student's usernames and passwords created?
- By when will your students all have played for the first time?
- How much time do you expect your students to spend on the games, or how many games should each student have played, after one month?
- How about for the first semester and the full year?
- As students play the games, what academic results do you expect to follow?

Share Best Practices and Use Models

Work with other teachers in your school and district to understand how their students use DimensionM and how these educators leverage that engagement into increased learning.

USE MODELS

There are a number of ways to use DimensionM with your students. In broad strokes, these can be described as Full Integration, Independent Curriculum and Competition. These use models are not mutually exclusive and can be used in different ways and with different students depending on the wide-variety situations educators face everyday.

Full Integration

In the full integration model, teachers align all of the DimensionM games' skills to their curriculum and lesson plans. The idea here is not to abandon traditional lessons. Far from it, in fact. Instead, the games are used as a supplemental tool to raise the level of student engagement so, when teachers are working through the traditional lessons students are that much more motivated to ask questions and learn. In actual classroom practice this can take many forms, but the prep and general set up would be as follows:

Using the resources found on the DimensionM website or on the documents that align the DimensionM games game back to state standards, identify the skills that are covered by a particular traditional lesson. Note that all skills in the DimensionM Multiplayer game can be played in all missions. This allows for a lot of variety in game play for students, which permits for new experiences but still more time on task for a particular skill.

The actual manner in which the game missions are done by students can vary, depending on time, resources and individual teachers' approaches. Generally, though, a teacher would start as she or he would start any lesson: Introducing the skill and starting to familiarize students with the various concepts and vocabulary at hand. After the initial instruction it would be time to introduce the game.

The first step in game play may be, if the teacher chooses, a group approach, or the all-class game demo. This decision should be driven by pedagogical factors, such as how prepared the teacher determines the students are to tackle the skill on their own if they go off and start to play their own mission. In addition, logistical issues may also drive this. Some things to be considered:

- How proficient does the teacher judge his or her students to be at this early point? If more proficient, then perhaps less time on the game is required, or the students might all play together as a class activity.
- How much time is there to cover this particular topic? If time is short, then the students might all play together as a class activity or be told from the outset that they have only *X* amount of time on that particular mission.
- How much time is there to use available computers? Again, if time is short, then the students might all play together as a class activity or be told from the outset that they have only *X* amount of time on that particular mission.
- How many computers are available? If only a few, but if there's enough time, then students should be cycled through the available machines. Otherwise, consider again that the class play together as a group.

In the group approach, the teacher projects the game on a screen and the mission (and its math) is introduced to all the students at once. Either the teacher can 'drive' (that is, play the game) for everyone to see, or one student can be selected to demonstrate for the class. In either case, the teacher or the student should have had an opportunity to

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try the game out beforehand so there's some familiarity in the movements and the mission as the demonstration progresses.

As the teacher or student goes through the mission have him/her stop at appropriate 'teachable moments' and work with the whole class to make the appropriate math decisions and calculations. These are opportunities to see what choices students make and query them as to why they would make those decisions. It's a chance to engage everyone at the same time and to be very methodical as the game content is related back to the instructional objectives.

After some group play – just enough to get the students involved and thinking about the skills in the right way, or generally about 15 – 25 minutes - the students should be directed to their own machines so they can give it a try themselves. Each student should be given their username and password, placed at a computer (perhaps, when possible, strategically seated next to a student who shows more proficiency in the particular skill so they may work together), and told which game and mission to play. As the students are playing, the teacher would walk around the room observing students as they tackle the problems at hand, noting how everyone is doing and stepping in as necessary. Students should be encouraged to jot down the math areas that they had trouble with as they progress. Mission time can vary for Meltdown III, Tower Storm and Swarm III in the Multiplayer – 5 to 20 minutes, depending on the parameters set up in the game. For Obstacle Course III in the Multiplayer, the student is competing against the clock, but generally will be able to complete a mission in 15 – 20 minutes, though this will vary depending on individual students' math and gaming proficiency. For the Single Player missions, students will need between 15 and 45 minutes. Again, this depends on individual students' math and gaming proficiency levels.

The desired outcome from the game play is for the students to not only have a better understanding of the math at hand, but to also want to talk about it more. They will want to learn about how to increase their skill and understanding so they can go back and beat their score, or beat their friend's score. Ideally, they'll be talking amongst themselves about how to do various things (which, in many cases, actually be conversations about how to do the math), and they'll be in a perfect position for the teacher to return to the traditional lesson plan with students who are anxious to talk and learn more about that topic.

During the review period, the teacher should solicit from the students the problems that they had during the game, or point out a few that s/he observed while the students were playing. This provides a very tangible and concrete reason for pursuing discussion on the skill. With the DimensionM Multiplayer game, students may save and print their game reports, so students and teachers have access to the actual items that students worked on. This will permit students to re-work problems they got wrong with a teacher's guidance. Teachers will also have access to a set of complete reports that show a variety of data, including aggregate data on student performance on various skills, and game play data including the number of answers attempted for each skill in a game, the number of question right and wrong, and the overall score in a game, among other data points.

