

# HOW DO TEACHERS VALIDATE THE USE OF MINECRAFT?

“Then, the final nail in the coffin that convinced me how much benefit there was is that she learned how to spell her first word because of Minecraft.”

- Minecraft Teacher

## Validating Validation

Minecraft use may be a promising idea to you, but you may not be ready to use Minecraft in the classroom quite yet. Or, you are hearing a lot about other teachers using Minecraft and want to know more. It may be that your students are very excited about Minecraft and gave you a copy of this book! If so, you are in a process of *validation* that is consistently part of every Minecraft-for-learning teacher narrative. Validation is the process of moving from *hearing*, about a new practice, tool, or idea for the classroom, to *using* it for teaching and learning. Consistently, teachers need a time to think about and see a path for appropriating new ideas for classroom use prior to actual use.

This chapter defines, across cases, what this validation process includes among exemplary and innovative teachers. Interestingly, these teachers learned new practices quickly, efficiently, and effectively using their lifetime interests, talking with students, and leveraging online resources to inform their practice.

The current and widespread belief about professional development (PD) is that if a teacher is told convincingly about a promising classroom idea, that they return to their classroom and try it. Summative literature outlines “core features”, for formal PD, including a presentation that has a “focus on content, active learning, coherence, duration, and collective participation” (Desimone, 2011). Where this literature is well established, *none* of the teachers (n=17) in this study were fully convinced to use Minecraft because of a single workshop or presentation. Which begs the question, if they were not *taught* to use Minecraft, how did they learn?

When asked, *"Where did you first hear about Minecraft?"*, our teachers actually describe multiple experiences including informal and digitally mediated experiences. They explain transformative informal professional development elements that appear consistently across cases. This chapter reviews past work that similarly finds these informal learning elements to be central to exemplary teacher growth, identifies what the resources are using the teachers' own words, and suggests how to build your own PD program toward exemplary practices.

### *Exemplary Teacher Professional Development*

Full disclosure, I had every reason to ask about validation in this study. Two years ago I was studying award winning, or 'exemplary', teachers about how they came into their current practices. These participants included Teachers of the Year, the ING Innovators, Presidential Award winners, and others (n=32). I wondered if the exemplary teachers learned the way the primers said they do, or if they had innovative PD strategies that led to innovative teaching? What was their 'trajectory of learning'? What was their story? This study and the current Minecraft teachers used the same narrative approach (Dickers, 2012).

My hypothesis was that as the flow of information shifted to digital mediums, so would the professional development; that teachers may not need to wait on the next workshop to hop online, meet other teachers, and find ideas for lesson planning. In the same ways that information and communication were speeding up other professions, teaching PD was silently undergoing a revolution of its own. Among our awarded teachers, at least, it was.

First, I learned that not all award-winning teachers reacted to formal PD the same way. In fact, some did tell stories that included formal PD as relevant to their growth (29%) - this included a good 'in-service' training session, project group, learning community, or conference session. But more often teachers gave conditional (39%) or negative (24%) answers that formal PD was a hit-or-miss endeavor; commonly:

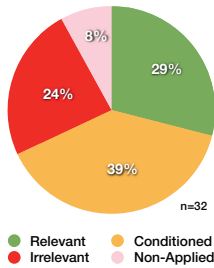
"We would count the light bulb in the ceiling while the person goes on and on" (p.121)

Teachers pointed this out even when not directly asked, because it was key to their storytelling to point out that they took a 'new' path to learning. At best, for the sampling, formal strategies are inconsistently effective. And when they positively pointed out the benefits, they shifted to extra-curricular tasks.

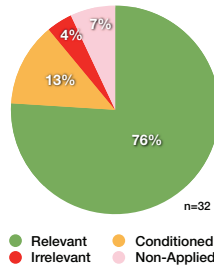
"They are helpful to me to make sure the kids get on the bus the right way, but not for anything in the classroom" (p. 122)

For expert teachers, as good as the PD might have been once, there were now other sources of training and development that were consistently more relevant to them and part of their narrative toward award winning practice.

