**Back to the Future: Learning Through Making Tabletop Games**

It is no secret that there is a large and growing emphasis on technological literacy in schools. From laptops and tablets to cameras and even virtual reality, creating competitive and job-ready minds seems to require increasingly pervasive technology education. While it is important for students to be tech-literate, we at foundry10 feel it can be all too easy to lose sight of the value that comes from working outside the bounds of technology, and into the analog world. When it comes to games, this is especially true. With flashy graphics and pop culture on their side, video games tend to be the first thing that comes to mind when people think games in the classroom. So we wondered what would happen if we took making games back to its roots on tabletops, and see how that differs from making video games.

Let me start with some context on who foundry10 is and what we have done with games so far. Foundry10 is a not-for-profit research organization that studies learning, particularly in non-traditional settings. While our work spans many genres and subjects, games have always been an area of interest for us, and we have done a number of studies that look into the use of games in the classroom in terms of both playing and creating them.

Throughout 2014 and 2015, we noticed a trend in our video game work: the biggest value identified by both students and professionals was computer and programming skill. It seemed interesting to us that when it came to game design, technology was the biggest focus, rather than the games the students were making.

Video games, and video game creation, are often viewed as tools for engagement. They are culturally relevant (read: cool) ways to teach STEM skills like programming, math, and computational thinking. However, when most students think about making games, the resulting excitement isn't about learning a new programming language, it's about telling a story or crafting an entire world from nothing. Due to the technical boundaries, these aspirations are usually frustrated and, while gaining technical skill, the creativity, determination, collaboration and other "soft" skills are diminished.

With video games as pervasive as they are, we wanted to take a step back and find a way to examine the value of making games when technology was removed. So, when we had the opportunity to bring a tabletop game design class into a high school, we jumped at it.

Here is what we learned from tech-less game design.

**The Class**

*"I got re-interested in board games because they were something I had played as a kid and stopped. Now I really want to play them again." - Student*

Tabletop games is a very broad category, and it includes board games, card games, pen-and-paper RPGs (think Dungeons & Dragons), and any other game that is played, fittingly, on the top of a table. The games most of us have experience with, like Monopoly or Poker, are traditionally very simple in their rules. However, there is a growing movement for more complex tabletop games that require advanced strategy to win (Small World, Dominion, and Betrayal at House on the Hill are all good examples). These sorts of games were the focus of our class.

The course design was very simple, we divided students into groups of 3-4, had them come up with a game idea, they designed it, and play-tested relentlessly to make a fun game for others. The end goal is

to have a playable game with a custom-made board and pieces. As basic as those steps sound, designing the complex ecosystem that exists between a game, its rules and the players comes with challenges and hurdles that require creative thought and problem solving.

Our instructor was a seasoned tabletop game creator named Dave Freeman, from gaming company Ninja Division. His role in the course was to guide the students and help them format their ideas, without giving too much direct guidance. Overall, the structure of the course was focused mostly on allowing students to come up against the hurdles inherent in game design, and work as a team to find ways around them.

**Comparing analog to digital**

As we mentioned before, we have a big interest in how games are used in classrooms, both in play and in design/development. We have conducted research using case studies, surveys of both students and professional developers, and observation of existing programs.

What we found in this was that nearly half of all of the students and professionals we surveyed felt the value of making video games came primarily from learning coding and computer skills. Other, more intangible, skills were seemingly overshadowed by this focus on the technological aspects of video games. These skills included things like creativity, teamwork, determination, and critical thinking. Furthermore, data from our case studies showed that students felt they actually had to reign in their creativity in order to be in line with their technical know-how.

In tabletop, however, we saw much the opposite. More-so than in video games, we saw students describe things like their team interactions, creative process, or design concepts when asked about the value of the course and skill gained. One student, who had some experience working in video games, said:

*"We didn't have to worry at all about the technical stuff and how it looks. We could print something up, paste it to cardboard, and go and play… With video games it is all about getting the technical side to work, you do not get to focus on balancing mechanics and that kind of stuff."*

The mention of "mechanics" in this quote really encapsulates the value of tabletop. In this setting, mechanics are key elements of the game that interact and/or can be manipulated to create dynamism in-game. In a video game, these require huge amounts of coding and bug-fixing, but in tabletop, students are limited by less concrete barriers like imagination, complexity, and fun. Students were able to push the limits of their creativity, but then had to switch to analytical thinking and revisit their ideas armed with playtesting and feedback.