Independent Curriculum

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In this scenario, students are given free reign in deciding what missions to play during the program (that is, what math topics they'll cover in what order). This does not, however, mean that there shouldn't be some rules governing students' approach to the games.

For starters, students should develop their own game plan. That is, they should present to the teacher which skills they are going to play and why. Missions all cover the same math skills, so any mission is possible, and students may simply enjoy certain missions more than others (if they like team play, for instance, then Swarm III might be preferred). Students' game plans should be driven a mix of math that they are already confident in and math that will be more challenging for them, the teacher should work with the students to find that mix. The goal should be to excel at each of the various skills that are attempted. This may actually mean playing certain missions more than once. In fact, students will generally want to play each mission many times so they can beat their previous high score. And beating their previous high score, of course, means answering more math items correctly. Certainly, too, students' game plans should align with their own academic goals. Are there known areas that they have had trouble with in the past? Then these are great areas to work on during in the games.

As the students work independently the teacher will still be monitoring their progress. Classroom observations and, when required, interventions as the students are playing, as well as looking at game reports in the Educator Portal, will give teachers a good idea about how the students are doing. Students should be encouraged to write down their experiences with each mission and share that experience with the teacher (plus, of course, it gives the student the opportunity to reflect on the experience and what she or he has learned). This can be a more formal assignment, such as writing their own game guide (or, in gamer language, a 'cheat code') or keeping a journal, or more informal and just jotting down notes as more difficult questions are encountered. These notes may be made as annotations on the saved game reports. Each of these approaches will give the teacher an excellent opportunity to monitor the students' progress while still permitting the students the space to proceed on their own and at their own pace.

Competition

In any scenario, or even among students who are engaged in different models and across classes and schools, the spirit of competition can be a terrific motivator for students and can foster a great deal of engagement. The keys to setting up competitions are the establishment of the rules and the goal or prize. Competitions may be set up on any scale: teachers can run competitions with a single class of students, or a teacher may have (for example) her first period class play against her third period class, or a teacher may challenge another teacher's class, and this can run up to a school-wide tournament. To take it a step further, a teacher in one school may challenge a teacher in another school to a competition, or two entire schools may compete. Or there can be a district-wide tournament. Or, whole districts may challenge other districts to a competition. The point is, any type of competition is entirely scalable and they can be as big, or as small, as you want. No matter what the size there are a few basic models in which the competition may fall, and two of the more popular models are listed here. These are described on the classroom level, but the concepts may be applied school-wide, district-wide, or even nation-wide.

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- **High Score:** Simply stated, in this model students vie for either the highest score in a single game or in a set of games over a period of time. In many ways this is the easiest format to set up since it does not require students to necessarily play against one another and it does not require teams. Instead, students are told what games and missions they should play (or, most simply, they are instructed to play *any* games and missions) and the highest score or set of scores wins. To facilitate, teachers just have to use the Educator Portal's reporting tools to look up and aggregate student scores. It may also be a good idea to set a time limit. In other words, the student with the best score (or, again, total from a set of scores) in a one-week (or one month, etc.) period wins.
- **Team Competition:** In this scenario, the teacher sets up groups of students in teams and teams compete. This is a tremendous opportunity for teachers to group students together in a way that is smart and advances learning in the classroom. Students who are more proficient in a given skill may be grouped with students who are less proficient, for example. This will provide balance to the teams – the competitions that are the most exciting are those with teams that are roughly equal in ability – and, even more importantly, this will get the more proficient students helping the less proficient students. This is really a form of collaborative learning or peer tutoring, but in a game-based format the students will really just view it as playing together. Or, in the Multiplayer game, in an 'Open Curriculum' game server, students may all work on different types of skills. This will allow for that much more focus on individual students' academic needs, even in a team-based gaming environment. Team-based competition can itself at least two distinct forms:
 - **Asynchronous Competition:** Here, students may be told that only scores on a particular mission covering a particular skill count, and therefore the teacher adds up all student scores from either designated or student-selected missions over a period of time. In other words, this is just like the 'High Score' scenario but a number of students (and a team can, in this scenario, have any number of players) combine their scores in the quest for victory.
 - **Synchronous Competition:** In this scenario the Multiplayer missions are used and teams compete head-to-head. A teacher places students on a number of teams and a round-robin tournament ultimately determines the winner. In other words, the last team surviving the tournament is the champion.

In any competition teachers may choose to employ the Full Integration or Independent Curriculum models, depending on the goals. Or, teachers can mix the two up by, for example, informing students that in order to qualify for victory they must cover certain key skills and they may also play any other skill of their choosing.