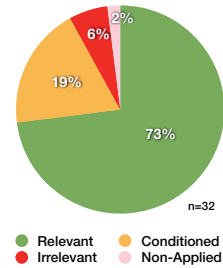
Cumulative Relevance of Formal PD Resources



Cumulative Relevance of Informal PD Resources



Cumulative Relevance of Digitally Mediated PD Resources



Though this study captured that teachers were learning elsewhere, I did not see the pattern soon enough to dedicate interview time to specifically probe on exactly how this happened. What did convince them that an idea was worth trying in the classroom? How did they validate a new practice? This study built forward and teachers were able to share their recent memories of validations. Teachers explained that they 1) learn from their lives, 2) validate with their students, and 3) build on knowledge using digitally mediated resources.

### *Learning from Their Lives*

Teachers told their stories and highlighted mostly informal activities (71%) that moved them from *hearing* to *use*. Remarkably, these narratives were filled with PD examples like hobbies, trying things at home, experimenting in class, student ideas, learning/playing informally with students, surfing the net, and community groups.

A sampling:

"Fly fishing... it has informed my classroom..."

"I read, I do yoga and that influences..."

"My pilot training plays a big effect in me..."

"Parenting"

"Reading and travel..."

and leading into this study,

"I was attracted to Minecraft when I saw students playing it during their breaks."

Broadly spoken, teachers were always on the lookout for new ideas,

"Every single thing I do, every single thing..."

"That's what I do... I'm always looking..."

Indeed, this data looked less like the PD primers, and more like Jenkins (2009) participatory cultures; or Ito's (2010) 'hanging out' and 'messaging around'; or Steinkuehler's (2006) 'third spaces'. This cannot be understated. Every single participant in that study (100%) named a personal interest or hobby as relevant resources for their teaching practice, growth, and professional development. Even with only 32 teachers, that leads to a compelling commonality among our awarded teachers, why wasn't there more research around teacher interests?

These teachers did not necessarily follow the PD learning patterns expected of employees; they were much more like designers. Hobbies consistently stood out in the narratives as inspirational elements and creative teachers were looking everywhere for new ideas. This was worth pursuing. If this is the case, then when we focus on Minecraft, will there be more common sources that lead to the particular tool?

### *Validation from Their Students*

A second common finding was the central importance of the students themselves. Award-winning teachers learned from their students,

"Not once in a while, all the time. All the time."

Similarly universal conditions introduced these kinds of student stories in the narratives (italics are mine),

"Students are the greatest source"

"*Constantly* teaching me things";

"I get feedback from my kids *all the time*";

"Students *always* drive what you do,.. if you watch them enough".

To these teachers, students are completely central to innovation and practice. This cannot be understated. Teachers tested everything against student reactions, behaviors, and learning. Before they ran with an idea they would verbally run it past students over lunch break or after school, test it in an after school setting, or run a single hour version of it - solely to see how students would react.

Minecraft, likewise, was enthusiastically presented to teachers in this study. Students were consistently part of the stories, and even were presented as the initial starting points for teachers.

“My initial experience with Minecraft came through students. Students introduced me to Minecraft. Actually, not students that I was directly involved with in the school system but indirectly involved with or played World of Warcraft with outside of school.”

As with the award winning teachers, the 10 out of 17 Minecraft teachers noted either playing with children at home, showing it to students at school, or both:

“So, [I discovered Minecraft] playing with my daughter, in school I’d pull one or two kids over to my desk and say what do you think of this game. What do you think of the graphics? I thought a lot of kids would be turned off by the simplistic graphics but quite the opposite. They were intrigued.”

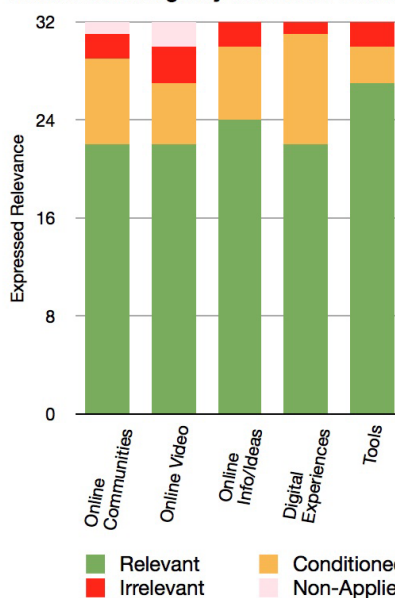
Both studies confirmed a pattern of reacting to student feedback around new ideas in the classroom.

