Understanding Japanese Games Education

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ABSTRACT

Although videogame education research is a growing area of interest, most work has examined practices in the US and Europe. In this article I describe the results of a study that explored how game design and development is taught in Japan and the challenges students face as they learn. For this study I interviewed ten people who teach game design and development courses in Japan. These interviews were conducted in person, recorded, and transcribed. The transcripts were analyzed using an iterative coding process to identify emergent themes. This study's results support earlier findings regarding common challenges students face. For example, students often have difficulties generating creative game ideas and concepts, preferring to "mimic" games they are familiar with. Some findings also provide insights into issues that may be culturally specific. For instance, games education isn't an area of explosive interest from the part of students as is currently the case in the US and Europe. Overall, games education in Japan does not seem to be that different from what is done in other places around the world. This is encouraging, since it suggests that solutions to pedagogical problems identified could be applied and shared more broadly.

Keywords

Games education, Japan, challenges

INTRODUCTION

Videogame education research is a growing area of interest. However, most games education research has examined practices and developments in the US and/or Europe (e.g. Egert, Jacobs et al. 2007; Ashton 2009; Hullett, Kurniawan et al. 2009; Zagal and Bruckman 2009; Estey, Long et al. 2010; Ashton 2011; Zagal and Sharp 2011). Although Japan has a unique and powerful presence in the world of videogames (Ashcraft 2008), little is known in the west about how games education is carried out there. This is curious because the Japanese videogame industry is noted for its importance and influence (Sheff 1993; Kohler 2005), its innovations in game design and development (Baba and Tschang 2001) and its strong creative roots (Aoyama and Izushi 2003).

In an earlier study I examined the role that prior game-playing experience played in students' games education experience (Zagal and Bruckman 2009). This study suggested that, amongst other things, expert players are not necessarily more insightful about games

and are often unaware of broader issues in videogames. Were some of these findings perhaps strongly defined by western gaming culture? Differences with Japanese games education could help provide a better understanding of why those issues exist, whether or not they are widely observed, and how they could be better addressed. In this article I will (1) provide a better understanding of the relation between Japanese game education and the unique features and characteristics of its industry, and (2) complement current work that has focused mainly in the US and Europe, allowing us to better understand the learning challenges (cognitive, social, and cultural) of games education.

Overview of Japanese Higher Education

Generally speaking, the Japanese university system is similar to that in the United States and Europe. For example, most undergraduate degrees/courses are for four years and students spend approximately 35 weeks per year studying (including exam periods) (Asaoka and Yano 2009). The Japanese higher education system has a combination of private and public universities, "junior colleges, and colleges of technology" and other specialist schools (Goldfinch 2006). Most of the public funding, including research funding, goes to the public universities (Goldfinch 2006).

After World War II, Japanese universities "mainly focused on training students for corporate and government employment" (Etzkowitz, Webster et al. 2000). While there is currently a shift towards doing research, the older focus can still be seen in the high degree of support that universities provide their students in helping them find post-graduation employment. Traditionally, Japanese companies "prefer to recruit their future employees from among university students. Japanese universities provide a bridge between job-seeking students and industry" (Asaoka and Yano 2009). It is also common for students to have both informal job offers while in their last year as well for them to start working as soon as they graduate (Asaoka and Yano 2009).

In other areas, much has changed since the post-war years. The current state of the Japanese university system is the product of several large-scale government led reforms that have been taking place over the last 30 years. For instance, Horie (2002) describes how in 1983 the Japanese government initiated a process of internationalization of the notoriously closed higher education system of Japan. In order to achieve this goal, it was deemed necessary to, among other things, "promote holistic reform of college education and to raise the quality of education and research to meet global standards" (Horie 2002). More recently, in 2004, "Japan restructured the state-directed public university system to create the national university corporations (NUCs)" (Goldfinch 2006). The idea was to provide universities with a greater degree of independence and encourage competition. These government efforts have forced Japanese universities to adapt and change significantly.