Ultimately the most fun part of any competition is winning and the recognition and reward that comes with victory. One very common and popular (and, it should be added, simple) way of encouraging student engagement is to post the progress of the competition in the classroom or school in a place where students get to see their names 'in lights'. Whether it is a list of the top 10 or 20 scores in the class (and updates to that list as students compete to be in the top 10) or the round robin brackets showing each



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teams progression, students will find this all very exciting and will want to move themselves, or their teams, forward. As for prizes, they do not have to be fancy and expensive. Ipods for the winners are always great, but this is an opportunity for teachers to get creative. Maybe the top team or individual winner gets extra credit, or doesn't have to take a quiz, or they get a pass on a homework assignment one night. The bottom line is that just about any sort of recognition will motivate students to want to win, and to win students have to play well, and to play well, students have to know their math. Competitions encourage participation and game usage, and the more usage students have the more exposure they have to math topics. And that – continued exposure to math topics – is the prize for the teachers and the students (even if the latter don't always know it!).

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GAME PLAY SCENARIOS

There is a wide variety of school and extracurricular scenarios that may successfully incorporate the DimensionM game play. All of these scenarios are opportunities to increase student engagement and motivation, which ultimately leads to more exposure to and learning about math. All of the scenarios below may incorporate the Full Integration or Independent Curriculum use models as well as any type of competition. Districts, schools and individual teachers can use one, some or all scenarios depending on what is best for them and their students.

Regularly Scheduled Play

No matter what type of set-up and logistical challenges you have – and these vary widely from school to school, and even from classroom to classroom – it is important to make DimensionM a regular part of your student's learning experience. Maybe a ½ hour a day, maybe a ½ hour a week. Maybe something else. Whatever the case though, game play time for students should be integrated into an overall structure and expectations for students and other educators should be set accordingly.

Home Play

Students may download the DimensionM games for home use, and this practice can and should be strongly encouraged by teachers. The process is simple to do and the benefits are great. Imagine students who go home and, instead of spending time playing other video games that keep them from homework and other productive things, are actually voluntarily spending time learning! Remember, students actually have fun playing the games and all the while they are constantly exposed to math content. Teachers may direct and promote student home usage in a variety of ways, including assigning home play for homework or extra credit, or having home play be a part of a competition. In any case, if students know that they'll be playing the game in school then they will be highly motivated to play at home – they will not want to just play the game, but they'll also want to be *good* at the game. And being good at the game means increased proficiency in math. Practice, as they say, makes perfect.

Afterschool Programs

DimensionM games can be incorporated into a variety of afterschool programs as either a part of a more regimented supplemental curriculum (as in the Full Integration model, in a program such as SES or a mandatory afterschool session) or as a general activity in which students may partake. In either case, setting up the games on machines that are accessible to students after normal school hours can lead to students actually wanting to take part in the afterschool program and will increase attendance. Just like during the regular school day, competitions can play a key role in increasing student engagement and learning. Moreover, game play can be used as a reward for afterschool program attendance.

Before School Use

Opening up computer labs and media centers where the games are installed so students may access them prior to the first class of the day will permit students to have yet another opportunity to engage with the games (and, of course, with the games' math). Like with any other scenario this can be regimented to any extent. In any case, this is yet another opportunity for students to practice their gaming skills so they're sharp for class time.

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Clubs

Math clubs, honor societies or even new DimensionM clubs can integrate the DimensionM games game as a part of their extracurricular agenda. Club members can hold competitions, challenge other schools, or just have fun playing!

Peer Tutoring

DimensionM games are a great tool for tutors to use – just like for any other teacher. In a typical peer-tutoring scenario one more proficient math student is working with a less proficient math student. Peer tutoring with DimensionM games incorporates that basic idea but with a significant twist: instead of the involved students viewing this set-up as tutoring they are, instead, just playing together. This is a major shift in the dynamic of the relationship between the two students. The more proficient math student is still recognized for her or his math skills and ability to help other students, but because the scenario has changed to 'playing together' the less proficient student may be more receptive to this help, and may not even view it as help at all (but still get the benefit). The games motivate students who might need that extra push to get excited about math, and serve as a great lead in to or review after more in-depth and traditional tutoring.

Detention and Suspension

Clearly this is not a scenario that any student wants to be in. All too often students end up here because they've acted out in class, and all too often they've acted out because they are not engaged with the academic matters at hand and their frustration takes over. And, all too often detention and suspension periods either only exacerbate that frustration by piling on more of the same work that these students don't understand in the first place or, at worst, is a period where nothing productive at all occurs. DimensionM games for detention or suspension students can change that dynamic. Game play can show to students that learning can actually be fun and change that frustration they feel into a challenge that they want to overcome – to win the game. These students might just end up with a positive educational experience that will result in a changed attitude when they're back in the classroom.

Cross-Curricular Game Use

DimensionM games are not just for math class! One great scenario for incorporating the idea of the games outside of math class is in English class, where the games can provide a terrific source for creativity. The games, it's important to remember, are built upon a fictitious world. With the concept of a game fiction as a foundation, English teachers may have students write fictional character sketches of characters in the game. The students then are instructed to invent a story that represents their character (i.e. the character they selected to represent them in the game) as well as other characters. In other words, students can put their creative writing skills to work to provide a fictional back-story for game characters. In addition, students might be given the assignment to write short stories that tie a narrative back to various missions.

