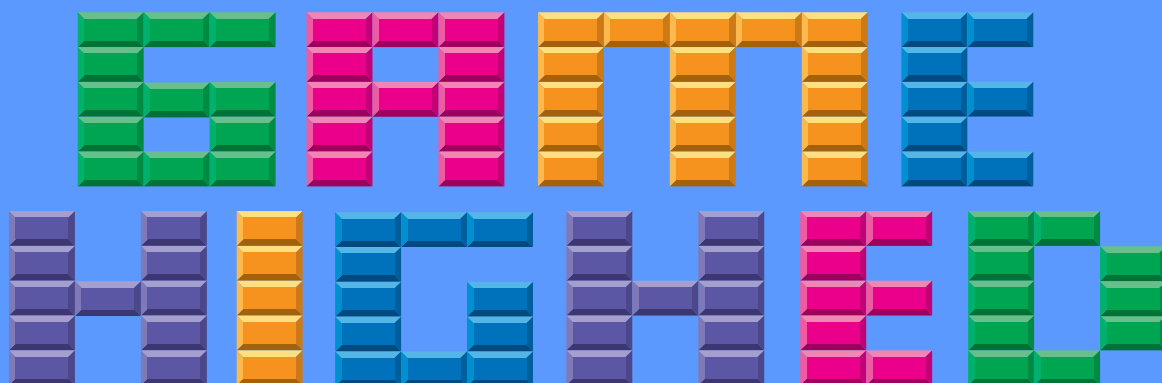


Output 1: Initial Research & Analysis Report



Higher-ed Programmes for Careers in
Game Design & Development (2019–2022)



Credits

GAMEHIGHED*

*** Higher-ed Programmes for Careers in Game Design & Development (2019–2022)**

GAMEHIGHED connects four universities and a game industry association in a 3-year project to develop innovative teaching programmes, open edu-resources [OER] and recommendations for higher education leading to game dev careers. Funded under Erasmus+, this is a Strategic Partnership with five Partners:

Kazimierz Wielki University in Bydgoszcz, Poland (Coordinator)
 University of Jyväskylä, Finland
 Charles University, Czechia
 Bahçeşehir University, Turkey
 Czech Game Developers Association



KAZIMIERZ WIELKI
UNIVERSITY
BYDGOSZCZ



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ



FACULTY
OF MATHEMATICS
AND PHYSICS
Charles University



BAU
Bahçeşehir University



GDACZ
Czech Game Developers
Association

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<https://gamehighed.ukw.edu.pl/>



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of the European Union



Preface

Games are changing and so do the players, and I'm not just talking about the gamer profiles. Production pipelines, monetization methods, user interfaces, controller devices: all components of the game industry are changing rapidly, influenced by many different things like technological developments, social media trends, shifting human psyche and so on. Game design and development education must definitely sync with the flow and adapt to the expectations of various stakeholders.

This first output of "Higher-ed Programmes for Careers in Game Design & Development aka GAMEHIGHED" Erasmus+ project focuses on the game education adventures of four countries (Poland, Finland, Czechia and Turkey), outlining their constraints and advantages as well as the specific needs and expectations of the host institutions. The GAMEHIGHED journey started with actual journeys as study visits to game universities and game scenes in İstanbul (BAU), Prague (CU + GDACZ), Jyväskylä (JYU) and Bydgoszcz (UKW). Besides being a solid onboarding for the project, those stops were a great opportunity to bridge institutions, exchange insights, understand the big picture, and prepare to set sails for new horizons.

Feedback given and taken during the visits has great value not just for the institutional joined forces, but for all universities in the business of teaching game design and development as well as the industry which needs qualified human resource, more every day. Academics, professionals and students were surveyed about their experiences, experiments, and expectations for game education. Besides the interviews, we ran brainstorming, prototyping and play-

testing sessions to better understand the process and come up with new ideas.

Each partner's input in this report starts with a short history of their gaming scene in general, and then their timeline in terms of education and research, which is followed by a detailed program structure and milestones. Relations and collaborations of the university help us understand how the programs are supporting the communities and companies and vice versa. Certain problems encountered and solutions experimented with are followed by a SWOT analysis, which is a practical conclusion to sum it up. Each partner's report is completed with comments for all other universities, and with an outro outlining future developments and ideas for further collaboration.

Finally welcome to be a part of our GAMEHIGHED journey! As researchers after the perfect gaming curriculum, we hope to inspire and guide institutions to start or improve their game design and development programmes as well as the studios to support gaming education with necessary collaboration and communication. We definitely need new ideas and strategies for the future of game education. So let's press start all together!

Dr. Güven Çatak

GAMEHIGHED

O1 Coordinator (BAU)

BAU INPUT /Turkey

Bahçeşehir University (BAU)

İstanbul

Authors: Güven Çatak, Barbaros Bostan, Çakır Aker, Ecehan Akan

//BAU Executive Summary

In this report it was aimed to give a brief history and description of the game scene in Turkey while highlighting the important aspects regarding the Bahçeşehir University's approach towards game education. After Bahçeşehir University Game Lab (BUG) was founded in 2012, the laboratory became a hub for the gaming community in İstanbul swiftly, gathering indie developers and enthusiasts under its roof. Bahcesehir University Game Lab (BUG) has been created by the Faculty of Communication, Department of Communication Design. Because of that, BUG was able to operate in an interdisciplinary manner from the beginning, combining communication studies with game development and game studies. Since the game scene in Turkey needed major improvements at the beginning, the laboratory, started with the motto "If the system doesn't work, there should be a BUG to fix", aiming to be a networking and educational platform for all that wants to design & develop games for Turkish game industry. Following various events and organizations including game jams and masterclasses for the community, with the establishment of Game Design Graduate and the Digital Game Design Undergraduate programs, Game Design Department is still offering research and development projects, events, organizations for connecting professionals, academics and students under the theme of games and playful experiences.