### *Digitally Mediated Learning*

Exemplary teachers also learned from digitally mediated resources. Though the teachers weren’t selected for their use of technology in particular, when asked how they learned, they consistently named online communities, videos, information/idea sources, tools, and video gaming. A rough mapping of these stories across the interviews, and coded for the context of the story (relevant, neutral, or irrelevant to their learning) shows a clear pattern of how important online resources are to exemplary teachers.

This finding led to the Minecraft study. Instead of pursuing how to make formal PD better, it seemed obvious that informal and digitally mediated teacher learning would be much more interesting and essential. Something was enabling these teachers to move from idea to practice. Minecraft is one of these online resources. How exactly did they validate using it in class?

**Relevance of Digitally Mediated PD Resources**



	Online Communities	Online Video	Online Info/Ideas	Digital Experiences	Tools
<b>Relevant</b>	22	22	24	22	27
<b>Conditioned</b>	7	5	6	9	3
<b>Irrelevant</b>	2	3	2	1	2
<b>Non-Applied</b>	1	2	0	0	0

## *Elements that Validate Minecraft for Teaching and Learning*

Teachers using Minecraft were selected in part because of their use of this tool. Naturally then, all of the participants (n=17) shared narratives describing how they discovered, saw potential, and decided to try using Minecraft. Teachers explained that they needed multiple elements to convince them to use Minecraft. Interestingly, not one teacher had a single experience that led to using Minecraft; instead, validation narratives contained anywhere between two to seven elements, but most (n=10) contained four to five elements, and averaged 4.49 elements per participant. Seven of the teachers explained that at one point they actually said, “No” to Minecraft at one point in the validation process.

PD elements were limited to only seven named within these narratives. Participants listed seven types of validation elements. Here is a closer look:

#	ELEMENT OF VALIDATION	NUMBER OF PARTICIPANTS NAMING ELEMENTS	% OF PARTICIPANTS NAMING ELEMENT	TOTAL # OF TIMES NAMED
1	Playing Minecraft personally	16	94%	17
2	Gaming as a hobby	15	88%	16
3	Online information and communities	10	59%	15
4	Friend’s recommendation	7	41%	7
5	Enthusiasm of students at school	7	41%	8
6	Watching a child at home	6	35%	7
7	Conference	4	24%	4

All but one teacher had to play the games themselves (1) as part of their journey (Chapter 3!). Others had used other games in their classrooms and approached Minecraft more ready to see it as a valid resource (2). Each element provided a contact point for the teacher to hear about Minecraft and/or hear others praise it as an educational tool.

One participant coded all seven in their story about choosing to use Minecraft in the classroom. Prior to a final decision to use, this teacher shares a rapid fire collection of stories that led him to using Minecraft. No one single element made this happen. Significant and complex validation ‘work’ is being done prior to formal classroom application and usage. This teacher, in particular, required multiple positive elements to overcome an initial rejection of Minecraft and develop an awareness of it as an interesting tool. As a veteran teacher he has a growing conviction that Minecraft has potential (especially watching his daughter over time) and that his students at school would welcome an opportunity to learn with Minecraft. His

telling:

"I came across it very, very early on. It was before it was even an alpha. I don't even think it had a name. It was just sort of this experimental game that this guy called Notch was working on..." (*Gaming as a Hobby*)

"...I saw it on a game discussion forum and I tried the free version and I got on a multi-player server, my first experience was on a multi-player and it was just this really chaotic world... I thought, 'Oh, that's interesting,' but I sort of discounted it. I said this is not for me..." (*Online community*)

"...Then it was probably a good sixth months later I was at Quakecon 2010 and... In fact, it was sort of the underground hit of Quakecon 2010 and if you know, they have very large LAN so there are several thousand people with their computers all networked together and everywhere you looked there were people playing Minecraft either by themselves or multi-player..." (*Conference*)

"...A friend said have you played Minecraft? It's really great. I said, I've seen it and it's not for me. He said, no, no, look at it. It has really evolved. At this point, the game had a survival mode. It was in a natural landscape and there was a large adventure component and creation component and I dove right in... and my very first thought is gee my daughter would love to play this game..." (*Friend's Recommendation*)