Testing

State summative testing is obviously a huge focus for schools and, as a result, much time is spent on preparing students for these assessments. DimensionM games are not test prep. They are, however, a math content-rich environment in which students are more than happy to engage. Teachers may find DimensionM games as a great



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supplement to more traditional modes of test prep. The games advance the goal of having students practice critical skills, but have the advantage of fostering a far less stressful, and therefore oftentimes much more productive and engaging learning environment. When used in conjunction with more traditional forms of test prep DimensionM games can effectively lesson the pressure associated with testing and foster a highly positive environment. In addition, game play may be used as a strong incentive and reward for students who accomplish other mandated tasks, while still providing a tremendous amount of exposure to topics that matter.

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GAMING IN THE CLASSROOM

Game Play Modes

There are a variety of ways that you can physically set up game play in your classroom. Factors such as time and equipment set-up will dictate what modes of play you might deploy, but even when time and equipment are limited you'll have some choices.

Here are some possibilities for how you might organize game play in your class:

Game Play Mode	Description
All Class Game Demo	<p>Connect the workstation to an LCD projector so everyone in the class can see the action. Then, show the game of choice to everyone at once. Either you can 'drive' (that is, play the game) for everyone to see, or you can select one student to demo for the class. In either case, make sure that you, or the student you select, have had an opportunity to try the game out beforehand so there's some familiarity in the movements and the mission as the demonstration progresses.</p> <p>This technique is great to introduce gaming basics to the class, but it's also a great tool to look at the math for each mission. As you or the student go through a particular mission, highlight the various features of the game, such as how to log into the game, how to control the avatar (your character), where to go in the game for more information, and so on. Likewise, when looking at the math, stop at appropriate 'teachable moments' and work with the whole class to make the appropriate math decisions and calculations. These are opportunities to see what choices students would make and query them as to why they would make those decisions. It's a chance to engage everyone at the same time and to be very methodical as you relate the game content back to your instructional objectives.</p>
Student Rotation	<p>Students are given time for game playing on the available machines. When one student or group of students is finished, the next student or group of students gets to go. Remember that while you may set game play time for the Multiplayer game (except Obstacle Course) you cannot with the Single Players. For the Single Players and for Obstacle Course, let the students know exactly how much time they have and then give them a five minute warning so they can wrap things up (or not start again).</p> <p>Two words: group activity. This is a chance to permit a group of students at a time to play the games while other students in class are working on other group projects.</p>
Game by Group	<p>This involves putting 3 or 4 students on each computer (any more than that and things get too crowded. One student 'drives' or plays the game, while the others help the driver with the math and what to do with the game. Be sure to cycle 'driving' responsibilities through</p>

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	the group so that everyone has an opportunity to play.
One Machine Per Student	The title says it all – everyone gets to play at the same time.

Different Game Play Modes for Different Equipment Set-ups

Computer set-ups vary from school to school, and even within many schools there are choices to be made (or situations you have to deal with). Think ahead about how to best deploy the games to all students in a way that's consistent, easily accessible and supported, and that fits in with your school's schedules and resources.

Computer Equipment Set-up	Game Play Mode Possibilities	Notes
Single Classroom Workstation	<ul style="list-style-type: none"> ➤ All Class Game Demo (Group Game Play) ➤ Student Rotation 	Group Game Play is probably best since rotating all of your students through a single work station will take a lot of time except for very small classes
Multiple Classroom Workstations (but not enough for everyone)	<ul style="list-style-type: none"> ➤ All Class Game Demo (Group Game Play) ➤ Game by Group ➤ Student Rotation 	
Laptop Cart in Classroom	<ul style="list-style-type: none"> ➤ All Class Game Demo (Group Game Play) ➤ Game by Group ➤ Student Rotation ➤ One machine for each student 	In this scenario you can, of course, have all students play at the same time. If you don't have enough laptops, or if some laptops aren't functioning, you can set up pairs of students to play together. Just make sure that each student in the pair gets equal opportunity to do the actual playing, not just helping.
Computer Lab, Library and/or Media Center access	<ul style="list-style-type: none"> ➤ All Class Game Demo (Group Game Play) ➤ Game by Group ➤ Student Rotation ➤ One machine for each student 	As with laptop carts in the classroom, all students now have an opportunity to engage in game play.
One-to-One Program	<ul style="list-style-type: none"> ➤ One machine for each student 	
Home Play	<ul style="list-style-type: none"> ➤ One machine for each student 	Students can all download the games for at-home game play. You'll be able to determine if your students are playing at home by checking reports on game play in the Educator Portal. Or, with the Multiplayer, have your students print out a report and bring it back to school the next day.