Important changes in Japan's social and cultural circumstances have also forced changes to the university system. A sharp decrease in the university-age population is one example of a significant change in social and cultural circumstances. This decrease has resulted in "an increased urgency to make reforms, especially at third-tier universities, which are now starting to have trouble recruiting students" (Doyon 2001). Mori describes how, in the past, universities did not need to concern themselves with attracting students. Now, however, "[i]nstitutions, both public and private, must compete for fewer prospective students" (Mori 2002). Since enrollments are tied to income, student tuition in the case of private institutions and governmental aid in the case of public, "[a]ttracting

and recruiting students has become one of the most important priorities in higher education [in Japan]" (Mori 2002).

Another importance cultural change is an increased distrust by youth in the stability of the economy and their future financial prospects. The traditional belief "that prestigious universities will bring you a better job and a secure life has been changing" (Horie 2002). Due to an economy that is more fragile, "this belief has been losing its power among the young generation" (Horie 2002). It hasn't helped that "the Japanese system of lifetime employment has been weakened considerably with the process of internationalization, the advent of the information society, and due to a long-term recession following the bursting of the economic bubble in 1990" (Doyon 2001). This has led to students being more willing to pursue different options for their careers and future.

Furthermore, Japan's university-level educational system is often derided, especially when compared to the quality of education at the lower levels (primary and secondary). Universities have been criticized for fostering a "leisure land mentality" (Doyon 2001) where students can relax after the challenges of high school and the notoriously competitive university entrance exams (e.g. Stronach 1988; Gittelsohn 1989; McMurtrie 2000). "One irony of Japan's education scene lies in the sharp contrast between stringent schools and slack universities. While primary and secondary education in Japan produces highly trained pupils, Japan's universities remain a resting space or 'leisure land' for many youngsters. Exhausted both mentally and physically by examination hell, they seek relaxation, enjoyment, and diversion in their university life." (Sugimoto 1997, p. 129, as quoted in Doyon 2001)

As we will see, these particular elements of the Japanese university system contribute to, and influence, games education in Japan in interesting ways.

METHODS AND ANALYSIS

In order to gain a better understanding of Japanese games education, I interviewed ten people who teach game-related courses (e.g. game programming, game design) in Japan. In total I conducted six interviews. Half of the six interviews were with two or more participants present while the remaining interviews were individual. Interviews were conducted in person, lasted between 45 and 60 minutes, and were audio-recorded and transcribed. The interviews were conducted during two separate trips to Japan in late 2011 and 2012. Since I am not fluent in Japanese, an interpreter was used when non-English speaking participants were interviewed. Two of the participants were English-speaking expatriates (i.e. not Japanese) currently employed by, and actively teaching at, Japanese institutions of higher learning. All participant names have been changed to protect their privacy. Furthermore, the pseudonyms I've used should not be construed as having any special meaning or significance in Japanese. I picked the pseudonyms from lists of common Japanese names such that each began with a different letter from the English alphabet.

Interview participants taught at one of two types of institutions:

- *Specialized schools* (senshu gakkō or senmon gakkō) are institutions comparable to post-secondary vocational schools in that they offer short (one or two –year) programs with an emphasis on specific skills for industry.

- *Universities* (daigaku) are institutions that offer undergraduate (4+ year) programs and/or graduate programs (e.g. Masters, PhD)

Since this study was designed to complement earlier work (Zagal and Bruckman 2009), an attempt was made to mirror the methods and data analysis of the prior study as closely as possible. Doing so would hopefully allow for more direct comparison of the results obtained. In the earlier study, twelve people representing ten institutions and ten countries were interviewed regarding their experiences teaching about games. The idea was to conduct a similar study, but focused exclusively on Japanese instructors.

However, there were important differences in two aspects of the Japanese-focused study. First, the selection of participants was not done using the same criteria. Second, an additional step was added to the interview transcription process. These differences will now be described.