**Tricky, not techy**

In the initial round of interviews, we asked students to describe the game they wanted to make. The students were very ambitious, and outlined advanced games with interweaving rules and player interactions. At the end of the study, we asked students what the biggest challenge they faced was, and the answers we got seemed to follow a pretty clear pattern:

*"Making a game that didn't get out of hand in terms of difficulty. A game that could be completed by all 4 people and everyone always had a chance to win. Not making unbalances and discrepancies in the board."*

Gameplay complexity was one of the biggest challenges the students faced, and the most commonly mentioned. As we stated above, the ability to be unrestrained by technical limits is a big boon for tabletop game making. This is true when it comes to learning too, as the act of analyzing this highly complex system gets students thinking not just about the rules of the game, but also making a fun experience for someone else, planning from an idea to action, examining (play)test data, and taking constructive feedback.

While the increased complexity does drive students towards unique challenges and solutions, it is not without downsides. Inexperienced students working in board game creation can easily overwhelm themselves with overly complicated game mechanics and outcomes. This can cause groups to become discouraged about their ideas, and that mentality can bring up problems inside of the group and slow the process of making the game.

**Starting with the ending**

To deal with these issues, the groups have tried a number of approaches.

Initially, the students came into the games with a loose idea of the rules they wanted to include and the story they were telling. Groups worked to craft a working game out of their collective idea pool, making compromises and finding ways to get the game working the way they wanted. This process was largely unsuccessful, however, as the students struggled to find ways to shoe-horn in rules and mechanics to solve holes in gameplay. Each group wound up facing issues in their games with either complexity or the fun-factor.

Part of the course was visits from veteran tabletop game makers in the Seattle area. After a few of these expert visitors came, and more on them later, the students started to implement different ideas into their creative process:

*"We tried to implement the top-down game design idea, and that helped us rethink a lot of what our old gameplay mechanics were. We saw how some of them were hurting the game more than they were helping it."*

The top-down design strategy this student mentions is common among game makers. The idea is to begin by figuring out a win condition and an overall story to tell. Having this vision and direction helps cut out superfluous rules, gives the players clear objectives, and immerses both the creators and their audience in the game.

Once the students were armed with this idea, they backwards engineered how their mechanics fit in, players interacted, and turns played out. What resulted were huge shifts in how the games worked. Students remarked that the top-down design lesson was one of the most important and useful pieces of the course as far as their design processes were concerned.

In tabletop, the ending is not just how a player wins the game; it also includes the story that designers want to play out each time the game box is opened. This includes designing things like player interactions (trading, combat, alliances, and of course, backstabbing), storyline (who are the characters in-game and why are they doing what they are doing?), and interesting mechanics to tie it all together. The ideal end-result is to have players who are excited to pick the game back up again.

Finally, the students really got a lot out of this way of thinking. They noticed a shift in their view as they went from seeing their creations as games to seeing them as systems: *"It really gave me the ability to focus on games much more analytically and look at games in a broad sense. They are basically systems."*

Who knew that we can teach systems analysis through making board games?

**The Power of Play(testing)**

*"You get to do lots of play, lots of testing… Because in order to make a change all you have to do is write a new rule, or scratch out something on the board and rewrite it. In video games you have to change a bunch of code or go back to the drawing board." - Student*

Failing fast and forward is a bit of a mantra in the small business world, and it certainly has merit. When students start to encounter the "bugs" in their game design, their immediate reaction is to find workarounds and fixes. Each fix comes with a myriad of issues, but over time and through repeated playtesting, the students can iron out all of their bugs and have a coherent and fun game.

This process is identical in video game design, except for one crucial piece: iteration time. With proper board game creation tools (whiteboards, index cards, pawns, and blank dice) implementing a bug fix is a short process once you have it designed. The focus of tabletop playtesting is solving design problems quickly and moving from one version to the next with minimal down time. Truly great games have been played thousands of times before they are boxed and shipped. Throughout this process, students learn much about what makes feedback valuable and how to give and receive it well.

While this point was made extensively by the experts, the students had to get their hands dirty with getting some feedback on their games. While thinking back on this process, students mentioned things like:

*"Taking constructive criticism, really, because you are going to have to do that. No matter how hard you have worked on something, you can make it better. I think, also, it is nerve-wracking to introduce your idea to other people, but this is something really important because other people have different opinions."*

Acknowledging the importance of constructive feedback is an important skill for anyone to have, and simply being aware of this was very helpful for the students as they opened their games to other players. Students were initially nervous to have their games shown, but they came to recognize that the feedback was extremely helpful and not meant to be hurtful or an attack on their ideas.

One important point to note is that we inadvertently eased into "external" playtesters. The first time someone from outside the class played the student games was with our sanctioned experts. They understood how to communicate their feedback most effectively, and the students clearly saw the value of the advice. In addition to simply giving the feedback, the experts had ideas for how to incorporate it. We feel that this approach prepared students for when it came time to bring in a more diverse audience. As a result, the students were able to effectively observe playtesting and had a clear path for implementation after they gathered their data.