Getting Started

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Ok, so you've installed and tested all the games, uploaded all your students into the Educator Portal and assigned usernames and passwords, know when you're going to play and how you're going to organize your students (game play mode) . . . now what?

First, remember that, for the majority of your students, if you just give them their username and password and point them in the direction of the correct icon to click, then they'll pretty much need no more help with the gaming. They'll get it. Really!

Understandably, though, this free for all approach might not be the best way to keep a classroom of kids organized. Plus, you might not be entirely comfortable with the gaming elements. So, here are some methods to consider as you get up and running.

Basic Info – Have it Ready

There are a few pieces of information you'll need to get started. Namely, your students' log in information, along with what game and mission you want your students to play. The former will be covered in greater depth below. As for the latter, log into the Educator Portal for a list of your students' usernames and passwords. Don't have a log in? Ask your school administrator.

Start Small

You know those students in your class that are those reliable, helpful kids? Well, time for them to help you out! Before playing for the first time, pull a couple (three or four) of these students aside and try things out with them first. This will help you accomplish two things: First, it will take some of the pressure off of you. It's a lot easier to do something for the first time with a smaller, attentive audience. Second, you just created three or four new and enthusiastic helpers. See below.

Deputize Your Students

Remember those three or four new and enthusiastic helpers? Well, take advantage of this! Deputize these students as your official assistants as you start that first time (and maybe the second time, and third time. . .) with the whole class. They'll be happy to help, and they'll catch on to what they have to do very quickly. All you have to do is make sure that you give the proper instructions as to what game and mission to play.

Keep in mind that deputizing your students is a great way to go throughout the year, especially when using the multiplayer games. It is NOT just for getting started. As a general practice you should be putting the students in charge. You usually will have more than one multiplayer game going at a time. Have each student Multiplayer Game Leader or Captain set up games under different parameters and then assign a group of students to play with each of your Captains. By doing so, you've managed to differentiate your classroom by addressing various proficiency levels and math skills in different games.

And, as an added bonus, you've just empowered a couple of your students and put them in a position where they are the class experts. Talk about a confidence builder!

Tutorials and Demos

The very first mission in Evolver Single Player is a gaming tutorial. This will help students understand how many of the gaming aspects work (though not all – there's too

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much gaming variety). Much of this will be familiar to most of your students, but it's not a bad place to start so everyone has an opportunity to get the feel of things.

All Class Game Demo

As described above under Game Play Modes, this is a great technique for initiating game play with the whole class. This gives you the opportunity to show the games on-screen in front of the whole class and to answer any questions for the whole group at one time.

Patience is a Virtue (and Reading Directions is Pretty Virtuous Too)

Admittedly, getting students to read the directions and to patiently wait to get going is pretty tough under the best of circumstances, let alone when there's a game on the other end of all that waiting and reading. But, it's very much in each student's best interest to read the directions on the screen, listen to the voiceover (for the Single Player games) and to most definitely not keep double clicking the game icon. Try to convince your students of this – you'll all be a lot better off.

The First Time – Student Reactions

You can expect a number of reactions the first time your students play. First, you'll witness that key "aha!" moment, when your students first figure it out. They won't just figure out how to play the game – they'll also discover (as will you) that these games are very different (and very cool and fun) from the norm. Your students will also realize that the games are, in fact, games – just like they might encounter at home. Just because there's math involved won't make them any less fun.

In addition, students will naturally do a lot of experimenting the first couple of times they play. This is how video games work – gamers explore the landscape, press all the buttons, and generally just try to figure things out (even if they actually did read the directions). Really, this is all about familiarization with the game and developing ways of figuring out what the problems are (gaming problems as well as math problems) and what the strategies to solve these problems might be.

In one typical scenario for the Multiplayer game, you might see, in a game of 10 players, that 8 of the players have figured out how to goop and will find that to be great fun. The other two players, however, will figure out that if they do the math then they'll get points and that they'll win. And guess who just had even more fun? The students that won the game (i.e. those that did the math)! The 8 students will quickly figure this out and, since they want to win (everyone wants to win), they'll stop running around gooping and they'll start to do the math too.

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GAMING DYNAMICS

The DimensionM games missions present educators with a wide range of options that will enhance both the game play experience for students, and, most importantly, the learning opportunities. Here's a look at some of these dynamics and how teachers might best take advantage of them, and all of these ideas will be elaborated upon during Professional Development.