In the earlier study, participants were selected based using theoretical sampling. Using a set of pre-determined categories, participants were contacted in order to cover each of the categories (e.g. course level taught – grad or undergrad). In the case of this study, interviewees were contacted and selected based primarily on availability and interest. While there was some diversity in terms of background (e.g. industry professional teaching part-time or regular full-time faculty) as well as the type of institutions participants taught at (traditional 4-year program vs. vocational school, as described above), the same broad coverage as the earlier study was not possible.

In terms of the interview transcription process, the differences from the earlier study were necessary due to the author's lack of knowledge of Japanese. As with the earlier study, a semi-structured interview protocol was used. Using a semi-structured protocol ensures that all the participants are asked the same questions while allowing flexibility so additional issues may be explored if they come up. Furthermore, participants are also provided the opportunity towards the end of the interview to ask questions of their own. The protocol used includes questions such as:

- What do students have the most difficulty accomplishing?

- What can you say about the role of students' prior knowledge of games in the context of your class?

In the earlier study (Zagal and Bruckman 2009), once the interviews were conducted they were transcribed for analysis. This time, since most of the interviews were conducted in Japanese with the assistance of a Japanese-English interpreter (the exceptions are the interviews with English-speaking expatriates), there was some concern that the transcripts might not capture some of the subtleties of the participants' responses. Furthermore, it was possible that the original questions might have been slightly altered in their tone or nuance when asked by the interpreter – resulting in responses that might not correspond directly to what was being asked. For example, questions might have been asked in such a way as to be more polite and respectful of Japanese cultural traditions. These possible differences might result in an incorrect interpretation of the interviews. In order to confirm the (original) translation and generate a more complete transcript, a second Japanese-English interpreter was hired to review the transcripts and recordings of the original interviews. During this process, the second interpreter and the author carefully

listened to the recordings (i.e. listening, pausing, rewinding, and re-playing as necessary) and extended the transcripts to include things such as:

- additions by the original interpreter to the questions asked (e.g. when the first interpreter clarified or restated the question for the interviewees)

- extensions to the interviewees' responses (e.g. including "thinking out loud" verbalizations by the interviewees that hadn't been mentioned by the original interpreter)

This additional process of transcript review was useful for gaining a more subtle and nuanced understanding of what the interviewees had said. Conducting real-time interpretation is challenging and this process of "double-checking" and careful revision of the recordings should not be construed as a symptom of issues with the original translator's work. Rather, it should be viewed as a necessary "due diligence" due to the author's lack of knowledge of the Japanese language.

Once the extended interview transcripts were ready, data analysis was conducted in an iterative fashion. As with the earlier study (Zagal and Bruckman 2009), open coding was used to identify possible themes deep inside the data (Neuman 2000). In open coding, codes (labels) are assigned to interview answers. These codes may overlap with others and multiple codes may also be assigned to some answers. As additional transcripts were coded, new codes might emerge and existing codes might be modified or consolidated. This process is conducted multiple times until no new codes emerge. The ideas is that the process of grouping and consolidating codes that refer to the same idea (or have similar meaning) allows underlying themes to be brought to light.

Arguably, this study was limited in the number of interviews. Thus, these findings should be considered as preliminary rather than definitive. Also, I would like to note that the coding scheme developed during the previous study was not used in this study. This was done in order to ensure that the themes that emerged were, in fact, from the new data collected. Thus, as will be discussed in the results section, it is encouraging to note that there were some themes that were common and resonant with the earlier findings.

FINDINGS

As shown in earlier work (e.g. Egert, Jacobs et al. 2007; Ashton 2011), students who want to learn how to make games are passionate about them and have been playing them since childhood. This is also the case in Japan. Professor Daichi notes how the people "that played games since their childhood and had dreams of game development, […] those people become our students" (as noted earlier, all interview participant names have been changed for privacy reasons). Like in the US and Europe, game students have many years of experience and are, overwhelmingly, experienced players. Adjunct instructor Kazuya remarks that "almost 100%" of his students are fanatic game players.

