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EDUCATIONAL GAMING

Case study: Kodu Game Lab & its use by Microsoft Finland

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CASE STUDY: KODU GAME LAB & ITS USE BY MICROSOFT FINLAND

The puspose of this thesis was to investigate the possibilities of gaming to educate different audiances.

First this work discusses on a theoretical level how games can assist and improve education in relation to the age of the student-player, the subject materials handled, and the limitations upon them. Then there is a more practical approach, a case study of Kodu Game Lab from FUSE Labs and how it is being used by Microsoft Finland. Here we look at how Kodu was made, its goals and inspirations, its platform breadth, and its usage. For this, an interview was conducted with Stephen Coy a member of the original development team from 2009 who is still involved in the project today. Finally, we will dive into how Microsoft Finland has leveraged Kodu Game Lab in its projects and events for their educational teams. Here we will primarily use Satu Huotari interview. Satu was a member of Microsoft Finland's Educational Team. To fill in any gaps first-hand knowledge is used of events either planned personally or assisted in planning in the author's role as an Intern in Microsoft Finland's Developer Experience Team.

KEYWORDS:

GAMES, GAMIFICATION, EDUCATION, CASE STUDY,

KODU, INTERVIEWS, MICROSOFT, MICROSOFT

FINLAND

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APPENDICES

Appendix 1. transcript of Stephen Coy interview, conducted on Thursday May 11th 2017

Appendix 2. transcript of Satu Huotari interview, conducted on Friday May 26th 2017

LIST OF ABBREVIATIONS (OR) SYMBOLS

RPG	Role Playing Game, a single player game type in which the player develops the skills of a single character usually these are story driven games set in a fantasy environment.
MMORPG	Massive Multiplayer Online Role-Playing Game, the multiplayer variant of the roleplaying game. Generally, all characters in the game are controlled by a player.
RTS	Real Time Strategy, these are fast paced strategy games where tactical decisions should be made quickly as all players movements are handled simultaneously.
STEM	Science, Technology, Engineering, and Mathematics
MP	Member of Parliament
MSP	Microsoft Student Partner, typically a technology student with passion for technology and motivation to help others stands out to where they are selected to help represent Microsoft in student events or assist with events on a voluntary basis.

INTRODUCTION

"I am calling for investments in educational technology that will help create… educational software that is as compelling as the best video game. I want you guys to be stuck on a video game that's teaching you something other than just blowing something up." (Obama 2011)

This is part of a speech President Obama delivered to students of the Tec Boston in Dorchester in Massachusetts. Clearly if the former president of the United States of America thought that gaming is the way forward for educating the youth of America, educational games are here to stay. First, this thesis will evaluate how games can assist and improve education according to the age of the player/student, the subject materials handled, and discuss the limitations upon them. Second, this thesis will look at Kodu Game Lab, its history, development, usage, and its educational role as it is being leveraged by Microsoft Finland.

In chapter 1 we look at the theoretical differences between student groups. Chapter 2 investigates the possible impact of gaming depending on subject matter. In chapter 3 the thesis discusses limitations of games used as a tool in education. The tool we will be investigating deeper Kodu Game Lab by FUSE is the focus of chapter 4, and in chapter 5 we will discuss the usage of Kodu Game Lab by Microsoft's Develpoper Experience Team in a number of events and workshop's throughout 2016. This thesis is finalized by the conclusions chapter.

1 STUDENT GROUPS

In this chapter the work will discuss the differences between student groups in how knowledge is obtained and how games interact with the different types of student.

Young children acquire none of their knowledge in the traditional educational manner for one remarkably simple reason: they cannot read the books. Yet pre-school age is the timeof our lives that we are learning the most, in a truly short span of time.

A toddler's first words might come from constant exposure to the spoken languages and parroting his surroundings but very soon parents are actively expanding the child's vocabulary via games, colors, animals, shapes, cars, and dinosaurs. All this knowledge and more, a child is likely to learn via a simple but effective game: the parent points at a picture in a book and the child guesses what it is. With touchscreen tablets becoming widely available this classic game has been given a face lift using the very child friendly interface inherent to tablets to create interactive learning environments that are both accessible and attractive to small children. A five-year-old cannot read, write, add or subtract but they probably learned how to count to 60 so they can play "hide and seek". The greatest – and arguably the most important lesson children learn on the playground is a rule of society: playing by the rules. They learn that to play together everybody must follow the rules, failing to do so will result in being called a cheater and the other children's refusal to play with them. This is a particularly important social lesson that holds true in all stages of live, especially in a school environment.

In school students are grouped by age, sex or sometimes the only common factor is their location. They are never sorted by what type of student they are: converger, diverger, assimilator or accommodator (Becker 2005).

1.1 Converger

A converger is prone to abstract thinking and focusses on deductive reasoning for problem solving; they usually have narrow interests and may come across as unemotional to others (Kolb & Fry 1975). Convergers are more attracted to the planning side of games so for them RTS and slower more tactical games are the most appealing.

1.2 Diverger

Then there is the diverger type. Divergers prefer concrete experience and observation; a typical diverger has broad cultural interests, a strong imagination and interest in people (Kolb & Fry 1975). Divergers tend to learn best via repetition and route; combine this with their communicative needs and you can see why RPG's and MMORPG's have a particular pull on divergers.

1.3 Assimilator

The third group are Assimilators. These students prefer conceptualization and reflection. They excel at inductive reasoning and creating theoretical models but generally prefer concepts and ideas over people (Kolb & Fry 1975). In most games the can try almost anything and the only risk you are taking is that the player must

start over. Games really encourage trying out new theories and concepts and this is what appeals most to assimilators. They can conceptualize, test and evaluate without risk.