"... She was almost five at the time, lets just say 4 1/2 and I thought she would like to explore and be able to build houses and I didn't know quite what she would want to do. I didn't think she'd be able to play by herself. I figured very often when we play she would sit on my lap and I'd play the game and she'd tell me what to do, that kind of thing. So, when I came home, I think I described it as the world game to her because every time you played, the game created a new world to explore and she loved it and every single day it was, 'Daddy, let's play the world game.' (*Playing Minecraft Personally*)

"...At first, she just liked cutting down trees and building little wooden houses. She wanted me to turn the monsters off because they were too scary but then I was a very proud dad when one day she said, 'Daddy, I think maybe you could turn the monsters on but keep them on easy mode... Then, the final nail in the coffin that convinced me how much benefit there was is that she learned how to spell her first word because of Minecraft. She wanted to be able to teleport herself back to her home in the game and I had set up that if you typed /home you'd teleport home so she came up to me one day and asked me how to spell home and that was the first word she ever learned to spell." (*Watching a Child at Home - full cuteness*)

"...So, as I was playing with her, I had it in the back of my mind that my second grade students specifically, I thought, would get a lot out of this... .. In school I'd pull one or two kids over to my desk and say 'What do you think of this game'? What do you think of the graphics? I thought a lot of kids would be turned off by the simplistic graphics but quite the opposite. They were intrigued. They had never seen a game like this and were very, very curious. All of this really gave me the confidence to dive in and create a little unit about Minecraft."  
*(Enthusiasm of students at School)*

Needing the least amount of validation (3 elements), another teacher had a history of gaming and immediately saw potential in Minecraft. Later however, he added that he had tried out the game with his kids at home and at school.

"I played, I am a gamer, I've been a gamer all my life and so I was gaming at the time playing World of Warcraft...and it [Minecraft] was so different and so I played it...it was such a different game and I was just getting into teaching and using other video games with kids. I immediately thought this would be absolutely amazing to use with students because it is a captivating game that doesn't have all the things that normally exclude off the shelf games from being used in schools."  
*(Gaming as a Hobby)*

"When it comes to using it with kids... I also started using it with my own two children as well as with my students so I have both of those lenses on when when I think about using it with kids."  
*(Watching a child at home + Enthusiasm of students at school)*

*Playing Minecraft* and *Gaming as a Hobby* was most common with Minecraft users as only two of the participants did not mention previous game play or hobby time with digital communities as relevant to their validation of Minecraft. In these two cases a good friend was involved that was a gamer. It should also be noted that when conferences were mentioned, it was often in regards to meeting people at conferences, not necessarily attending a particular session or lecture.

On occasion, the teacher would include two or more specific instances of an element influencing their validation. Of note is *Online Information and Communities* where participants reported multiple and distinct stories about different online sources. The data does not capture the number of sites, conversations, and videos that were watched during these times, only that the participant named this as a relevant part of their learning, so even the number of elements recorded may not represent the detail with which they spent time online learning and gathering ideas.

Knowing the number of occurring elements is not the full picture however. These elements were always found in combination with each other. The following data shows the



chronological ordering of these elements for each teacher. When a teacher mentioned previous experience, for instance, with game play, as a relevant part of their story, these were located prior to when participants were 'aware' of Minecraft. Normally however, most told their stories in chronological progressions.

Below, bold italic lettering identifies when participants rejected Minecraft (n=8). Also, italic identifies the point at which teachers saw potential for Minecraft to be used in classrooms (-->). Bold lettering (n=9) shows that the teacher had previously used digitally mediated learning (DML) in the classroom, legitimizing games for learning.

### Narrated Order of Elements of Validation

KEY: <b>DML History</b>   <i>Rejects Minecraft</i>   <i>Sees Potential</i>							
PARTICIPANTS	PREVIOUS GAME HISTORY	1ST AWARE OF MINECRAFT					USE OF MINECRAFT
<b>1</b>	2			5	7	3	1 →
<b>2</b>	2	5	<b>3</b>	3	5		1 →
3		4		3	1		3 →
4	2	3	<b>1</b>	4	7	6	5 →
5	2	1					1 →
6	2	3	<b>1</b>				6 →
7	2		<b>3</b>	3	1		3 →
8	2			4			1 →
<b>9</b>	2	5	<b>1</b>	3	3	4	1 →
<b>10</b>	2	1					1 →
11	2		<b>1</b>	4	1	3	6 →
12			<b>6</b>	6	1		5 →
<b>13</b>	2		<b>4</b>	5			1 →
<b>14</b>	2	3		6	5		1 →
<b>15</b>	2	3					1 →
<b>16</b>	2			4			7 →
<b>17</b>	2			7	4	6	1 →