In its academic context, the revolutionary Bauhaus model was followed in the manner of workshops executed by professionals, including developers, artists and game designers, from the field. By providing this advantageous structure, the department was able to integrate courses with those organizations in its core. Additionally,

by including the students to game production areas via BUG Kitchen incubation space, students were given the opportunity to learn from a production oriented stand point. Moreover, the events such as jams, demodays, post-mortems, meetings and masterclasses aim to actualize the motto of the Bauhaus model, which was 'Play becomes Party - Party Becomes Work - Work becomes Play.' By integrating workshops and events together with the program structure and by cherishing the interdisciplinary perspective within the course schedule, BAU Game Design program aims to educate generalists for the game industry but also allow specialization in an area by providing elective courses. Although the department is rather new, the number of students attending the program and participants in BUG events is ever-growing.

As the game industry in Turkey is gaining momentum, the much needed human resource could be provided by educated designers. To fulfill the need, the game design department integrates professionals via seminars and workshops to its structure. Additionally, with the support of BUG's vast network of game design companies, students are encouraged to start working in those studios while studying. The Joint Educational Model, which is founded for the Faculty of Communication, is solely built upon this opportunity. With the help of the Joint Educational Model, students have the opportunity to apply what they've learned in a real working environment. The model today consists of more than 20 companies that students could apply each semester.

Other than video games, BUG also works as a R&D center for interactive and playful experience design. By getting together at BUG, academics, professionals and students aim to make innovative projects, trying to have an edge over the game world.

In the context of GAMEHIGHED, the following academics, lecturers and industry professionals are surveyed and contributed to the report with their experiences and insights.

BAU staff

Dr. Güven Çatak—*Faculty of Communication, Department of Game Design*

Dr. Çakır Aker—*Faculty of Communication, Department of Game Design*

Dr. Barbaros Bostan—*Faculty of Communication, Department of Game Design*

Prof.Dr. Kemal Süher—*Dean of Faculty of Communication*

Dr. Şafak Şahin—*Vice Dean of Faculty of Communication*

Dr. Tolga Hepdinçler—*Vice Dean of Faculty of Communication*

Prof. Dr. Şirin Karadeniz—*Rector*

Dr. Yavuz Samur—*Faculty of Educational Sciences*

Kutsal Mustafaoğlu—*VR First Lab Coordinator*

Professionals / Part-Time Lecturers

Can Oral—*Creative Director of Cultic Games*

Efe Özenç—*Esports Writer & Editor*

Efe Alaçamlı—*Indie Game Developer*

Oytun Kal—*VR Experience Designer*

Mete Sezgin—*Indie Game Designer*

Berk Yalçın—*Indie Game Developer*

Erkan Bayol—*Game Producer / Entrepreneur*

Başar Ünder—*Film & Game Composer, Sound Designer*

Galip Kartoğlu—*Game Developer at Zoetrope Interactive*

İsmail Kemal Çiftçioğlu—*Co-Founder at RealityArts Studio*

Dr. Altuğ Işığın—*Academic / Game Designer*

Ayça Zaman—*Coordinator at association TOGED*

Associate Professor Çetin Tüker

Associate Professor Diğdem Sezen

Tansu Kendirli—*Chairman at association OYUNDER*

////II

INDEX

15	INTRODUCTION
20	SHORT HISTORY
23	TIMELINE & MILESTONES
25	PROGRAM STRUCTURE & ACADEMIC RESEARCH
44	RELATIONS & COLLOBORATIONS
53	INNOVATIONS, POTENTIALS & OUTCOMES
58	CONSTRAINTS & NEEDS
60	SWOT ANALYSIS
62	COMMENTS FOR THE PARTNERS
65	OUTRO

What I teach, How I teach

- Aim of the course
- Class size
- General approach
- Teaching tools & methods
- Assignments
- Assessment
- Side projects with the students
- Key challenges in game design education
- Industry and academia relationship: opinions and perspectives

//Introduction

Bahçeşehir University (BAU) with 4 campuses in Istanbul consists of nine faculties, a school of languages, three vocational schools and four institutes have approximately 25,000 students and 1050 lecturers providing more than 100 programs. BAU has more than 193 international partners and strives to be one of the leaders nationally, it offers teachers, researchers and students rich opportunities to gain international experience. BAU was granted the award of the championship as two times in a row in the “Education Export” category in the Awards of 500 Major Exporters of Turkey given by the Turkish Exporters Assembly within the years of 2017 and 2018. BAU has a strong track record of working in national and international projects. The University Library contains over 250.000 publications, books and electronic books. BAU has the experience and capability to support the scientific, logistic and organizational requirements.

Known as the centre of Istanbul indie game scene, Bahcesehir University Game Lab (BUG) has brought together the industry and academia with the game development workshops and community events since 2012. All that energy and synergy gave birth to BAU Game Design master and undergraduate programs as well as the pre-incubation sandbox BUG Kitchen and virtual reality R&D space VR First BAU which is the pilot of VR1 global network initiated by Crytek. Still BUG Lab is the one and only gaming hub not just in Turkey but the region with its community based approach and professional education options.

Initial motivation of BUG Lab as a partner of GAMEHIGHED is to share the models which are currently experimented throughout the

courses of both BAU Game Design graduate and undergraduate programs with the academic and industry networks of the fellow partners of the project. By doing that playtesting, we will be able to fix the bugs of the programs and most importantly find new ways

Still BUG Lab is the one and only gaming hub not just in Turkey but the region with its community based approach and professional education options.

to bridge game design programs all around Europe with a common approach which is diverse enough to inspire each other. Looking for answers and ways together for synching with the industry as institutions is the other main motivation for us. The need for human resources in the game industry is increasing every day. So opening new channels between industry and academia is definitely crucial for both sides.