1.4 Accomodator

The final group of students are accommodators. Accommodators value concrete experience and like to experiment actively. They do and try different ways, take risks and usually solve problems intuitively (Kolb & Fry 1975). While accommodators are unlikely to read the game manual, their methods of experimentation can be remarkably effective in a game setting where there are only rewards to be gained by the risks they like to take. While turn-based strategy games will probably never appeal to an accommodator, anything action based is sure to peak their interest.

To make a successful game, game developers aim to combine elements of various styles of games into their product, thereby ensuring maximum appeal to a diverse group of players. This is what makes games such a powerful tool: each type of learner will find what he finds appealing in the game, keeping the students interested, focused and engaged. To all, learning boils down to repetition and observation. Motivating young students to repeat a task is probably one of the hardest challenges an educator faces, and this is exactly what games excel at. Next, we will evaluate how adults can benefit from games.

1.5   Adult learning

Learning as an adult comes with a whole new set of challenges time restriction being the most obvious but also speed of progress. As an adult, time is the most constricting factor to learn in most cases. It can be difficult for an adult, managing work and family responsibilities, to find the free time necessary to attend courses in a school setting. Courses are usually held at fixed times and dates and if one is juggling shift-work and a family life, setting aside the time to go to a course can be challenging. Games are exceedingly flexible: the player can play many consecutive or just a few minutes. It is generally easy to save the game's progress and continue the next day or maybe next week. The level of education can be a second hurdle the adult student faces. In a school setting most students are of a similar level of education, they have all studied the same subjects at the same time. Some are better at math, others are linguistically stronger, but the general level is similar for all students. This is not the case in adult education. A Spanish-language evening course can have a rocket scientist, a nurse, a janitor as students. Some students will feel the course is too simple while others might be left behind. In a game a player can try the same level as many times as needed. Some will play true the game in 8 hours others will spent 40 hours but in the end, all have the chance to play at their preferred speed and learn all the game can teach without frustration.

2 SUBJECTS

Here the work will investigate on how gaming interacts with different subject matters.

Social:

We learn the art of communication at a young age from our parents and on the playgrounds. We learn what are the unwritten rules of our society, how to ask politely, what to expect and what is expected in public interactions. -Many of these lessons apply only to our own culture. What is considered polite in one place may be rude somewhere else. Games can be a gateway to other cultures, be it via the game itself or through the online community. Games come with clear, well defined rules; an advandatge that not necesariliy translates to real life.

Scientific:

Scientific subjects may be the most obvious and easiest materials to implement in educational gaming. One of the most famous games of all time, Angry Birds by Rovio is basic physics poured into a fun application played by millions of people. A challenge for science-based games is that they can feel more like a series of exercises than a game if they lack a good game mechanic.

Language:

According to Nadzrah (2013), one of the prime differentiators between language skill levels is the size of the speaker's vocabulary. Word guessing, and association games are a good way to expand one's knowledge intentionally but even by playing any adventure or role-

playing game the player will be actively using language for many hours and improve one's skill accordingly.

3 LIMITATIONS

The usage of games for educational purposes has clear upsides, in this chapter the work will investigate the limitations and drawbacks.

Games are mostly self driven learing, or more correctly it is driven by the game developer without close interaction. For some students and subjects this can be limiting. There is no options for follow up questions, no test at the end of the course to solidify the learning, there is nobody there to challenge the student on how they understood the lessons.

Through games players can learn a myriad of things, but should all knowledge be so readily available to everybody? Should some limitations exist on the accuracy of the depiction of certain subjects in a game? Some simulation games, which are not meant as educational can be so complex and realistic that the knowledge a player gains could be applied in real life. After the attack on the World Trade Center buildings in New York, it was discovered that the assailants used Microsoft's Flight Simulator as a training tool (Fainaru & Grimaldi 2001) to learn how to handle Boeing passenger planes, knowledge usually only accessible to a very select few. The same can be said for many games involving guns and fighting, especially the hyper realistic simulations that were popular in the early 2000s, like Daryl F. Gates' Police Quest: SWAT a game so realistic that the game manual included tables for wind- and elevation calibration for a

sniper rifles scope and explanations on how to calculate and implement them. Oversight can be critical for some individuals' learning. How a person uses the knowledge he has gained is and should always be that person's responsibility; but in some cases guidance can make all the difference.

4 KODU GAME LAB

Ask Stephen Coy about Kodu Game Lab, and there will be an avalanche of answers, data, figures, and experience a first-rate example of a man passionate about what he does. Stephen was part of the small team of developers that produced Kodu's concept in 2009 for a hack event and he has been a persisting presence through the years fulfilling a myriad of roles in the project.

For several years Stephen Coy has been maintaining and updating the Kodu Game Lab. Handling support questions that are being send to him from all over the world, using online translators when needed to bridge the language barriers; working diligently on the graphics to keep them appealing to a user base that has evolved over Kodu's 10 year life span; he even still finds time to do his original task of maintaining the code, making sure it runs on an ever expanding list of devices: Xbox, tablets, 15 year old laptops and state of the art desktop gaming rigs.