1) Playing Minecraft personally; 2) Gaming as a hobby; 3) Online information and communities; 4) Friend's recommendation; 5) Enthusiasm of students at school; 6) Watching a child at home; and 7) Conference.

Commonly teachers gamed as a hobby and brought this into the classroom, but it was not always the case that they had to play the game themselves before deciding to use Minecraft for learning.

Did veteran users of DML require less validation? No, the number of elements needed to validate did not significantly change when a teacher had previous experience using digitally mediated experiences in class. Of the seventeen participants, eight claimed to be using a digital environment (of any type) in the classroom for the first time with Minecraft. Nine, 'veterans', had previous experience using digitally mediated environments for classroom learning (including Second Life, World of Warcraft, River City, Wolfquest, Pokemon, Webkins, and Quest Atlantis). In addition, validation was not apparently related to years teaching or context of practice. In other words, we had a good mix of new and veteran games for learning teachers in the study. Nor did being a veteran simplify the process of validation.

The veteran gaming teachers still required an average of 4.44 elements to validate use, and the 'newbies' shared slightly fewer elements (4.25) and they both had a range of two to seven elements. The previous use of digital experiences did not show significant difference in the number of elements needed to validate Minecraft for classroom. Likewise years of teacher practice had no significant effect on validation elements.

Along each of the narrative plot lines, teachers described a point at which they 'got it', or saw that Minecraft could be used for the classroom ('Potential') - even if they didn't quite know how to use it. It was at this point that the teacher would start to pursue ideas, examples, and explanations of using Minecraft for learning. On six occasions, seeing potential led directly to trials in the classroom. Preceding elements were distributed between playing Minecraft personally, seeing something online, a friend, student enthusiasm, and watching a child play Minecraft at home.

#	ELEMENT OF VALIDATION	NUMBER OF TIMES PRECEDING 'POTENTIAL'	% NAMING ELEMENT AS 'POTENTIAL'	# OF TIMES PRECEDING 'USE'	% NAMING ELEMENT AS 'USE'
1	Playing Minecraft personally	5	29%	10	59%
2	Gaming as a hobby	0	0%	0	0%
3	Online information and communities	3	18%	2	12%
4	Friend's recommendation	2	12%	0	0%
5	Enthusiasm of students at school	3	18%	2	12%
6	Watching a child at home	4	24%	2	12%
7	Conference	0	0%	1	6%

Prior to 'Potential', teachers were receiving elements, afterwards they would pursue elements of validation toward the use of Minecraft in the classroom ('Use'). Personal play time was the compelling element that led to actual use of Minecraft for most of the participants (n=10). For some, the choice to use was simple:

"I got an email from her saying I know this guy called Liam who is awesome and he wants to do this thing with Minecraft. I don't know what it is but want to try? I said, yeah, I want to do a PLC that is formalized and I said yes I'm in."

For others, seeing the potential was harder. Half of the eight participants that rejected Minecraft initially were basing this decision on playing the game themselves. Personal play of Minecraft was the most significant factor in making pedagogical choices about not using Minecraft too.

"After taking a look at some of the videos on the website and kind of examine the game I essentially laughed and said, 'No way looking at the graphics... you've got to be kidding me,' and then went back to playing World of Warcraft."

To overcome rejection of the idea, teachers needed to personally use Minecraft *again* in all but two of the cases, where it took seeing a child play at home to convince the teacher of the learning potential of Minecraft.

When presented with a compelling technology, teachers need to play the game for themselves prior to making the decision to try it in the classroom - often more than once. Over half of the time this was the element that directly precedes the choice to use Minecraft in the classroom. On two occasions, teachers only needed one element (in addition to being lifetime gamers) to validate classroom use - both times this was personal play. Within this sample, the time to personally test-drive Minecraft was the most powerful and common validation asset.