- *Setting Students Up for Success:* For the DimensionM Multiplayer missions, set up games where students of similar levels of math proficiency are playing with (e.g. on the same team) and against one another. This is a terrific opportunity for students who generally aren't particularly confident in math to become more confident. Likewise, it's an incentive for students to strive to win the game (and be the best in math) at all levels of game play, which is great for any level of math proficiency.
- *It's Not Tutoring Anymore – Partner Play:* Teachers may pair students who are more proficient in math with students who are less proficient and have them work together on a mission. In 'normal math world' this might be considered peer tutoring. But, in the gaming math world, these students are just playing together. The teacher is achieving the same goals (e.g. facilitating the transfer of knowledge from one student to another) but has managed to breakdown any of the walls and stigmas that might be attached to a more straightforward tutoring session. In addition, the tutor has the opportunity to assert her or his leadership and knowledge, and the tutee benefits in a non-threatening environment.
- *Game By Group:* This involves putting at least two, but up to even 3 or 4, students on each computer (any more than that and things get too crowded). One student 'drives' or plays the game, while the others help the driver with the math and what to do with the game. The teacher should cycle 'driving' responsibilities through the group so that everyone has an opportunity to play.
- *Teamwork:* In addition to all of the math that the students are repeatedly, and enjoyably, getting an opportunity to address, this is a terrific opportunity for the teacher to facilitate the circumstances for students to work together as a team. Teachers should encourage (not that they'll need the encouragement!) students on the same team to figure out strategies and work together to beat the other teams. For the DimensionM games played in team format, teammates should be seated to one another – this will allow them to strategize, plan, and help one another on the math.
- *Mix It Up:* Teachers should strategically seat students around the room. Strong gamers next to the weaker gamers. More proficient math students next to the less proficient math students. More introverted students next to the extroverts. Then, teachers should let the dynamics that come with video games take over. They're all looking to play better (that's another way of saying that they're all looking to do the math better), and they'll help each other out. Even when students are competing against one another they will, up to a point at least, clue their opponents in to how to better play the games.

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TEACHER PREP AND SOME BASIC TROUBLESHOOTING

Attitude is Everything!

Practice. . .but don't worry if you're not a 'gamer'! You should be reasonably comfortable with how to log in to each of the games and, with the multiplayer, how to create and start a game. However, unless you're a gamer (or are striving to become one), it's unlikely that you'll be particularly good at the actual game play. No worries though – this is for your students! Remember, the vast majority of your students will entirely comfortable with the game controls and the overall gaming experience (including setting up the multiplayer games). It might be a bit tough to get used to at first, but this is an area where your students will know more than you (and they'll be happy to teach you!).

More about your being n00b (that's gamer talk for newbie, or a gaming novice): Think about it this way – you know that feeling of frustration that your students get when they can't understand the math? Well, now you can entirely empathize with them because it's pretty much the same feeling you have about the gaming. But, really this is just a terrific opportunity for you to empower your students. More on that below.

Basic Troubleshooting

Well, there are a few things that might come up before and during game play. This isn't a fully comprehensive list, but it will help you be prepared for a few of the more common things that you might encounter. To be sure, though, most of these occurrences are rare and after you deal with it once (if you have to deal with it at all) you'll probably never have to deal with it again.

ISSUE	DESCRIPTION	REMEDY
The video in the game is choppy or does not appear at all	There are noticeable stops and starts in the movements around the screen	Go to 'Options' and reduce the video settings to 'Low'. In the Multiplayer game, this is the default.
On the multiplayer game, the 'We're sorry, but we cannot detect any other games running for you to join' message appears.	<ol style="list-style-type: none"> The screen needs to be refreshed. Your network firewall settings are blocking the game. 	<ol style="list-style-type: none"> Clicking 'Search Games' and then wait a few seconds. See your network administrator.
A student forgot his or her username and/or password	Students need these to log in	Go to the Educator Portal to view and edit all students and their information
No username for a student	All students need to be set up in the Tabula Digita database as users	Go to the Educator Portal to add students and their information
The game is loading slowly	Nothing appears on the screen for a while	Patience. The games, especially the Evolver Single Player, are fairly large. Users should just wait until the game starts and they should NOT try to double click the game icon again.

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'Copy of Torque is already running, exiting' error message appears	The game is already running or in the process of loading	Press 'OK' to get out of the error and patiently wait for the game to load.
Users say they need a registration code to get into the game	That message comes up if the students have clicked the wrong place (i.e. the Registration area, not the Log In area)	A registration code is required for consumer users – not school-based users. All school-based users are automatically registered.
General issues	In general, and especially on PCs, some problems are just inexplicable and not easily replicable. Just like with any PC application you just may run into random problems.	When problems occur, students should exit out of the game entirely and then re-launch it. A nice fresh start.
Multiple log-ons	Students are logged on to the same game on more than one machine.	Make sure that if a student moves to another machine she or he is completely logged out of the game that they were playing on the original computer. Otherwise, our database gets confused and freezing could result.

Online vs. Offline Play

The Evolver Single Player and Dimenxian Single Player games have the option of offline play (all game play must be online for the Multiplayer). Tabula Digita highly recommends that all game play be done online. Why? Playing the games online is the only way in which Tabula Digita can collect all the game play data, and therefore is the only way in which you can see reports on interesting things like what students played what games, when they played, how long they played and, most importantly, how well they did and what problems they encountered.