"*Let's do something that can get kids hooked on to programming*" (Coy, 2017)
This simple statement by Stephen on the original team of developers' motivation to start working on what would become Kodu Game Lab shows clearly that the target audience, was younger children and teens. Everything about how Kodu looks and the environment that he moves through has been designed with that in mind. Controllers are more familiar to the younger generations than mouse and keyboard, so the control scheme was setup in such a way that it would be easy and intuitive to use. The color scheme in Kodu's world and the overall

roundness of the objects that can inhabit it are based on a collection of plastic toys that one of the designers collected as a kid. Kodu itself (Fig. 1), the main character of the project has its dimensions based on a toddler, this is further amplified by its movement style and speed all of this was aimed to make Kodu Game Lab as accessible and relatable as possible to the young users.

Figure 1 - Kodu character 1

Kodu Game Lab is a free tool available at https://www.kodugamelab.com/ , designed, made and maintained by passionate people; the target audience might be young children, the goal was to make them interested in computers and coding via games but in the end, it is still a cost for Microsoft, so tools to clearly measure of usage and adoption where embedded from the beginning of the project. Adoption is easy to measure; simply by keeping track of the amount of times Kodu Game Lab is downloaded from the official web page gives a sufficiently representative value for this. Stephen and the team were always aware that this is not perfectly accurate, especially in the developing world countries, this is not an exact method; a single downloaded file might be shared many times to

places that do not have adequate access to internet. Measuring usage is done with another approach. When Kudo Game Lab is launched, it sends out a ping to the servers for an update on any news relating upcoming updates, events, or just interesting facts. This ping is received, and the server sends back the requested information that gets displayed in the news ticker on Kodu Game Lab's start screen. This process gives the team, a count of utilization and the locale from where the data was requested from. In the graph below (Fig. 2) we can see Kodu Game Lab´s global total impact progression over the 5 year span from 2012-2017.
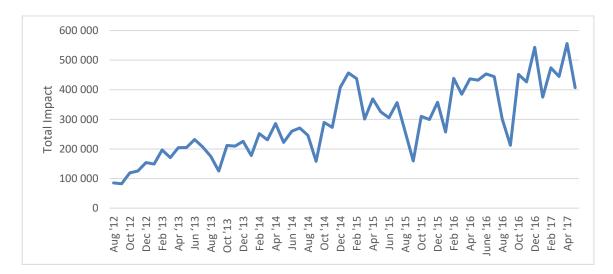

Figure 1 - Monthly Total Impact 2012-2017

To acquire to the total impact number, the team assumes that 5% of unique downloads are made by teachers and they adjust the number of students per classroom depending on location. So, the impact of Kodu is still growing as the graph clearly shows. Another fact Stephen Coy was proud to point out during the interview that usage wise Kodu Game Lab just had its best month ever, with more than 770,000 unique pings to the servers during the month of March 2017.

5 KODU IN MICROSOFT FINLAND

In this chapter the work will discuss the usage of Kodu Game Lab in 3 different scenarios of educational events organized by Microsoft Finland.

Kodu Game Lab has been used in a multitude of projects and workshops by Microsoft Finland's Education and Developer Experience teams in in the past. This thesis will focus on three events organised by the Education and Developer Experience teams in 2016 all of which the author of this work was directly involved in. First, we will look at the Girls in Tech event. Second, we will discuss an OpeCode event organised for teachers. The final use case we will examine is the "Cocktails & Code" event organised for Finnish members of Parliament. These events were chosen for their varying target audiences and goals, while using remarkably similar methods and tools.
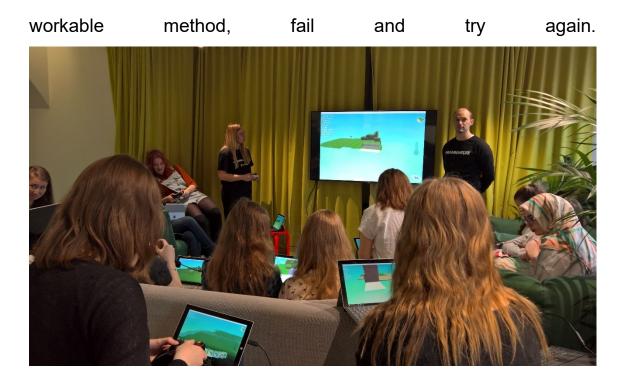
5.1 Girls in Tech

5.1.1 Setting

Girls in Tech (Girls in Tech, 2016) was the working title for an event organised in April of 2016 by Microsoft Finland as part of a European wide effort to help girls break through "the glass ceiling" that is preventing women from succeeding in the ICT work landscape. The number of female students in STEM studies are significantly lower than in other fields and this is perceived to be a contributing factor to why fewer women succeed in the ICT field. The goal of the series of events organised by different technology companies around Europe was to introduce teenage girls to technology in an approachable manner, show casing that programmer, technician, or researcher are valid career choices independent of gender.

5.1.2 Actions

The event was organised in Flux, a Microsoft owned shared workspace environment in Helsinki's Korkeavuorenkatu. The choice for Flux was made to have a more relaxed environment for the participants as opposed to the strict and business minded location of the Microsoft offices in Espoo. On the agenda for the day, there were talks by women that work and thrive in the ICT world in Finland, Microsoft's Developer Experience Team had invited several female university students in STEM fields to function as "big sisters" answering any questions that the participants might have on life as a female student in what is currently a very male dominated field of study, and there were several different tech related workshops using

fun interactions to introduce robotics, electronics and of course programming.

The programming workshop using Kodu Game Lab was run by Noora Kaurissaari, an intern in the Developer Experience team. She followed a loose step by step script to progress the participants to the first stages of programming a game with Kodu as the main character. Starting with introducing how the camera is manipulated and the cursor controlled, moving to the methods for expanding and manipulating the environment, finally showing how to add characters and how to program them to respond to inputs from the controller or react to events in the game. All of this was done in a very playful "learn as you try" approach: Noora herself had only very shortly tried out Kodu Game Lab herself as she has a background in marketing. The girls were encouraged to try their own designs and any questions on how to achieve goals or ideas they might have for their games were answered as vaguely as possible, motivating the student to find a

workable   method,   fail   and   try   again.