Finally, in the cases where hobby participation led to awareness, teachers had to play for themselves to see if it had potential in the classroom - even in the cases where these were the only two elements narrated. Playing Minecraft personally was the most common cause of seeing potential, and choosing to try Minecraft in the classroom.

### *Using Elements of Validation as Professional Support*

Validation is often overlooked, but in these cases it shows an important aspect of teacher growth toward using digital media in classrooms. These narratives show validation as essential starting points for teacher innovation. Prior to accepting an idea or planning for classroom use of Minecraft, *all* of the teachers in this study expressed a narrative, with four to five elements, that led to validating the idea and ultimately transforming their classrooms.

Most of these teachers needed to try Minecraft out, even if it meant rejecting it at first, then continue to hear and learn more about it. All too often, anything less than compliance with formal PD strategies marks the teacher as 'stubborn', 'resistant', or 'coasting toward retirement'. The result is a misperception of the modern teacher that doesn't want to try innovative strategies in the classroom.

Worse, single-element PD potentially assumes that teachers are willing to let 'experts' validate an idea without local discernment. Thinking that a single session or book on an idea, (no matter the degree of fidelity to design), will transform teacher practice or even validate the potential of an idea is simply not supported by this data. This doesn't take into account a natural and positive process of validation that is evident when we take a closer look at innovative teaching. This process is locally relevant, involved, ongoing, and complex - and this small study only identifies its presence, not the full range of its workings. In short, I propose that a stronger appreciation for the validation process would paint a different picture of the modern teacher - or at the least, we should be thankful these teachers put so much consideration into design prior to use.

Notice that 'seeing potential' was separate from 'choosing to use' Minecraft for learning in the teacher-design process. In fact, the two are distinct and separate in most cases. We saw this when trying Mobile Media Learning (Dickers, Martin, & Coulter, 2012) models with teachers too. Initially we would provide a game intervention that teachers would praise in the post-interviews, but then note that they would never try it out on their own. Seeing the potential of mobile learning was a positive stage, but the challenges of using new technology without researcher support, was still unaddressed for the teachers. 'Believing in' and 'acting on' are clearly different parts of validation.

If these are indeed separated for the larger population of teachers, then we need to plan accordingly when designing professional development interventions or presenting new pedagogical practices to teachers. Consider personal exposure (play), lifetime hobbies (learning), and online information (inquiry) as the most commonly involved stories of validation. These three elements may actually be *more* affordable, convenient, and deliverable than traditional, formal strategies. For our teachers, they are clearly more impactful. What if these were elements that school leaders actively tried to encourage? How would it affect teaching and learning in your school?

### *Time to Play*

Personally trying out Minecraft was, most commonly, the final step prior to a decision to try it in the classroom. Hands on testing can be as affordably organized as an in-service presentation. Instead of presenting an idea, for instance, PD designers should consider showing design potential and use to teachers; alongside letting teachers try something out for themselves and with their children at home or at school. 'Show, don't tell', applies to

adult learners too - and it should be assumed that one element will not result in changed classroom practices.

Districts that expect any technology integration without allowing teachers to take home that technology and 'play with it', should expect marked detachment from the creative design process of classroom planning. Without time to explore and consider, the new tools or applications simply are not present as teachers think of new ideas and projects for next week. With a modest amount of planning, providing teachers with new technology a year ahead of any formal expectations could align with the findings here and potentially have a greater chance to result in innovative teaching than a presentation alone would. In short, buy teachers toys to play with, let them take the new technology home, and pilot test use prior to large scale adoption. This tip alone could save millions, nationally, in technology purchases. If teachers cannot design for use in their classrooms, save your district a stunning amount of money, and wait until teachers do have particular technologies they want for teaching and learning.

Promoting and sharing interesting and compelling classroom trials (even imperfect ones) would also promote the design-focus that teachers like thrive within. Consider starting, ending, or filling staff meetings with faculty sharing their most recent efforts for engaging learning design. Put a spotlight on playful design efforts, 'plan B's, and cheer success along with... initiative.