GAMEHIGHED team which is also the current BUG team is listed below with their short bios:

- » Dr. Güven Çatak started to write in video games magazines (PC Gamer Turkey, Level and Oyungezer) and make short films while studying architecture at İstanbul Technical University. His shorts won several awards and were screened at various festivals. After his media adventure, he continued his games career as an academic in Bahcesehir University. He has a master thesis on "Usage of Architecture in Video Games" and a PhD thesis on "Using Video Games in Design Education: Basic Design Playground". His media network and academic studies empowered him to found "BUG Lab" which kickstarted indie game scene in İstanbul and eventually transformed into an education platform including undergraduate and master programs on game design with pre-incubation and virtual reality spaces. He's still working as a professor in Bahcesehir University and running BUG Lab and its components.
- » Barbaros Bostan is an Associate Professor in the Game Design Department of Bahcesehir University/Turkey. He has a Ph.D. in Information Systems (2007) from Marmara University, an M.B.A. (2003) from Yeditepe University, and a B.S. in Electronics and Communication Engineering (2001) from Istanbul Technical University. He worked as a post-doc researcher at IDM Institute, Games Lab of the National University of Singapore between 2008 and 2010. His research areas include computer games, presence, interactivity, gamer psychology, gaming motivations

and player profiling. Bostan has teaching experience in the areas of computer games, computer networks and interactive narrative. He is a member of the ACM, Computers in Entertainment Editorial Board. He reviews journal articles and book chapters for various journals and publishers, local and international (Journal of Computer-Mediated Communication, Versita Open Access Books, etc.).

- » Çakır Aker is currently working as an Assistant Professor at Faculty of Communication, Department of Digital Game Design in Bahcesehir University, Turkey and as the coordinator of Bahcesehir University Game Lab. He has a Ph. D. in Media and Communication Studies (2018) from Galatasaray University, an M.Sc (2010) from University of Pompeu Fabra, an M.B.A. (2008) from Bahcesehir University and a B.A. in Advertisement (2005) from Bahcesehir University. His research areas include gaming, interaction design, player experience, and user experience. Aker has working experience in advertising and teaching experience in the areas of interaction design, user/game experience and gamification.
- » Ecehan Akan is a game designer and researcher on virtual reality and video games. She is currently a Research Assistant at Digital Game Design Department of Bahcesehir University, conducts research at BUG Game Lab and VR First BAU Lab. She is a graduate of B.Sc. Mechatronics Engineering, B.Sc. Electrical and Electronics Engineering and MA Game Design. She works on extended reality and games user experience subjects. Currently she is a Ph.D. student at Bahcesehir University Cinema and Media Research.



Photo by BAU



//Short History

Turkish game industry used to be a step behind the Western scene. Starting at the end of the 1980s, the number of games produced in Turkey between 1980 and 2005 is less than 25. Still, the Turkish game industry has grown rapidly in the last two decades. Infosfer (formerly 3TE Games) developed the first 3D action game of Turkey; "The Ambush: Awakening" which is a third person shooter game was published by Yoğurt Technologies in 2005. Another factor affecting the kick-start of the rapid growth was Mevlüt Dinç's return to Turkey. He was one of the precursors of digital game producers in the UK, and he established a game studio in Turkey (Sobee Studios) and released Turkey's first MMORPG "İstanbul Kıyamet Vakti" (IKV, İstanbul Apocalypse Time). Soon after, as the number of game studios increased, the industry "leveled up" from amateur to professional.

In the current view, there are almost a thousand professionals working in the game development part of the industry, including the companies working on world-class 3D games (Taleworlds, Sobee Studios, Ceidot, MadByte), and more than fifty mobile, casual, social game studios (e.g. Peak Games, Gram Games, Rollic Games). Today's game scene puts spotlights on the mobile game market. Another major company is Peak Games that has over 30 million active users globally, Gram Games have several hits and Rollic Games have more than three games ranked in the top ten in US App Store.

Another huge market share is on game localization and publishing successfully carried with global game companies' partnership. In 2013, Riot Games and Crytek established offices in Turkey which brought a lot of interest and public attention to the game industry.

Likewise, South Korean CJ Games and Turkish Joy Game which is one of the pioneers of the field in the Turkish game industry has a partnership that led to Netmarble Turkey branch. Speaking with the numbers, not only the number of companies increased but also the Turkish game industry had 850 million dollar revenue in 2018 that also indicates the rapid growth comparing the previous years' income.

There were several attempts to create a community in the 2010s. The ongoing game-related official associations are TOGED and OYUNDER. By 2017, OYUNDER (Game Developers, Designers, and Publishers Association in Turkey) has 160 members including companies and individuals while TOGED (Game Developers Association of Turkey) has partner companies around 30. There are also other communities within universities or on social media. BUG Game Lab has been an active community center for indie game developers since 2012. The center acts as a hub that brings indie game developers, students and researchers together. Another formation for university students who have an interest in game development, founded in 2017. UNOG Game Dev Community has more than a thousand members who are currently university students. Hence, the next generation of game designers and developers are on the line. On social media, there are facebook groups such as Game Developers Turkey and Türk Oyun Geliştiricileri with thousands of game development enthusiasts.

The game scene regarding education has a more complex construct as game development emerged in different cities and in various universities. Starting with the academical interest which has shorter than two-decade history, the first preincubation center in Turkey was founded as part of Middle East Technical University with the name of METUTECH –Animation Technologies and Game Development Center (METUTECH – ATOM) in 2008. The aim was to convert creative ideas into marketable products. Entrepreneurial and financial support highlights its commercial value. Along with this center, there is also METU Game Technologies (GATE) postgraduate program to educate game designers and developers. Simulations and Game in Education (SIMGE) Research Group, on the other hand, works on pedagogical and cognitive aspects of games in education since its establishment in 2004. Another educational program is Computer Animation and Game Technologies of Hacettepe University since

2011. Also, Bahcesehir University Game Lab (BUG) entered the scene in 2012, followed by the establishment of Master BUG, the graduate game design program, in 2014 and BUG Jr, the undergraduate digital game design program, in 2016. Master BUG is a Master of Arts program that accepts graduate students from different disciplines.

Around those times Bilgi University and Beykoz University established their undergraduate game design programs. In 2019, İstinye University and Aydın University also announced their undergraduate programs regarding the game area. One more important establishment was İstanbul Technical University's (İTÜ) Game and Interaction Technologies program providing a Master of Science degree.