Picture 1 Noora Kaurissaari in GirlsInTech 1

5.1.3 Results

Some girls just built a simple world, where Kodu would be free to roam around in, either controlled or automated; some build a game were Kodu had to survive as long as possible while being chased by other characters when getting caught meant game over; some forgot all about the characters and just build a vast world filling it with threes, lakes, mountains and valleys. One small group of girls started collaborating and build a game where apples rolled of a hill and Kodu had to grab as many as possible before time ran out.

Over the course of the day, the girls participated in four different workshops and from oral feedback received the programming workshop shared top spot with a workshop about robotics. The participants reported that the shared discovery of the games´s

possibilities and the relax atmosphere to be a fun experience. Several of them commented that school should be this entertaining every day.

5.2 OpeCode

5.2.1 Setting

OpeCode was a series of workshops aimed at teachers. Finland started introducing coding to pupils at a much younger age around 2016, arguing that the logic of coding is a skill that can benefit all and will contribute to a better overall education. The problem with that is of course in many cases the teachers in charge of these pupils are in general far less exposed to computer science than their 10-year-old pupils. Microsoft Finland Educational team organised a series of one-day schoolings for lower and middle school teachers in the metropolitan area with the purpose of providing the teachers with some guidance on how they can introduce coding in the class room, activate their pupils and themselves to learn coding and the logic behind it by doing. The day we will be discussing next was a special version of the OpeCode sessions held for a visiting group of Estonian and Latvian teachers; aside from the primary language being English instead of Finnish the content of the day was identical to others in the series.

5.2.2 Actions

The day was organized on 26.4.2016 at Helsinki's County Hall in Toinen Linja for a group of 18 teachers from Latvia and Estonia and a few of their Finnish colleagues that were acting as group leaders for their Baltic colleagues' visit to Finland. The agenda for the day consisted out of four different workshops; three workshops that introduced different tools that teachers can leverage in their computer

science courses and the fourth workshop was an introduction to Sway, an at that time new online presentation services from Microsoft.

As the goal of these workshops was to provide the teachers with skills and tools that they could take back to their classrooms the Kodu Game Lab workshop was in this case a tightly scripted guide; the idea was that the teachers who were not too confident in their skills would be able to simply reproduce what they had done on the day later with their pupils. The instructors started by familiarizing the teachers with the controls by having them expand the world map. After adding in the main character, the instructors had the teachers "run" the program they just build, emphasizing that the reason their Kodu was not doing anything was because it had not programmed to react to any inputs. So now the instructors are introducing the basic principles of programming: if joystick forward, move Kodu forward; when "a" pressed and joystick forward, move Kodu double speed forward. At this point we are introducing new elements with apples that the Kodu needs to eat to score points: this raises the point of when is a game a game, we need a winning or losing condition; we are also manouvering the teachers into a teachable moment: the apple pickup code is incomplete and causes the score to go up without removing the apple from the world, creating an infinite loop of points scoring and breaking the game. We move on by having them understand what went wrong and correct it. Moving step by step the teachers learn to build a simple game where their Kodu needs to earn "x" amount of points in a limited time by picking up apples, while at the same time avoiding becoming hit by other characters chasing them. Using this tutorial style approach, they learn about basic coding logic structure,

cause and effect, and the basis of game development all within a one to one-and-a-half-hour session using a tool freely available to them and their students.

5.2.3 Results

At the end of the day, the teachers walked away with a template for an introduction lesson they could share with their colleagues at work and leverage as the basis for a lesson with their pupils.

5.3 Cocktails and Code

5.3.1 Setting

"Cocktails and Code" the final use case we will be considering was an event organised to demonstrate to Finnish Members of Parliament how games can be a fun and effective method to teach the logic of coding to young students and to generate discussion on the topic.

In January 2016, The Members of Finnish parliament were attending an event in Vanajanlinna near Hämeenlinna. The Finnish Parliament has two hundred members and a large portion of them were expected to be present. The Members of Parliament would be enjoying some refreshments and a networking opportunity between 15:00 and 15:30, this would be the time allotted to Microsoft Finlands team to interact with them.

5.3.2 Actions

The fact the workshop presenters would be sharing the Memmbers of Parliament's attention with their refreshments and colleagues, the

sheer amount of people to engage, and the location all lead to a conference boot style solution. Microsoft Finland Developer Experience-team engaged the help of several Microsoft Student Partners to host small demonstration sessions. A group of tables were setup in the area where the Members of Parliament would be enjoying their break. Each of the Micorsoft Student Partners hosted their own little workshop with 4 Surface Pro devices available to them per table. We expected the Members of Parliament to shortly visit the tables and interact with the Microsoft Student Partners and the Kodu Game Lab demonstrations; the Microsoft Student Partners were instructed to build a very simple game, explaining each step as they progressed and inviting the Members of Parliament to try for themselves on one of the devices at their table. The script that we provided for this was very similar to what was used previously with the teenage girls; the variation here being that we stressed the importance of repeating the explanations on why something works every time, making sure that new visitors to their tables would be able to catch up on what was going on. This approach worked as intended with small groups forming around the tables and opening discussions between the Members of Parliament that were interacting with Kodu and those observing their colleague's progress.