**Expert Opinions**

When we asked students what the most valuable part of the course was for their design process, 10/11 students answered similarly to this:

*"Definitely hearing from the professional designers and developers. Getting them to look at and play our games, get advice from them. They gave us a ton of good advice for how to handle things."*

Students consistently referenced their interactions with experts when responding to many of their questions making it clear how important the consultations with experts were for the students. They were able to ask questions about their games and processes, playtest the games with them, and discuss industry. Advice that was given by these designers was directly relevant to each student, and thus interpreted into situations that were meaningful.

Much of this advice was game-specific and had to do with the enjoyment and playability of the games, which was very useful and important for the students. However, we did notice a few broader themes across the games. As we have talked about, the top-down design process was critically useful for students, but there were other areas the experts touched on that resonated with the students: ins and outs of the games industry, the experts' own backgrounds, the art of taking feedback, and how to collaborate in creative projects.

In addition to the advice, the raw enthusiasm the experts had for their craft was also important to the students. While this had fewer mentions, we wanted to bring this up as it shows how infectious excitement can be. Roughly half of the students directly mentioned this enthusiasm, while others indirectly mentioned it by talking about experts enjoying their job or something similar. Some of the students even cited enthusiasm when we asked them what was surprising about the course:

*"Probably be how enthusiastic everybody was… At [Wizards of the Coast], someone working there for 15 years still loves what he does and has the excitement to go into work every day."*

It seems fairly obvious to point out that having enthusiastic experts improves the experience, but the point is so important that it warrants repeating.

**Scale and Accessiblity**

One of the best parts about tabletop games (whether designing, playing, or modifying) is simply how accessible it all is. The essential pieces of a tabletop game creation kit can be boiled down to index cards, dice, disposable whiteboards, simple tokens, markers and pawns. Each of these pieces, with the exception of the whiteboards, can be bought in bulk on Amazon for around $10-15 including shipping, and most are re-usable.

Additionally, video game design can be alienating to students who might not have the interest in tech or video games themselves. The same is true for tabletop games, but by dropping the technical requirements of video game design we can broaden the scope of engagement and open the learning to many more students from all backgrounds.

With these tools, students can at least get to the playtesting stage and start iterating. Creating a true prototype, with custom pieces, is the natural next step, but at this point the design portion is ideally finished and thus the learning from that is concluded.

That being said, if you want to get even fancier with it, 3D printing is readily available, so having students design pieces and having them printed is doable. We did have a number of students mention that the opportunity to have a prototype would have been exciting: *"I think, if we had just worked a bit harder, we could have gotten to a prototype stage with more art. That would have been very cool."* Having potential for prototyping could drive student engagement even more.

**Inherently Social Design**

There were two social themes we noticed in our interview with students. The first was an acknowledgement of how important collaboration is as a skill. Of 11 students, 8 specifically called out teamwork and collaboration as a skill they gained during the course. One student said "This helped me collaborate more, learn to compromise, and think about ideas that work best vs. ideas that you are more attached to."

The other interesting piece of the social aspect of tabletop is empathy, in this case defined as the ability to see things from the audience's perspective and understand their mental-state. Designing for someone else was a common theme in questions asking about skills and value, as well as those asking about the biggest challenges students faced. But empathy really shined when we asked students "Why would your game sell, or not?"

From a sales perspective, most students considered specific game mechanics or themes. Only 3/11 students thought first of the consumer, fitting their game mechanics into the consumer needs. This is counter to the design process of simplyInterestingly, two of these three students were the only ones to identify empathetic design as a potential challenge during the pre-course survey. This indicates that empathetic design, while inherent in the process of game making, may need to be emphasized more heavily in future programs.

**Fitting the pieces together**

Game design, in any form, teaches a number of useful and relevant skills that can be transferred to a broad spectrum of careers and jobs. While these skills are accessible in both video game and tabletop game design, part of the fun of the design process is getting to see everything in action. Tabletop makes this possible and can move faster through the design cycle. It is more scalable, broadly engaging, accessible, and culturally relevant than ever before, and brings the ideas of students to life in a social setting.

To close out, we wanted to bring up the responses we got when we asked students if they could see themselves using the skills they gained elsewhere. It was immensely surprising to find a 100% positive response rate to this question. Each and every one of the students believed they had developed skills that would be applicable in other facets of their lives. Every answer showed the parts of the course that student would take with them, from communication skills to systems analysis to creativity, each student left the course with a set of skills that was meaningful to them.

Technology will continue to grow and integrate into classrooms, streamlining processes and generally making life easier. The combination of the removal of tech boundaries and the social nature of tabletop led to a unique experience for the students, and one that every student felt was valuable and worthwhile.

As society progresses through the digital age, we hope to keep working with analog games to bring tabletop back to the future.