//Timeline & Milestones

Bahçeşehir University, BAU, is a foundation university, established in 1998 under the auspices of Bahçeşehir Uğur Educational Institutions, Europe's largest private educational provider. It has eight Faculties (Architecture and Design; Communication; Economic, Administrative, and Social Sciences; Educational Sciences, Engineering; Health Sciences; Law, and Medicine), four Postgraduate Institutes (Educational Sciences, Health Sciences; Natural and Applied Sciences; and Social Sciences) and two Vocational Schools (Vocational School and Vocational School of Health Services).

Bahçeşehir University Game Lab, aka BUG, was founded in 2012. It became the community center of the indie game scene in İstanbul. BUG also served and still serves as a research and development center for computer games and user experience design. After two years, in 2014, a graduate program on game design was established with the experience and network provided by the events such as gamejams, bootcamps and masterclasses organized by BUG which was the first step of an upcoming structure. The graduate program is opened under the Social Sciences Institute.

The undergraduate program of Digital Game Design opened in 2016 under the Faculty of Communication. Admission to undergraduate study programs in Turkey is based on nation-wide selection examinations. These central university entrance examinations (called YGS and LYS) are two staged, held once a year and are administered by the Assessment Selection and Placement Center (ÖSYM). According to the ÖSYM, there are five private universities in Turkey offering Digital Game Design undergraduate programs and among

these programs, Bahçeşehir University Digital Game Design has the highest rankings in the entrance examinations. The program had 43 students in 2016, 51 students in 2017, 64 students in 2018 and 67 students in 2019.

After 8 years BUG Lab is not a just community center organizing events; now it is an education platform including undergraduate (BUG Jr) and graduate (Master BUG) Game Design programs; a pre-incubation space (BUG Kitchen); a mini production studio (BUG Pro); an activity brand (BUG Berlin) due to close relations with Germany and a virtual reality laboratory which is the pilot lab of VR1 initiative and network started by Crytek.

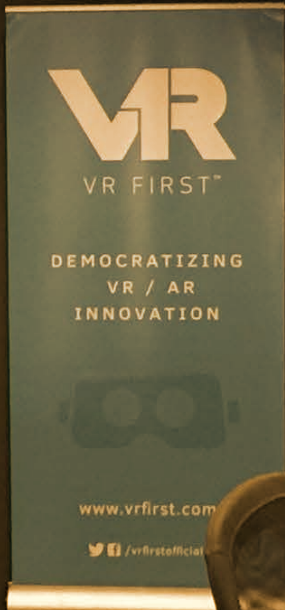
// Program Structure & Academic Research

The initial vision of the BAU Game Design program is influenced by the revolutionary Bauhaus, which was a design school opened in Germany after World War I. Workshops were part of the Bauhaus Manifesto and they were executed by known professionals and artists, similar to the modules which BUG integrated to its Game Design BA and MA courses. Master & Apprentice model worked well at Bauhaus in terms of creating a fruitful production environment. As the BAU curriculum was designed, it was aimed that pre-incubated teams at BUG Kitchen should inspire students and sometimes recruit the students as interns or employees. Different disciplines teach, learn and work together at Bauhaus. Craft, design and art come together at workshops, which were modules of different disciplines like architecture, advertising and photography. As video games are already a medium of art, design and code, BAU game design education naturally aims to bring together those different fields and tries to form a common language between those different profiles. 'Play becomes Party—Party Becomes Work—Work becomes Play' was the teaching motto of the Bauhaus school. Students of Bauhaus were absolutely 'jamming' by improvising, role playing, designing and above all inviting locals to share those playful activities. BUG, which became a community center in Turkey, embraced this motto with community events like Game Jams and various workshops that support the academic curriculum.

The initial vision of the BAU Game Design program is influenced by the revolutionary Bauhaus, which was a design school opened in Germany after World War I.



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So, the starting goals of BAU Game Design program was to: (1) bring different disciplines together by forming a common language between different profiles of students, (2) to integrate workshops given by professionals and artists into the courses, (3) to use a Master and Apprentice model where the professionals teach the BA and MA students, the MA students support the BA, and the pre-incubated teams inspire and recruit the students, (4) to create a sandbox environment where students improvise, roleplay, design, work and have fun together.

While designing the undergraduate program, the biggest constraint is the structure of undergraduate programs in Turkey. In the first year, almost every program gives introductory courses of the faculty they are part of. For example, if it is an engineering program, all students of the faculty took courses such as mathematics, physics, calculus, and so on in the first year. Departmental courses for the programs are always reserved for the 2nd, 3rd and 4th years. BAU Game Design undergraduate program is opened under the Faculty of Communication but aims to provide departmental courses (GAD coded) even in the first two semesters to motivate the students so that they can start designing and experimenting even in their freshman year. So, for example, the first semester of the program provides 5 GAD courses to the students: GAD1003 "Basics of Programming" course which was not a standard introduction to programming course but a course specialized in programming for the game engines, GAD 1005 "Design Thinking" course which gives the fundamentals of visual perception and basic design, GAD 1007 "2D Digital Art" course which introduces the students to digital art in the form of 2D assets, GAD 1009 "Game History and Analysis" course that summarizes the milestones of game history and teaches the students how to analyze games, and GAD1001 "Fundamentals of Game Design I" course which is a practical study of board and card game design and development processes from the perspective of a game designer. The second semester provides four GAD courses to the students: GAD1004 "Introduction to Game Engines" course which teaches the students how to use a game engine, GAD1006 "Basics of Storytelling" course that analyses the narrative aspects of computer games, GAD1008 "3D Digital Art" which deals with the basics of creating 3D assets, and GAD1002 "Fundamentals of Game Design II" course which aims to teach the basics of designing digital games. Overall,

9 departmental courses in the freshman year is something that no other university or department in Turkey ventured before.