5.3.3 Results

According to feedback from the Microsoft Student Partners, they fielded questions ranging from "what button do I press to make it go forward?" to "how do you create complex behaviour, with multiple conditions?". For "Cocktails & Code" the goal was to demonstrate how non-traditional tools can be used to teach children about coding and

the logic of programming; how well we succeeded in this case was hard to gauge; the size of the crowd as well as the short interaction time limited the impact the demonstration could have on these decision-makers.

6 CONCLUSIONS

This work investigated the usage of games to educate, more specifically how Microsoft Finland has used Kodu Game Lab to educate a variety of student groups using different form factors of workshops.

Albeit by intentional design or as a side effect from trying to entertain, games can be a powerful tool in the arsenal of students and teachers alike. The sheer amount of time spent playing ensures the student will learn something. Whether that is useful or not is in the hands of the game designers and the student's willingness to use it. Well-designed games can keep players of all ages and interests focused for hours on end, slowly opening more options and teachings as the game progresses. It's this ability to keep players enthralled while being flexible with difficulty, rate of advancement and time management that makes games a strong addition to the toolset of educators. Games will not – and should not replace a skilled teacher but they can make the educator's job a lot easier.

Kodu Game Lab's longevity is a testament to it's simple and timeless design. The fact that in 2017 it was still growing in usage is due to this simplicity; the graphics might not be as shiny as they were when Kodu was first released, but because of this Kodu Game Lab runs on devices that are broadly available to all users around the world. Education is a way out of poverty and if the tool that is used only runs on state of the art PCs it would be alienating a very large portion of its target audience.

Microsoft Finland has used Kodu Game Lab alongside with other educational tools in a wide variety of settings, from a workshop run for the employees' children to the "cocktails & code" event for Members of Parliament and everything in between. From the use cases that were discussed in this work we can learn that in some cases games are an impactful educational tool: the teenage girls left the event entertained and educated, the teachers left with an action plan and increased confidence in how to engage their pupils in the future. In the case of the Members of Parliament a more traditional approach with a presentation might have been more effective: the crowd was too large, the amount of time spent by the participants interacting too short, and the combination with the networking proved to be detrimental to the attendees' ability to focus sufficiently.

A key error that was made in the organization of these, and other events and workshops organized by Microsoft Finland is measurability. In some cases, considerable resources, be it devices or time were invested in planning and executing these events, yet no consideration was given to how to measure their impact or success other than short conversations with attendees afterwards when possible. Gathering empirical data would have been a great tool to hone the delivery of the workshops.

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Transcript of Stephen Coy interview, conducted on May 11th, 2017

So first of all, thanks again for doing this. Could you describe what your role was in the Kodu Game Lab project?

Well, as originally planned; When Kodu first started, there was three of us on the team. Myself, Matt, McLaren, Ann Michael Miller. And so, Michael and I are both developers by trade. Matt is a developer slash PM Slash genius guy. But over the years, we grew code up to about a six-person team for the initial shipping over the years. Most of those people have gone away to the point where for the last several years I have been the only person on the team. So now I do artwork, I do the design, I decide what features go in and out. I do all the interacting with the public; I answer all the email to the code who support email alias I go online and handle all the forums. As such I am kind of doing pretty much everything on the project now.

So basically, you are considering changing your name to Steven Kodu soon.

Not quite that far, but it is that is quite a quite a bit of work there. Well, it is an amazing project, and the fact that I get to keep doing this is kind of cool. Yeah, because development started. How long ago exactly like well, at the time we were part of the Vista team and then when Vista shipped, we came to Microsoft Research and Lonely Chang was or still is. That is manager, so she moved to a group back to Microsoft Research and that was. I guess that is 10 1/2 years ago now.

Well, look at that and it is still alive and kicking and being you and growing even is it still growing really?

Yes, yeah, in fact. Usage wise, just this past March (2017) was our highest month ever. We saw, over the month we saw 770,000 Kodu starts. As recorded by our instrumentation. That is quite remarkable after, For like quite a remarkable life span for any like form of software, and so yeah. Yeah, so the development time is basically it's still ongoing because you're still building on it.

You're still working on it piece by piece?

Yes, correct.

What were your inspirations when you started doing on the project working on a project like what?

Well, it was the kind of the motivation was a little bit from a couple of different directions. First of all, we had seen some there was a lot of articles at the time that enrollment in computer science programs at the University level was actually in decline and had been declining for several years. Um and so we got to talking about that and realize that. You know myself, Michael, Matt, that it was those early experiences that we had with programming that really hooked us into computing and set the course of our careers. So we decided at that point. OK, let us do something that you know can get kids hooked into programming you look at. PC of the arrow back when we learned, let us say circuit 1980 or so or early 80s. Most of the time you turned it on, it went beep and you are left at a command prompt where you could actually start typing in basic code right away. Well, Fast forward to modern computers with Windows or whatever. You know Mac OS and there it is amazing how far computers have advanced, but when you turn them on your completely removed from that. Ability to program, you know, yes, you could download a copy of Visual Studio, but that is a really intimidating way to start. So. You know that motivation there was like OK? How can we make it easy for kids too? Get excited about programming. And then. A lot of weird things kind of came together to drive what actually became Kodu about that same time the first beta test for XNA was happening. And the idea that we could actually deliver this on the Xbox was really exciting. Because we had this idea that you know, especially with the game controller in their hands. Kids think that they are playing rather than learning, and we wanted to help get that across. So. With XNA coming out, we decided OK will target XNA will target the Xbox 360. By targeting the Xbox as our platform, that meant that our primary input device had to be the GamePad, which so that completely influenced the user interface from top to bottom because it's a very different experience than keyboard mouse.