That said, please note that the gaming experience on and offline is, with the exception of the data being stored and reported on, exactly the same. If you have a class filled with kids and not all are able to get online for some reason, you should consider having them play offline and then troubleshooting the issue later.

Wired vs. Wireless

Tabula Digita games do not eat up a lot of bandwidth as data passes back and forth. This is especially true with the Single Player games. Therefore, it technically should not matter if the games are played on a wired or wireless connection.

However, if you have an opportunity to choose between wired or wireless then Tabula Digita recommends going wired. Wireless access points introduce a slew of new variables into the equation. You've probably witnessed some of these with other software or web-based applications. Wireless routers come in all shapes and sizes. Some can handle a lot of traffic at one time, others can't. Some schools have multiple VLANs, which basically means that two students sitting next to one another might be on



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different sub-networks, and that sometimes (depending on firewall and port settings) makes multiplayer gaming challenging. Also, individual wireless routers often have their own firewall and port settings, and if they are not set correctly then certain aspects of the games (especially multiplayer) may not appear as they would on a wired set up.

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RESOURCES

Tabula Digita has developed a number of resources to help you better understand the DimensionM games, and to assist with the integration of DimensionM products into your classroom. Here's some info on what we have and where you can find it. Think of it as a cheat guide to the cheat guides (cheat guides, in gamer talk, are resources to help players better play the game). Also, remember that we're always updating these materials as we learn more about how educators like you working with your students. So, don't be shy. If you have an idea, email us at ideas@tabuladigita.com.

Resource	Description	Where It Lives
DimensionM.com	Tabula Digita's website and the home to a ton of resources, announcements and general information. Check here for the latest on tournaments, product updates and more. Log in with a username and password to access even more information.	www.DimensionM.com
Educator Portal	The home to all your administrative needs, reports, and more resources and documentation. Some more specifics are below. You'll need your username and password to log in.	www.DimensionM.com/educators
Educator Portal Guide	Setting up and maintaining your student's user accounts are the first steps to using Tabula Digita's games and instructional modules. Do you need help navigating the administrative features of the Educator Portal? Then this is the document for you.	www.DimensionM.com/educators
Videos	We have a bunch of videos to share, and we update our video library all the time. We have such things as a brief overview of the components of our immersive learning program, with demonstration, explanation and testimonials from students and educators, videos of various tournaments and events (very inspirational!) and other news clips and fun pieces.	www.DimensionM.com
Flyers and Letters	We've created a bunch of flyers and sample parent letters that you can copy and distribute to your students to encourage Home Play.	www.DimensionM.com/educators .
Overviews	The storyline behind each of the Single Player games—Evolver Pre-Algebra, Dimenxian Algebra—along	www.DimensionM.com

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	with slideshows from the missions.	
Research	Conclusions of a UCF research brief describing the “significant positive effect on student mathematics achievement in a public high school setting” resulting from classroom engagement with the DimensionM games. Follow the link to download the full study.	www.DimensionM.com
Content Alignments	We've aligned the content of all skills covered in the games (i.e., math topics) to state standards to help plan ahead for game use appropriate to the scope and sequence of your curriculum and instruction.	www.DimensionM.com
Learning Objectives	Quickly find which Single Player missions cover the skills addressed in your classroom. Click on a skill to highlight the relevant mission(s). You can also click on a mission to highlight the covered skill(s).	www.DimensionM.com
Game Demos	Download a demo of any of the games to experience it yourself or share with others.	www.DimensionM.com
FAQ	Answers to common questions about installation, program use, and others.	www.DimensionM.com
Support Desk	Need help with the technology? Tabula Digita has a support line that's open around the clock (well, almost).	Call 1-888-9 -TABULA (1-888-982-2852) or email support@tabuladigita.com
Technology Help	Tabula Digita's product suite is generally easy to install and maintain. But, computers being, well, computers, occasionally things go awry. So, we've put together system specifications, troubleshooting guides and lists of Frequently Asked Questions.	The Educator Portal, at www.DimensionM.com/educators , contains a Resources section with a plethora of technical (and other) support information. Or, go to www.DimensionM.com and look under 'Support' on the left. Or call our support desk (see above)
Instructional Modules	Instructional Modules are web-based, interactive math lessons, reviews and quizzes aligned to each of the Evolver and Dimenxian missions.	www.DimensionM.com
Quick Starts	Notes on the game controls and game-objectives that can be printed and handed out to students. This is a huge help as you get started.	www.DimensionM.com/educators .
Teacher Editions	You didn't play every single mission of	www.DimensionM.com/educators

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and Item Inventories	every single game yourself (or don't remember every detail)? No worries! We've created Teacher Editions, which are essentially 'blackline' versions of the games. This is an in-depth guide to what students will encounter throughout the game. The emphasis is on the game play. That is, the goals and obstacles in the games apart from the math, or areas that many educators who aren't gamers might not be naturals at and therefore have a tougher time helping their students. In addition, we've created 'Item Inventories' which list all the possible math that students will encounter, and how they may encounter it, in each of the games.	tors
Tournament Help	Tabula Digita has prepared a number of resources for running tournaments in your class, school or district.	www.DimensionM.com/educators .
Client Connection Newsletter	Updates and advice about Tabula Digita's product suite. We're always looking for contributors so if you'd like to submit an article, let us know.	In your inbox, about every other month.