BAU Game Design program aims to educate generalists for the game industry but students can also specialize in an area by taking elective courses. Another constraint for the Turkish higher education system is that the track system usually doesn't work because there is always a minimum number of students that should enroll in a course so that that course can be opened in a semester. This constraint makes it difficult to open Design, Development and Art tracks for the undergraduate program because if the number of students that enroll in a course is below the minimum, the course can not be opened by the faculty. For example, if a specialized game programming course has less than 18 students, it can not be opened by the faculty and this problem completely ruins the track structure. The solution is to provide departmental electives where students can specialize in an area they want but if the course can not be opened, there is always another elective course that they can take. The whole program can be found in Table 1 and the departmental electives are listed in Table 2. Besides the elective classes which can act as advanced modules of must courses, community activities and industry components of the program like the Joint Education Model's in-semester internships, various game jams, guest lecturers and weekend workshops, students are able to create their own "Paths" which are sort of customized tracks enabled by the sandbox nature of the programme.

BAHÇEŞEHİR UNIVERSITY					
DIGITAL GAME DESIGN DEPARTMENT					
UNDERGRADUATE PROGRAM					
1. Semester					
CODE	COURSE	Theory	Practical	Credit	ECTS
ENG1003	Communications Skills and Academic Reporting I	2	2	3	4
GAD1003	Basics of Programming	2	2	3	5
GAD1005	Design Thinking	3	0	3	5
GAD1007	2D Digital Art	2	2	3	5
GAD1009	Game History and Analysis	3	0	3	5

GAD1001	Fundamentals of Game Design I	2	2	3	6
		14	8	18	30
2. Semester					
CODE	COURSE	T	P	C	E
ENG1004	Communications Skills and Academic Reporting II	2	2	3	4
GAD1004	Introduction to Game Engines	2	2	3	5
GAD1006	Basics of Storytelling	3	0	3	5
GAD1008	3D Digital Art	2	2	3	5
VCD1112	Art, Culture and Society	3	0	3	5
GAD1002	Fundamentals of Game Design II	2	2	3	6
		14	8	18	30
3. Semester					
CODE	COURSE	T	P	C	E
GAD2017	Game Development I	2	2	3	8
GAD2020	Level Design	2	2	3	5
GAD2021	Game Audio	2	2	3	5
GAD2003	Game Production	2	2	3	5
TLL1003	Turkish Language and Literature I	2	0	2	2
PRL1111	Theories of Media and Communication 1	3	0	3	5
		13	8	17	30
4. Semester					
CODE	COURSE	T	P	C	E
GAD2018	Game Development II	2	2	3	8
GAD2019	Character Design	2	2	3	5
	Departmental Elective I	2	2	3	5
	Departmental Elective II	3	0	3	5
TLL1004	Turkish Language and Literature II	2	0	2	2
	Non-Departmental Elective I	3	0	3	5
		14	6	17	30
5. Semester					
CODE	COURSE	T	P	C	E
GAD3022	Virtual Reality Technologies	2	2	3	5
GAD3024	Psychology for Game Design	3	0	3	5
	Departmental Elective III	2	2	3	5
	Departmental Elective IV	3	0	3	5
	General Elective I	3	0	3	5

	General Elective II	3	0	3	5
		16	4	18	30
6. Semester					
CODE	COURSE	T	P	C	E
GAD3017	Experience Design and Human Computer Interaction	2	2	3	5
GAD3019	Gamification	3	0	3	5
	Departmental Elective V	2	2	3	5
	Departmental Elective VI	3	0	3	5
	General Elective III	3	0	3	5
	Non-Departmental Elective II	3	0	3	5
		16	6	18	30
7. Semester					
CODE	COURSE	T	P	C	E
GAD4001	Junior Game Project	2	4	4	10
GAD4003	Summer Training I	0	0	0	8
HST1001	Atatürk's Principles and History of Turkish Republic I	2	0	2	2
	Non-Departmental Elective III	3	0	3	5
	General Elective IV	3	0	3	5
		10	4	12	30
8. Semester					
CODE	COURSE	T	P	C	E
GAD4002	Senior Game Project	2	4	4	10
GAD4004	Summer Training II	0	0	0	8
HST1002	Atatürk's Principles and History of Turkish Republic II	2	0	2	2
	Departmental Elective VII	3	0	3	5
	General Elective V	3	0	3	5
		10	4	12	30
	GENERAL TOTAL CREDIT			130	240

Table 1. BAU Undergraduate Program

DEPARTMENTAL ELECTIVES					
GAD2005	Mobile Game Development	2	2	3	5
GAD2007	2D Game Art	2	2	3	5
GAD2009	Interface Design	2	2	3	5
GAD2013	Designing Educational Games	3	0	3	5
GAD2015	2D Animation for Games	2	2	3	5
GAD3005	Game Business	3	0	3	5

GAD3009	Writing for Games	3	0	3	5
GAD3013	Game Studies	3	0	3	5
GAD3015	Game-based Learning	3	0	3	5
GAD2006	Advanced Game Development	2	2	3	5
GAD2008	3D Game Art	2	2	3	5
GAD2010	Contemporary Game Engines	2	2	3	5
GAD2014	Serious Games	3	0	3	5
GAD2016	3D Animation for Games	2	2	3	5
GAD3004	Advanced Game Sound and Music	2	2	3	5
GAD3006	Game Analytics	3	0	3	5
GAD3008	Multiplayer Game Development	2	2	3	5
GAD3010	Cinematography for Games	3	0	3	5
GAD3012	Playful Experience Design	2	2	3	5
GAD3014	New Technologies in Gaming	3	0	3	5
GAD3016	Game Communities	3	0	3	5
GAD3020	User Experience and Usability	3	0	3	5
GAD4006	Portfolio Design	3	0	3	5
GAD3021	Advanced Animation for Games	2	2	3	5
GAD3023	Advanced Character Design	2	2	3	5
GAD3025	Advanced Level Design	2	2	3	5
GAD3027	Innovative Game Mechanics	3	0	3	5
GAD3028	Game Journalism	3	0	3	5
GAD3029	Innovative Game Marketing	3	0	3	5
GAD3030	Virtual Worlds	3	0	3	5
GAD2004	Game Artificial Intelligence	3	0	3	5
GAD1010	Pixel Art	2	2	3	5

Table 2. BAU Undergraduate Program Departmental Electives

The activities listed below are the innovations planned and accomplished for the Undergraduate and Graduate programs. These innovations support the curriculum and become an integral part of the game design education given by BAU.