Do you think that that limitation actually was guiding you in a good way?

Yeah, I think that it did. It really did. You know it made it a little bit harder when we decided to move it to the PC. I remember at first we tried to just do a quick mapping of. Controller buttons to keyboard buttons and it was an absolutely abysmal experience, but I think that it at least it eventually evolved into something where - the keyboard mouse experience is on par with the GamePad experience and the fact that you can fairly seamlessly move back and forth between them is something unique that's just not out there elsewhere. And you know, now we're also doing touch input and I just spent the last several months trying to help make that a little bit better, so it's not quite on par with those two yet, but it's getting there; It is getting there.

So the original goal was really to bring coding closer to all?

In in a more abstract sense or maybe bigger picture is. You know, kids have devices all around them these days, but they are primarily used for consumption of content that other people put together, and we wanted to also show that look. These devices are great creative tools for making your own content. And so that was also one of the motivating factors. It's not just getting them programming but getting them thinking of all these screens as tools that they can use to express themselves creatively.

Kodu code has a quite unique visual look. How did you come up onto that one?

Well, since we chose the Xbox 360 is our initial platform. And we had, you know, the early betas of XNA. We realized, hey, we could do 3D. We could actually make it look more like a modern game compared to something like Scratch which, I love scratch dearly, but it looks like it's still stuck in the 80s. Yeah, 1980s. It's all the way hip again now but yeah, but the actual characters we wanted we wanted something that was approachable by kids and in fact - Kodu himself, the character was designed to, resembled proportions of a toddler; and that's also why Kodu is a little bit slow and a little bit clumsy, we didn't want to do, you know, Sonic or something you know in your face we wanted something that was approachable,

friendly. A lot of the art style was inspired by the Japanese vinyl toys that you can get. You know the molded vinyl toys. Matt McLaren collected quite a few of those, so he was. I was collecting pictures of them and you know showing them to our 3D artists saying yeah, this is kind of what I want it to look like.

So the plastic small cute version of Godzilla turned out into Kodu eventually?

Right, right and so yeah, and if you look at some of the models you know, some of the models. It is much more obvious than others. Like for instance the trees. There are actually mold lines that go across the two halves at the top of the trees and things like that where we really played up the fact that these are kind of plastic toys.

Now a bit more of a debatable question maybe: is this Kodu, in your opinion, is it a game on its own?

No. Kodu is a 3D game development environment. It is much more akin, to you know, Unity or then, you know the games made with unity. Yes, Kodu comes with some premade games. And yes, you know kids create. You know thousands of games every month and share them with the world. But code to itself I. I really think it is kind of almost important to make that distinction that Kodu itself is not a game. Kodu is a game development tool that kids can use to create their own worlds, populate them with characters, and then program the behaviors for those characters and the rules of the world. You know it's kind of an interesting point, because I think that a lot of people. Miss that distinction, and for instance, you're familiar with Project Spark, right, yeah? That was one of the things that I think that they. Or one of the reasons that I think Project Spark had so much trouble early on finding its identity was that. The game designers in the game studios that were working on Spark. They kept thinking of it as a game, you know, so they wanted to have levels and badges and progression. And… It's kind of, you know, at some point it was almost where they were trying to make it a game about being a game developer, and I just kept shaking my head and saying like no, this isn't a game about being a game developer. This is being a game developer.

What do you personally think? What defines a game being a game?

I do not even know if I want to try to get into that. I have read so many different books, gaming and play and… Every single book has a slightly different definition or a greatly different definition. I agree with most of them to some level, but then disagree with all of them to some level. I think that unless you are really being, you know harshly academic about it, it kind of doesn't matter. I mean and you know I mentioned the word play too - no, there's something you know Kodu, while I do not think it's a game, it is something that you can play with and you can have a lot of fun. Being just creative with it.

Whereas many games that are officially games are not fun at all?

A lot of the time. Well, here is the question - does it? Does it need to be fun to be a good game? You know, there is a certain joy about being frustrated and getting over that frustration. You know they. Just, you know, trying to beat your high score, just you know, think about you know playing the classic arcade games you knew you were never going to win. It was just a matter of can you, you know, just beat it just that little bit further. Is it even possible to win pacman? Um, I do not think so. I think that you can get through. You know, however many levels there are there, it does get to some like point where it actually glitches and it ends up with only half the screen being shown and the other half not quite clear and. There is some weirdness that happens if you can; If you go all that way and people have done it. In fact, I am sure you could go to YouTube and find a video of it.

So you are clearly it's still very active with the IP there. What are the plans going forward for the cute little toddler shaped Kodu?

Let us see. Well, hopefully this summer. One of the guys I've been working with off and on lately. His name is Chris Phillips. He is a contractor. He has been handling all the website stuff because I know absolutely nothing about web development. Anyway, he's taking some time off right now, but hopefully June or July he'll be back, and our plan then is to more closely tie the coded client into the online community so it's much easier to find, upload, download and manage your worlds within the community. Yeah, because I think that we are up to sync.

We are seeing like 15,000 worlds shared per month now. To the community so it is pretty strong. The other part I want to do is just that a lot of Kodu was built crazy fast. And so, like anything else that was built that quickly, it has got some brutal parts to it. So, what I'd like to do at some point would be to completely redo the whole UI. And, you know, rethink how things go. The flow through the menus. Just both from a visual perspective and also from a user experience perspective to try and clean up the rough edges there and make it just a little bit more appealing especially to the first-time user. I would really like to focus on that first time that somebody uses Kodu. Can we make that experience just a little bit smoother than it currently is? Because, if you use it longer than 15 minutes, you are using it longer than an hour.