Role of Extensive Game-Playing Experience

Earlier findings highlighted how expert "gaming" experience can be counter-productive to students' learning goals. For example, it "often interferes with students' abilities to reason critically and analytically" (Zagal and Bruckman 2009), or it "colors [students'] expectations of game development, as [they] may only see the importance of skills necessary to implement games from their favorite genre" (Egert, Jacobs et al. 2007).

These earlier findings were echoed in this study as well. Bennet, who has been teaching in Japan for several years now, notes how he finds that "a lot of [students'] analytical skills are somewhat lacking, they [his students] sort of accept things without questioning". However, issues with critical skills were not raised that much by this study's respondents. Rather, a slightly different issue was raised by multiple respondents. "When [our] students come to the school, they have good ideas of what kinds of games they want to make" says Professor Ryouta. However, they are sometimes challenged to make the most of their idea and their professional goals. Kazuya describes how "the students who have lots of experience playing games, they don't tend to think about those games that they played when they design a game". He noted that he was quite mystified and surprised by this and continues, "they make games, but they don't put that gameplaying experience into designing". A colleague of his, Professor Tsubasa, clarifies, "if you are a person with lots of experience and then put that into game design, [we expect that you] would have been more creative and more innovative. But for some reason, the students are not doing it".

The study participants alluded to a notion of "one pattern way of thinking" – the idea that students seem to follow a singular way of thinking that they've seen in other games. In English this notion seems comparable to the idea of "thinking outside the box", something that these students seem to have difficulties with. Instructor Souta sadly notes that "there are a few students that come up with new ideas. Not many, only a few." Yuuto, an adjunct instructor who also works full-time at a large game company echoes this frustration, "I have been involved in game development for more than ten years. There are many cases of mimicry in the development of games, but I'm teaching my students not to mimic." He wants to encourage them to "make a game based on their observations of the world". In his experience, students have difficulties when they "try to come up with game mechanisms from viewing the world rather than from learning from other games." Souta agrees, "there are students who admire the past games, they tend to imitate the past games which they enjoyed. But it's not real creativity in the end."

I would caution, however, against thinking that this concern may be unique to Japanese games education. Alex, one of the non-Japanese participants, is a young professor with experience teaching both in the US as well as Japan. During his interview, he cautions that "I don't want to 'knock' the Japanese students [on this problem], because I also see this when I teach freshmen and sophomores back in the States".

This perceived lack of creativity in being challenged to create games that aren't entirely inspired by earlier games is an issue that deserves further exploration because it has often been brought separately up as a criticism of the games' industry. Arsenault notes how one of the game industry's traditions for innovation is to model a new game "specifically after a prior game, either as a 'clone' […] or as an 'enhanced' version" (Arsenault 2009). As a notable example of this practice he shows, via Google searches, how the term "doom clone" rapidly grew in popularity as a way to refer to the first-person shooter games (derivative of id Software's seminal title Doom) that "swarmed the video game industry" in the 1990's (Arsenault 2009). The issue here is not about the alleged lack of creativity in the game industry. Rather, the concern is that this problem may be perpetuated via current game students that also seem to have difficulties finding inspiration and ideas for games outside of games

Adapting to a Changing Industry

In each of the interviews in which the issue of lack of creativity came up participants seemed a bit sad, and somewhat disappointed. They quickly perked up, however, when it came to discussing changes in the industry. Bennet notes how his students "have a broader view of the game industry because the mobile market is so huge". Ryouta seems proud when he describes how "in the beginning, in the 1990's, students were motivated by their hobby. Now, they are more focused on it as a business – as a career". Daichi echoes this sentiment, "the enthusiasm of the students for making games hasn't changed, but the platform becomes different. They see diversity in the games that they want to make".

Additionally, and perhaps driven in part by the shifting social and cultural context described earlier, "some students come in with the specific goal of starting up a company" says Ryouta. The emphasis on establishing a career in a single company seems to be shifting. Ryouta continues, "our recent graduates, they have come in with the model that after they graduate they get a job at a game company, and a few years later they become independent and start their own company". Doyon notes how this phenomenon is observed in other industries, notably Internet and IT related companies (Doyon 2001).