- » Game Jams are usually 36 or 48-hour game development marathons where you don't know the theme before you arrive at the jam site and also don't know anybody to work with. So within 48 hours you must come up with an idea, build your team and develop your game around that idea with that team you've just found. Game Jams are great environments to meet new people, share ideas, work together, experiment and experience. BUG organizes a game jam for every semester to kickstart the final projects. Students confront this jam challenge besides the actual challenge

of developing their final project. They stay at the school for 48 hours, barely sleep, work hard, but have fun too. Every BUG Jam is a great experience for them in terms of team building, working agile and surely developing and presenting interesting games. Afterwards they are supposed to continue to develop the game they prototyped during the jam with the same teams. Jamming is a very efficient mechanic for the Game Design curriculum. Plus the unpredictable things happening during a jam creates very good dynamics for the students to experience.

- » Demo-Days which we can define as the picnics of the gaming community where people show their games and get feedback while other people are playing them. BUG demo days are student exhibitions where projects from various classes are being installed and tested by the other students and instructors. Besides getting feedback, positive comments motivate students to continue developing their games and fixing bugs.
- » Meet-Ups are mostly networking events including some speed talks, introductions, matchmakings, and panel discussions. This type of community events are integrated into the programs as field trips and student club activities which usually take place after hours and good for headhunting and being headhunted.
- » Masterclasses are expertise and experience sharing sessions given by pioneers in their fields. After the academic programs are founded, due to budget and space limits, masterclasses are being organized exclusively; some of the members from the community are always invited.
- » Workshops and Seminars are usual know-how sharing activities of the community given by professionals or academics either in a hands-on or talk format which we included and integrated them to the BUG courses as modules. Besides the practical value of those modules, students are able to reach the up-to-date know-how and research from the industry and academia; and they also find the opportunity to meet new people.
- » Post-Mortems are success (or failure) stories or just case studies usually told by the project owner or the responsible person. At BUG instead of professionals, students present post mortems of their final projects to a group of instructors and depending on the scale to some invited professionals which are called 'the jury'. Besides the fun of it and the value of feedback, preparing to present

their projects to the jury as post-mortems increases self-awareness and sense of responsibility in students.

- » Bootcamps are events focusing on education which usually last for a longer time than the other community events, minimum a week. BUG gained a great experience by organizing the 3-week bootcamp BUG Game Workshops and the-6 week bootcamp Developers of the Future Mobile Game Workshop in terms of developing a game design curriculum, integrating different production pipelines and building up teams. The network in terms of participants and instructors provided during those two bootcamps still support BUG as students and professors.

In terms of academic research, BAU Game Design Graduate Program, 39 students completed their master thesis in various topics (see Table 3). Department instructors were the editors of two books from Springer, one book from Peter Lang and also the section editors of the "Game Design" and "Virtual Reality" sections of the Encyclopedia of Computer Graphics and Games (see Table 4). Students at the graduate level are always encouraged to make publications and Master BUG students also contributed to these publications with chapters of their own. Besides this project, the department participated in two Erasmus+ projects and two projects for the Scientific and Technological Research Council (TÜBİTAK) of Turkey (see Table 5).

STUDENT NAME	YEAR	TOPIC
Başak Tinli	2019	Towards a categorization of fictional worlds in computer role playing games
Zeynep Nesrin Coşkun	2019	Acoustic labyrinth: Validation of a game based heart auscultation educational tool
Alihan Şimşek	2019	Casualization of games and its effects on casual and hardcore gamers
Ecehan Akan	2019	Examining presence scales under the influence of increasing virtual reality experience in physiologically arousing virtual environments
Atakan Cankorur	2019	Designing xcube and analysing fun factors
Baturhan Gürbüz	2019	The sexualisation of woman in top free mobile role-playing games in Turkish app store

Volkan Sevinç	2019	Psychometric evaluation of simulator sickness questionnaire and its variants as a measure of cybersickness in consumer virtual environments
Mistik Çağın Eremektar	2019	Presence and game user experience in 2d monitors and virtual reality
Zeynep Palaz	2019	Understanding video games' power to induce guilt through their design
Berkan Baltaş	2019	Balancing the game experience and how to design for fun
Selim Özkil	2019	From monetization in games to creating an in-game economy for free-to-play casual mobile games: Roles and duties of a game designer economist
İbrahim Kaya	2019	Monetization strategies in mobile games and implementation techniques
Yeliz Kurt	2019	Social behaviour learning with digital games: An experimental study
Asena Aksayım	2019	Effects of physical interactions on user experience in virtual reality games
Özge Mirza	2019	An analysis of religious imagery in Assassin's Creed Origins
Oğuz Türkekel	2019	Design of collaborative cross platform escape room game on head mounted and handheld augmented reality devices
Simay Gizem Çavuşoğlu	2019	An analysis framework for experiential spaces in video games
Abdulvareth Lahham	2018	Game experience and physical props design
Birce Yılmaz Karasu	2018	Gamified product design for paper recycling
Meltem Özmutlu	2018	Designing a digital game design platform for children
Yasemin Baran	2018	Evolution of visual depiction of elves in computer role playing games: From mythology to present
Vugar Sevdimaliyev	2018	The impact of empathy to moral choices and decision making in narrative based games: A case study
Çağdaş Yıldırım	2018	Suitability of presence questionnaires with different virtual reality experiences
Hadi Çağdaş Erk	2018	A comparative analysis on differences between long term and game jam game development cycles