Are you getting involved in any other like game development project at the moment? Or is this Kodu just all the way embroiling your life?

Kodu is just pretty much wrapping up everything that I have, you know, between doing the support, outreach, keeping the forms alive, doing all the bug fixing I try to do release every six months or so. Just to wrap up all the bug fixes and any new features, that pretty much keeps me fulltime busy.

Well as a one man show nowadays, I can see how that can happen.

Yeah, well, I'm pretty lazy too so. There, was this really clever guy once who said that "I'll hire the lazy person to do something, he will find the easy way to do it." Yeah, and apparently, he did.

Well, that was it for basically the questions that I had prepared for you for this time. As you went and filled in quite a few of the questions all voluntarily. **Thank you again Stephen**.

Transcript of Satu Huotari interview, conducted on May 25th, 2017

Satu, you used Kodu Game Lab in several events last year with Microsoft. One of the most prominent ones was "Cocktails and Code". What was the goal of this event?

Well, I would like to start with describing first who were the target audience of this event. So the event was part of a two day seminar about Information Society. And it was called Information Society Academy and the. whole target of the seminar was to give new information to decision makers, politicians and until network key stakeholders on that area. So there were Members of Parliament present as well as. people from different ministries and different companies. Microsoft was asked to provide fun and easygoing networking event after the whole day of seminars and give an introduction to coding an in a way that we usually do it. So. I decided that we could use Kodu because that's an element that we use with quite many or quite different audiences because it's easy to learn and.with it you can do - You can spend from 10 minutes to almost the whole day, so it's a good platform to use in that type of events.

So who actually did the interaction with these ministers and Members of Parliament?

We had I think, four or five student partners there too, and they had created outline which I think I still have and I can send it to you if I haven't sent it to you yet, that created an outline of what to do with the Kodu. Do so, basically they started with like quick intro of what Kodu is and then after that they immediately started to create their own game. So,how to give commands to the code creature and how to make it do something.

What was like the average time that the Members of Parliament or the people involved in the demonstration spend with the student partners?

It was varied quite a lot because the timing of the event wasn't that appealing. It was after a long day of speeches. So,I think it varied from one minute to up to 10 minutes. There were couple of persons who clearly were interested. Interested about Kodu and wanted to learn a bit more but others were mainly

just taking a quick look or watching one of
the Student Partners, demoed Kodu a bit more by playing. Easy game that they
had created beforehand.
Do you feel that? This event reached its intended goal.

Maybe not. Well, on the first hand we did not actually have a goal, it was more like a fill up event. But I guess that student partners felt that they were not there for nothing, that they actually got to do something and there were couple of persons that were really, really interested. But I think we could have - if we wanted to have a goal with that event, we should have organized it a bit earlier stage during the day.

OK, so then maybe we should switch to the girls in tech event from April End of April 2016.

Yes

So, this event was organized by Microsoft in cooperation with. who?

 It   was organized together   with Nuori Yrittäjyys, that is Junior   Achievement Finland.

And, well, the title is obvious, but the goals of this event were?

Yeah, it was a part of larger,I'm not sure what do you say it – a larger campaign, European wide campaign: girls   in   Tech   and   we hosted one event in Finland. Regarding it and the main goal of the whole campaign was to inspire girls to see ICT or stem areas as one they could actually see as a future for them and our events goal was to show interesting areas in ICT. And empower the girls to see if they can actually code and that ICT is not just for boys.

Can you expand a bit on where this event was held and how it was structured in Finland?

We held it in Microsoft Flux startup base, a startup place in center of Helsinki and the day was structured so that there were four workshops. If I remember correctly the girls were meant to attend all of them during the day.

Just a second. So yes, there were four workshops: one was titled. "Blog what's next". The idea was to create a blog, or how to alter the WordPress code behind it. There was social media marketing workshop and then there were two more hands on workshops and those were "Coding with Kodu", and the other one was" Little bits". And the day ended in a mentoring session. The audience was 14- to 18-year-old girls and I think there were about 50 girls attending.

So, the Kodu workshop was held in this case by Microsoft Student partner again?

I think, actually it was held by a Microsoft trainee Noora if I remember correctly. So, the. Student Partners were engaged with other workshops that day.

So that's very different target audience than the previous event. 14 to 18 year old girls compared to members of Parliament. How did that compare in interactivity?

A lot because in the previous event it was small. It was their own choice if they wanted to take part, but in this. Uh, the Kodu workshop was part of the actual program, so I think it was better structured than the. Members of Parliament event and it also gave more time to the girls to actually create something with Kodu so, they actually got like a hint of what you can do with it and got time to play around with it.

So, it would be fair to say that it was a bit better result then?

Yes.

I think that will be all for today, OK?

 I actually had a really good realization about Kodu yesterday, but do you want that?

Yes, if you have any good, yes, please do

So, I think go to is, the idea behind Kodu, it is really important an it's to good platform for like different target audiences to understand whatwhat coding is an

the logic behind them but. The like visual platform of code. Oh, it's getting a bit. Outdated, and I think that could be a problem if we keep using that with. Younger audience because they might see code was outdated and therefore boring and not maybe something that they would like to do do things with, so I'm hoping that there will be.