An ailing traditional game industry, a booming mobile market, and shifting attitudes towards career expectations seem to be encouraging an entrepreneurial spirit in Japan's youth. It is possible that these changes are reflective of the thriving "indie game scene" (Bowen Martin and Deuze 2009) that has been an increasingly important part of the games industry in the last ten years or so.

Game Development as a Growth Area

In the West (and perhaps in the US in particular), games education is often seen as an area for enrollment growth. While a few institutions have seen "games courses" as a way to reverse falling enrollments in other disciplines (e.g. adding a game course to an engineering or computer science program), most recognize that there is a strong and vibrant industry that is growing and looking to hire people across a variety of disciplines (e.g. Egert, Jacobs et al. 2007; Estey, Long et al. 2010). Similarly, there is a strong demand from students in studying game design and development. The situation in Japan is somewhat different. While the Japanese game industry was a worldwide leader in the 80's and into the 1990's, that is no longer the case. This has resulted in game industry jobs not being perceived as that attractive or interesting. Naoto, a game industry entrepreneur who teaches as an adjunct as a way to "give back", describes his view of the situation, "my assessment is that right now Japan is not in the center of game development. So, the question we need to ask is where is Japan situated in the global scene? We need to ask ourselves why Japanese games were so strong and what the game industry should do to move forward". He sees this as an issue that's related to education, "education in Japan didn't play any roles for the two decades when the Japanese game industry was leading the world. The game industry is the only industry that used to lead the world and is now going behind European or American game developers. That makes us think about the educational institutions". Yuuto echoes this sentiment and adds that "from my perspective, we're just focusing on making sure our students will get jobs in the game industry. We don't have any time to think about how we can teach students to fight in the global market. That's a different story." Bennet notes how, contrary to many students in the West, Japanese students "don't seem to have a sense of what's going on outside of Japan in terms of games". Tsubasa is also worried about this, he remarks that "the number of Japanese universities and schools teaching games is not increasing". He

continues by pointing out that "at the last Tokyo Game Show [2011], the schools that would have booths, only a few are universities. The rest are all vocational schools. Game education is going to – shifting towards vocational schools rather than universities".

The Japanese university system has traditionally been quite centralized and there is reason to doubt that the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has, in fact, "surrendered the large degree of control it had manifested over the university system" (Goldfinch 2006). This can have a significant impact on games education since one of the issues seems to be the lack of interest, at the administrative or organizational level, in creating programs and courses to support the game industry. Naoto talks about how a large traditional Japanese university (different from the institution he works for) "tried to come up with their own courses. They did it experimentally for the graduate school, but it didn't work out. They didn't continue. The initial idea was to come up with experimental courses and if the feedback was great then they would probably continue, but they didn't do that." While there was some government interest in supporting the creation of game and other media-related programs, that funding has moved on to other areas deemed to be of greater strategic importance. Yuuto also notes that "there are politics inside colleges too. It is really difficult to pass through and create these types of courses". Naoto describes how "all these upper class managers ended up deciding that they cannot offer a course or don't think it's necessary to do that". He continues, "the Japanese government is now focusing on biology or all these cutting edge technologies more than the entertainment industry. So, I guess the school felt like they weren't going to get funding from the government".

The students aren't all that optimistic either. Yuuto explains why his institution works so closely with local game companies, "they're willing to help us because they need the talent. But the students' feelings toward games are somewhat negative because the size of the industry has been shrinking over the years." Kayuza raises an additional issue, "for those students with higher degrees, they go to different industries like hardware engineering or automotive. The students who would be able to create intricate technical things like, say, Unreal from scratch, they are here, but those people will go to different industries. It's the income, the salary!" It seems that while the students that study game design and development are motivated and interested, they do not represent a growing segment of the student population, rather the game industry is perceived by some as a second-tier industry in terms of career advancement.