İbrahim Can Hoşceylan	2018	Replayability through narrative design: A narrative design analysis of Bloodborne
Selin Sop	2018	Using sims 4 build mode in preliminary interior architectural design
Sezin Engür	2018	The impact of machine learning on gaming industry
Mehmet Sonat Karan	2018	Enhancing the gaming experience in head mounted augmented reality devices by expanding the user interaction through a smartphone
Ali Burak Ankaralı	2018	A taxonomy and terminology study on the embedded narrative elements found in Bloodborne
Sercan Altun	2017	Deferred planning: Generating interactive stories with emergent story plans
Arda Çevik	2017	The effects of digital companions on tabletop role-playing experience
Orçun Turan	2017	Usability of Vladimir Propp's narratemes in video games
Oytun Kal	2017	Designing a virtual reality educational game for cinematic storytelling education
Allen Ohan Dülğar	2017	Guidance cue differences between screen based and virtual reality games
Berk Yalçın	2017	Presence in virtual reality using different controllers: A usability study
Osman Doruk Kıcıkoglu	2017	Comparing players' self-perceived and actual gaming dedication levels
Orhan Efe Özenç	2017	The usage of humor as an element of game design: 'İstanbul Efsaneleri: Lale Savaşçıları' as a case study
Mehmet Can Uney	2016	Creating and usability testing of safranbolu houses as a modular set for computer games
Ozan Özkan	2016	The compatibility of widely used presence questionnaires with current virtual reality technology

Table 3. BAU Graduate Student Master Thesis List

PUBLICATION NAME	PUBLISHER/YEAR	EDITORS	NOTES
Gamer Psychology and Behavior	Springer, 2016	Barbaros Bostan (BAU Game Design Instructor)	There were 9 chapters, the authors are selected from the BUG network, one Master BUG student was a chapter co-author
Encyclopedia of Computer	Springer, 2018	Güven Çatak was the section editor of the "Game Design" section, and Barbaros Bostan was the section editor of the "Virtual Reality" section.	Güven Çatak reviewed 28 chapters, Barbaros Bostan reviewed 26 chapters, local and international BUG network contributed with entries
Contemporary Topics in Computer	Peter Lang, 2019	Güven Çatak (BAU Game Design Department Head), one of the four editors	23 chapters form the selected proceedings of the Eurasia Graphics conferences, 5 Master BUG students, each student contributed with a chapter
Game User Experience and Player-Centered Design	Springer, 2020 March	Barbaros Bostan (BAU Game Design Instructor)	There will be 22 chapters, chapters are selected via an open call, 3 Master BUG students, each student contributed with a chapter

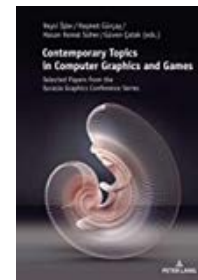


Table 4. BAU Publications

PROJECT	YEAR	CONTRIBUTORS	NOTES
Interactive Meet Up of Students with Virtual Reality Technologies	TÜBİTAK (The Scientific and Technological Research Council of Turkey) 4004 Project, 2018	BAU	59 teenagers not only experienced VR, most importantly taught 101 courses on VR development; starting with what VR is, how to create educational content, basic Photoshop to digital communication tools, 3D modeling with Maya, principles of 2D & 3D development using Unity.
Interactive Meet Up of Educators	Tübitak (The Scientific and Technological Research Council of Turkey) 4005 Project, 2018	BAU	99 adults not only experienced VR, most importantly taught 101 courses on VR development; starting with what VR is, how to create educational content, basic Photoshop to digital communication tools, 3D modeling with Maya, principles of 2D & 3D development using Unity.

<p>PUDCAD - Practicing Universal Design Principles in Design Education through a CAD-based game</p>	<p>Erasmus+, 2018-2020</p>	<p>BAU and another university from Turkey (ITU), two partners from Germany (Hochschule für Technik Stuttgart) (Hochschule Ostwestfalen-Lippe), on partner from Finland (Lahden Ammattikorkeakoulu Oy), two partners from Italy (Politecnico Di Milano) (Università Degli Studi di Firenze)</p>	<p>PUDCAD project aims to help in finding new strategies on implementing Universal Design and Inclusive Thinking in design education with the aim to give future designers the tools to take responsibility for a common future that triggers empathy for the other.</p>
<p>VR4inclusion, Social and Physical Inclusion of Paraplegic Youth by Using Virtual Reality</p>	<p>Erasmus+, 2018-2020</p>	<p>BAU (Bahcesehir University), SUT (Politeknika Slaska), KIO (Development and Innovation Office), UOFD (International Spinal Cord Society), TRYTAOIS (sports club for disabled)</p>	<p>The ultimate goal of the project is to strengthen young people with the SC paralysis to get involved in social life and support them to be self-sufficient young people. This aim will be achieved by bringing technology and sports together with innovative outputs. The major intellectual output is creating VR (virtual reality) mobile applications that will help them overcome the inaction problem of spinal cord paralysis.</p>

Table 5. BAU Projects

What Went Right: Integrating Academic Research with Courses

Academic research conducted in the department usually required participants who play certain games or who experienced a VR/AR session. Then participants usually fill some questionnaire or they are interviewed about their experiences after the sessions. We integrated these game sessions into the undergraduate courses in the form of course assignments and we also get support from the graduate students who overviewed and collected the data for us. For example, Game History and Analysis undergraduate course has three gaming sessions given as assignments, where students have to play three different games from three different gaming platforms. Undergraduate students have their own assignments regarding the games they played but we also collected data using the translated version of the Game User Experience Satisfaction Scale (GUESS) for our own research. The graduate students who helped in this project will also write their master thesis using the data collected from the experiments. This is a win-win situation for everyone: department instructors, undergraduate students and graduate students.

What Went Right: Integrating Table-Top Role Playing Games and Board Games into Courses

There are various table-top role playing games and board games the students can benefit from and should experience if they want to be in this industry. We integrated these games into the courses in the form of tools that will assist them in their assignments. For example, in the Basics of Storytelling undergraduate course, students are expected to write a story in a fictional world but this fictional world is chosen from historical table-top role playing universes, such as Cyberpunk or Planescape. The rulebooks of these settings are very detailed and the students can benefit from these rulebooks if they wish to design their own fictional worlds. The official adventures of these settings are perfectly optimized stories/scenarios for interactive settings. How these analog games provide an enjoyable, meaningful and playable game sessions is a very precious knowledge for the students. But of course, as the students work on their stories in these fictional worlds, the instructor gives each student one-to-one feedback in every step, guiding them to write a coherent and meaningful story for these fictional worlds. Besides the narrative

structure, studying board games helps students to experience and experiment game design principles in a very transparent manner. Since mechanics in a board game are not embedded just like in a digital game, it is very possible to practice and change them, and playtest the iterated version until you reach the gameplay you intend for very at the beginning.