### *Learning Everywhere*

At first glance, hobbies are hard to encourage. We can even ask if we should seek too. In fact, if teachers are just employees, it may not be appropriate to encourage any activities outside of work. Minecraft teachers were not necessarily going to Minecraft communities until they saw potential in the software - however many were already in video game communities. So if teachers are designers, sharing and celebrating any activities of excellence is actually supporting and condoning hobbies, or more appropriately, high interest, lifetime learning habits. Initially, professional learning communities (PLCs) were promoted with similar evidence that innovation commonly started in trusted conversation. However, when these were mandated, and often organized by grade or subject, they lost their potency to influence active, vibrant, teacher learning.

Promoting lifetime learning may still be within reach. PLCs could easily be arranged around high interest areas like computer gaming, civic engagement, project-based learning, and new topics could be driven by teacher suggestion. This data shows that these groups may not naturally form around grade levels or subject areas, but informally gather around common interests. Teachers can easily translate a science teachers use of Minecraft for use in their history lessons. Also, they are only, ever, one of seven elements found in this study and not all teachers came to innovative practice because of a community. PLC groups should be

highly enjoyable, fluid, and voluntary.

For education leaders, showing interest, and modeling, participation in clubs, community groups, volunteer activities, and online communities can serve to show younger teachers how these are relevant activities. Willfully choose to tune into new ideas and tune out empty small talk. When a respected (valid) leader chooses to focus conversation on lifetime learning, it sets a bar for professionals to get involved, geek out, and play - just to be more interesting to their colleagues. Consider gently starting in the interview process and continue by bringing it up in annual merit conversations to sustain a culture that legitimizes passionate investment in hobbies and new skills.

Learning with and from students is a form of learning everywhere. In the cases of our Minecraft teachers, the students were often the 'experts' that teachers leaned on for initial classroom efforts. Designing teachers actively sought out feedback from students and based key decisions on their reactions to an idea. Little attention is given to training teachers for this kind of data, yet we see consistently that innovative teachers measure each effort by student reactions. Techniques for gathering student feedback are easy to teach, model, and highlight in formal training.

Recently we've also had great success involving student presenters at our local Playful Learning Summit and working with student teams as personal coaches for teachers that are taking their first steps in digital environments. Students have been consistently excited to show teachers new tools, they are patient, and they are familiar with coaching others to play.

### *Supporting Online Literacy*

Finally, districts can easily provide links, leads, and provide guidance for using the internet as an information and community building asset. When a teacher is interested in using Minecraft in the classroom, a district can dedicate attention to saving the teacher time looking for more information, people, and examples of use.

For example, the drive to have local 'data-based decision making' may be well received as having the potential to improve learning, but teachers and administrators also *need tools to process student data* in a timely, effective, and even exploratory way. For data to affect daily choices it most likely has to fit within the constraints of time, cost, ability, comfort, and safety that are also part of teacher decision making. These are all based on a person's competency and knowledge base around digital tools. Supporting online resources means building tools, communications, and support for teachers so they can efficiently and effectively do things for themselves.

It is worth reasserting that the prevalence of informal PD around new media technologies can easily be explained by the newness of the technologies. We simply haven't formalized

training yet. So, conditionally, this study (and the limits of both the sampling and method) should not be used as a critique of formal PD, only that informal PD is currently prevalent for new technology adopters. Formal PD may in the future address the need to build teacher capacity using online tools - moving from boutique to mainstream practices.

## **Conclusion**

Understanding a process of validation provides a new lens through which we can look at teachers and how they actually validate and adopt Minecraft in their classrooms. Teachers are essential designers constantly looking for and validating old and new practices. As information is digitized, it stands to reason that teacher validation elements are shifting toward both digital resources and communities of practice that can expand and filter ideas for new classroom practices. Second, I'm convinced that a better understanding of how teachers design their practice can open up new conversations about structuring PD more effectively. If teachers naturally leverage informal PD assets, then formal PD designers can potentially also benefit from appropriately updating new PD designs that more naturally fit with evidence of actual adult learning.

Personal play, having a hobby (related to the intervention), student reactions, and personal relationships (friends and colleagues) were all key elements that contributed to a clear process of validation prior to adoption of Minecraft. Validation, though varied, was consistently communicated through narrative as a process of moving from aware of Minecraft, to seeing potential in Minecraft, to choosing to try using Minecraft in the classroom. Next, we have the privilege in hearing how those first efforts played out, how the ideas were refined, and how they ended up with their current practices.

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