Data table on Kodu Game Lab between July 2012 – April 2017

	July '12	Aug '12	Sep '12	Oct '12	Nov '12	Dec '12	Jan '13	Feb '13	Mar '13	Apr '13	May '13	Jun '13	Jul '13	Aug '13	Sep '13
Downloads	17 114	20 288	22 160	20 788	22 081	17 095	21 279	23 097	38 294	33 554	30 238	26 931	22 811	19 030	23 026
Unique installs (60% reporting)	14 580	14 139	20 447	21 508	26 365	25 573	33 703	29 295	35 005	35 094	39 726	35 470	29 978	21 474	36 267
Unique installs (40% non-reporting –estimate)	9 720	9 426	13 631	14 339	17 577	17 049	22 469	19 530	23 337	23 360	26 480	23 647	19 985	14 316	24 178
Total (100%)	24 300	23 565	34 078	35 847	43 942	42 622	56 172	48 825	58 342	58 454	66 206	59 117	49 963	35 790	60 445
5% teachers (estimate)	1 215	1 178	1 703	1 792	2 197	2 131	2 809	2 441	2 917	2 923	3 310	2 955	2 498	1 790	3 022
→ 50 kids / class (estimate)	60 750	58 912	85 196	89 617	109 854	106 554	140 429	122 063	145 855	145 135	165 515	147 791	124 908	89 475	151 113
Total Impact (Kids + Unique Installs)	85 050	82 477	119 274	125 463	153 796	149 176	196 601	170 888	204 197	204 589	231 721	206 908	174 871	125 265	211 558

	Oct '13	Nov '13	Dec '13	Jan '14	Feb '14	Mar '14	Apr '14	May '14	Jun '14	Jul '14	Aug '14	Sept '14	Oct '14	Nov '14	Dec '14
Downloads	24 934	29 869	25 935	29 355	30 092	33 700	28 905	29 839	22 755	19 987	16 179	23 754	23 929	31 299	36 109
Unique installs (60% reporting)	35 920	38 744	30 453	43 176	39 576	49 036	38 056	44 555	46 378	42 101	27 108	49 620	46 782	69 978	78 259
Unique installs (40% non-reporting –estimate)	23 946	25 829	20 302	28784	26384	32 691	25 371	29 703	30 919	28 067	18 072	33 080	31 188	46 652	52 173
Total (100%)	59 866	64 573	50 755	71 960	65 960	81 727	63 427	74 258	77 297	70 168	45 180	82 700	77 970	116 630	130 432
5% teachers (estimate)	2 993	3 229	2 538	3 598	3 298	4 086	3 171	3 713	3 865	3 508	2 259	4 135	3 899	5 832	6 522
→ 50 kids / class (estimate)	149 665	161 433	126 888	179 900	164 900	204 317	158 567	185 646	193 242	175 421	112 950	206 750	194 925	291 575	326 079
Total Impact (Kids + Unique Installs)	209 531	226 006	177 643	251 860	230 860	286 043	221 993	259 904	270 538	245 589	158 130	289 450	272 895	408 205	456 511

	Jan '15	Feb '15	Mar '15	Apr '15	May '15	Jun '15	July '15	Aug '15	Sept '15	Oct '15	Nov '15	Dec '15	Jan '16	Feb '16	Mar '16
Downloads	31 947	29 262	36 681	30 310	28 129	28 742	26 967	21 987	29 070	29 925	16 384	20 615	25 106	18 721	33 974
Unique installs (60% reporting)	75 064	51 576	63 316	55 766	52 341	61 143	44 444	27 293	53 215	51 284	61 377	44 110	75 158	65 936	74 859
Unique installs (40% non-reporting –estimate)	50 043	34 384	42 211	37 177	34 894	40 762	29 629	18 195	35 477	34 189	40 918	29 407	50 105	43 957	49 906
Total (100%)	125 107	85 960	105 527	92 943	87 235	101 905	74 073	45 488	88 692	85 473	102 295	73 517	125 263	109 893	124 765
5% teachers (estimate)	6 255	4 298	5 276	4 647	4 362	5 095	3 704	2 274	4 435	4 274	5 115	3 676	6 263	5 495	6 238
→ 50 kids / class (estimate)	312 767	214 900	263 817	232 358	218 088	254 763	185 183	113 721	221 729	213 683	255 738	183 792	313 158	274 733	311 913
Total Impact (Kids + Unique Installs)	437 873	300 860	369 343	325 302	305 323	356 668	259 257	159 209	310 421	299 157	358 033	257 308	438 422	384 627	436 678

	Apr '16	May '16	June '16	July '16	Aug '16	Sept '16	Oct '16	Nov '16	Dec '16	Jan '17	Feb '17	Mar '17	Apr '17
Downloads	43 591	38 525	40 270	33 931	28 173	45 498	50 623	51 260	54 061	48 741	43 756	64 038	30 524
Unique installs (60% reporting)	74 152	77 734	76 164	51 585	36 405	77 495	73 084	93 172	64 271	81 276	76 274	95 333	69 744
Unique installs (40% non-reporting –estimate)	49 435	51 823	50 776	34 390	24 270	51 663	48 723	62 115	42 847	54 184	50 849	63 555	46 496
Total (100%)	123 587	129 557	126 940	85 975	60 675	129 158	121 807	155 287	107 118	135 460	127 123	158 888	116 240
5% teachers (estimate)	6 179	6 478	6 347	4 299	3 034	6 458	6 090	7 764	5 356	6 773	6 356	7 944	5 812
→ 50 kids / class (estimate)	308 967	323 892	317 350	214 938	151 688	322 896	304 517	388 217	267 796	338 650	317 808	397 221	290 600
Total Impact (Kids + Unique Installs)	432 553	453 448	444 290	300 913	212 363	452 054	426 323	543 503	374 914	474 110	444 932	556 109	406 840