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OTHER RANDOM THINGS TO CONSIDER

Headphones

There is no 'right' answer when it comes to headphone use by students when playing the games, but there are a few things you should think about. If headphones are an option (that is, if your school has them), you might want to consider having your students use them when they are playing the Single Player games but not when playing the Multiplayers. What's the difference? The Single Players, of course, are meant to be played by one player at a time. Though certainly it can be extremely useful to have students play Single Player missions in pairs or groups, if a student is indeed playing on their own then there is a lot to pay attention to, including a voiceover with both math and gaming instruction. Headphones will help the student focus on what's going on in her or his game, and not that game of her or his neighbor. Headphones won't prevent students from working together (if that's ok with you), but they will keep the racket to a minimum and that's good for everyone. The Multiplayer, on the other hand, is designed specifically to be a social activity and headphones should generally not be used. The collaboration and competition, and communication among students necessary to enhance both of those aspects, is essential. If things are getting too loud have some of the students just turn off, or turn down, the sound on their individual machines.

Using Mice (Mouses?)

While mice are not necessary, those with less gaming experience may find them helpful (possibly such as yourself, for instance). There are many controls used in the games, and you may find that laptop keyboards get pretty crowded pretty quickly – particularly for adult-sized hands. That said, most students will get used to just using the keyboard pretty quickly, and certainly you don't lose any of the elements of the gaming if you don't have a mouse.

Use of Student Email

Tabula Digita takes student privacy very seriously and we will never spam any student. Although there is a field for email address in the Educator Portal, you are not obligated to use it. If we do have a student's email address we will only email students if we are specifically asked to, and there are only a few situations where that may occur.

- Password Reminder: if a student requests that we send their password (via a request link in the games) then we will, provided we have their actual email address in the Educator Portal.
- Downloading the games: In order to download the games, a student must log into www.DimensionM.com and enter their email, along with their parent's or guardian's email. We will send them a link to the download file, and we'll send the parents a note explaining what the student just requested.
- Info Requests: by clicking the 'Get More Info' button on www.DimensionM.com and then filing out the form, students may opt in to be on a mailing list from Tabula Digita. Students (or anyone) may opt out at any time.

To see Tabula Digita's full privacy policy, go to www.DimensionM.com.

Game Names

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Game names are important in video games. It is the public 'persona' of each of the players, and makes the games that much more fun for everyone. Everyone likes to see who they're competing with and against, and there's nothing quite like seeing one's name up on the leaderboard at www.DimensionM.com.

That said, as a matter of policy Tabula Digita does not accept or tolerate any game or usernames that it deems inappropriate. When Tabula Digita discovers, or is made aware, of any such inappropriate language the account is immediately deactivated and the offending name is deleting. The account remains intact, however, and the final decision remains with our clients as to whether or not they want to reactivate the user in question. Repeated inappropriateness by a user will result in their permanent deactivation and deletion from our system.

Teachers and other supervisors are encouraged warn students that any inappropriate language will not be tolerated and violators of this rule will be subject to punishment. Teachers and other supervisors should occasionally scan the list of their students in the Educator Portal and to look at students' screens as they play to look for inappropriate names. Fortunately, inappropriate names have not proved to be much of an issue since the punishment is generally that students cannot play the game anymore, and they all want to play. But still, it's smart to keep an eye on things.

Regaining Control

Certainly a very important part of integrating the games into your classroom mathematics lessons is having a classroom discussion about the gaming – and math – experience after your students complete the assigned mission or game. But, the only way to have a good conversation is to have the students actually stop playing the game for a bit, which is sometimes like pulling teeth. Here are a few classroom management tips that are specifically related to a computer gaming environment:

- If you hear it, it's not off. Hearing game play when you're trying to review concepts and experience is a dead giveaway that someone (or two. . .) hasn't quite gotten the message that game time is over.
- Walk around and look at students computers. If the game is running, it's hard to hide. Make sure that no other applications are open that might be covering the game as well.
- Have students face away from their computers. Not all classrooms are set up for this, but if possible, have your students turn their chairs to face you or form a circle, or otherwise just not face their computer monitors.
- Laptops at 45°: For laptops only. Have all your students close their laptop screens until it is at a 45° angle from the keyboard. This will prevent them from being able to look at the screen or use the keyboard, but will generally not put the computer to sleep. Plus, it's a nice geometry lesson!
- Two fingers: For laptops only. Have all your students close their laptops screens until they are a width of two fingers from the keypad. This will prevent them from being able to look at the screen or use the keyboard, but will generally not put the computer to sleep.

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