Determining the Appropriate Level of Technical Expertise
Towards the end of the interviews, participants were invited to ask their own questions. In my experience, interviewees generally don't ask many questions or are interested in issues that are not directly related to the study they are participating in. In this case, things were different. In five of the six interviews, participants asked for my opinion on the use and role of middleware in class. The role of tools and technologies has been noted as contentious in game programs in the US (Zagal and Sharp 2011). So, it is understandable that participants were curious about how things are done in the United States and if our (my) students faced similar issues. Tsubasa phrased it thus, "American game companies tend to use middleware and students won't know how to make the middleware anymore. They just use it. How are you dealing with teaching students how the middle layer and middle systems are made?" The question goes deeper, as Jun notes "do your students take full use of this? And kind of exploit this opportunity [to use middleware]?"

My participants view the non-Japanese game industry as open in the sense that they share common technologies (e.g. middleware) as well as expertise (e.g. online, books, etc.). While they see this as providing a great opportunity for students to achieve their visions, they are curious regarding the extent to which this opportunity is realized. Professor Souta wonders, "My understanding is that in the US game development is quite open, but I wonder if the students are utilizing such an open culture for their game development".

Jun, who teaches programming and other technical courses, gets to the issue he's most worried about, "in order to study from the beginning, it takes quite a long time. So the students are facing difficulties developing games". He continues, "Flash and Actionscript, they are important for education in computer games because they can eliminate a lot of excess procedures in order to get graphics". However, he then wonders if they'll be able to develop their own technologies. Kazuya seems to share this opinion as well, he is adamant that "we try to teach students so they can start from scratch and not use middleware to complete the game". At his institution, they have explicitly detailed two tiers. "The bottom layer is the tools and framework, and the top is the game layer" he says. Kazuya adds that even if students are interested only in the game layer, "they still have to know the bottom layer, what it takes". This concern regarding middleware seems to parallel one of the reasons that has been given to explain the decline of the Japanese game industry: they relied too long on closed-proprietary systems while the rest of the world rapidly adopted middleware solutions.

CONCLUSIONS

In this article I have reported on a study that examined some of the issues that are faced by Japanese game educators. A brief summary of these findings can be seen below:

- Students, especially those with extensive experience playing games, are challenged when tasked with developing original or creative game ideas, concepts, or mechanisms.

- Students are shifting towards mobile games/development and there is also an increasing entrepreneurial spirit.

- Contrary to what is happening in the US and Europe, games education does not seem to be a growth area in higher education. Most activity seems concentrated at the level of vocational schools

- Instructors are concerned with the role of middleware in games education. Especially in technically-focused programs, how much of the fundamentals should students know?

Some of these findings, such as the challenges that expert players encounter when learning about games, echo results from an earlier study. However, even in this case, there are insights that deserve further exploration. The apparent challenges faced by Japanese students in coming up with innovative and creative ideas for games seems like the sort of thing that might also be an issue elsewhere. In particular, the role that significant game playing experience may have should be explored in greater depth in the future. A better understanding of this issue could lead to new techniques for encouraging creativity and ideation in game design and development. It would also be interesting to see how existing techniques, such as those developed in other creative areas, might best be applied.

There are also some findings that may perhaps be associated more closely with Japanese culture and the current state of its game industry. It may be surprising to some that the game industry in Japan isn't viewed by many as an attractive career option. Those within the games education community are perhaps accustomed to the high amount of interest that courses and degrees in game design and development generate. The explosive growth and larger amount of awareness in the public of the game industry plays a significant role. However, the situation in Japan is different. Their local market has been shrinking and the Japanese game industry's influence has waned since its heyday in the 1980's and 90's.

Perhaps the most significant finding is that, all things considered, games education in Japan does not seem to be that different from what is done in other places around the world. This is encouraging, since it suggests that solutions to pedagogical problems could be applied and shared more broadly. Overall, however, it is clear that further work needs to be done. For example, it might be instructive to perform more detailed analyses of curricula across institutions as well as course structures and organization.

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