What Went Right: Making Them Play Games

The graduate students are coming from diverse backgrounds and not every student can consider him/herself as a gamer. So, we concluded that they should all play games and they should share their experiences with each other in the class. For example, the Interactive Narrative course requires each student to select a game and find a subject who hasn't played this game before. A single game can only be chosen by a single student and games are distributed on a first-come first-served basis. The term assignment requires each student and his/her subject to play the game, they observe the subject's gaming experience and later ask them specific questions. Students also make a presentation about this gaming experiment in the course to the class so this means that if there are 30 students taking the course, 30 different games will be analyzed and presented to the class.



Photo by BAU



//Relations & Collaborations

Relations with the Industry & Routine Activities

Bahcesehir University Game Lab (BUG) is formed with the idea of creating a community with game developers, designers and enthusiasts under the roof of the game lab to provide novel opportunities and structure in which participants (both professional and independent) and academia could come together. With that goal in mind, BUG has been making various events and organizations to this day for improving the knowledge of game design, development and the sense of community.

BUG's first events were the "Playful Interaction Seminars & Workshops" followed by the foundation event "BUG Game Workshops" back in 2012. The playful Interactions seminars and workshop event was aimed to gather indie developers and enthusiasts together by providing them the opportunity to experiment with new ways of designing physical computing experiences. Leading actors of the game industry and education have attended the event. The event lasted for three days including seminars, workshops and an exhibition at the end in which participants were able to demo their creations.

While the event was helpful for realizing the experimental side of BUG Game Lab, it was essentially a preliminary event for BUG Game Workshops. The foundational event of BUG was held for three weeks of workshops gathering community veterans and novices together. Moreover, this certified event provided many participants to be a part of the BUG community while creating a basis for the Game Design Department's curriculum.

Since the success of the foundational events, BUG has been organizing many events to bring the community together with the industry as well as forming stable and consistent community mechanics. These mechanics, including game jams, demo days, meet-ups, master classes, workshops & Seminars, post mortems and boot camps, all aim to contribute to the department structure in either direct or indirect way.

Game Jams

As one of the most important routine activities that are organized within the department, game jams aim to provide the opportunity to create actual games and provide hands-on application of game design & development.

The Global Game Jam (GGJ) event is one of the most crucial since the beginning of the BUG Game Lab and the Department of Game Design. The event is the world's largest game jam event for game creation, taking place around the world at physical locations. GGJ offers the chance for exploring the process of development, be it programming, iterative design, narrative exploration or artistic expression. Hence it also provides the game community to participate and contribute to this global spread of game development and creativity. The event is also reputed for limiting the time-frame with 48 hours in which the participants are expected to design and develop their games under a certain common idea, followed by exhibiting them on a global platform. Being a part of this global event allowed BUG to be in the global scene as well as creating opportunities of networking between participants. BUG has been organizing the GGJ events in Istanbul since its foundation thus traditionalizing it in the Turkish gaming scene while being considered as the main spot for GGJ in Istanbul. Over 150 participants attend each event making connections with the game design community. Including GGJ 2020, BUG has organized eight GGJ events until today.

Inspired by the Global Game Jam, BUG Game Jam events also provide participants the opportunity to create games with a hands-on approach. Distinctively, BUG Game Jam events are organized for Game Design Graduate and Undergraduate students, promoting them to create their own games in 48 hours. BUG Game Jams

are held for each semester, giving the chance to students to create games freely twice a year. Until today, a total number of eight BUG Game Jams are organized. BUG Fall and Spring Jams are both aiming to support the application of theoretical knowledge gained through the semester into practical applications. By them, the event also supports the courses throughout the program in a direct way for students are developing their final projects for various production related courses during the event time.

Moreover, Gamification workshops and jams are organized under the roof of BUG Game Lab, delivering an interdisciplinary per-

BUG Fall and Spring Jams are both aiming to support the application of theoretical knowledge gained through the semester into practical applications.

spective for creating projects other than games. The Gamification Hackathon event provides the participants the opportunity to develop their own gamification projects while actual brands from the industry provide unique briefs for each team of participants. Similar to game jams, the event lasts for 48 hours while professionals from the industry and academia mentor the projects.

Over 100 participants, 15 companies and 20 mentors have attended each event.

Inclusively, all the game jam events contribute to the notion of creation in an interdisciplinary perspective, giving the participants the chance to experiment their skills via a hands-on approach. As for the contribution for the program, these events are considered to be introduction for final projects for which students are expected to deliver prototype level and/or completed games. Moreover, these events deliver a common ground for the overall community by joining many participants together under the umbrella of BUG Game Lab and Bahcesehir University Game Design Department.

Workshops & Seminars

Ux Camps

Bug has organized several User Experience (UX) Camps which were arranged twice a year. UX Winter Camps and UX Summer Camps were events that prioritize the interdisciplinary approach of providing fundamental principles of user experience design and evaluation. By these events, participants were able to understand the basis of user experience design as well as evaluating them. Un-

like the previously explained game jams, these camps last for several weeks including seminars and workshops. These events were beneficial for the community and the program since the events were not just to provide basic knowledge on user experience, they also give participants the chance to experiment and evaluate their own designs within the context of real-life design issues provided to them. Additionally, these events represent a branch for BUG Game Lab and Game Design Department for involving with the UX community. Therefore the program benefits from the collaboration with the UX industry by not only getting detailed and valuable information regarding the field, but also by giving the opportunity to students for developing professional projects via leading actors from the industry of UX in Turkey.

Community Events

BUG Game Lab and the Game Design Department supports various game related communities and NGOs such as "Women in Games", "University Student Game Developers (UNOG)" and "Game Developers Turkey (GDT)". By doing so, those communities could gain knowledge of academia while providing practical experience related know-how to the department. Additionally, with the help of these communities, the Game Design program could provide a set of networks to its students to make them be involved with professionals and industry opportunities. Moreover, BUG is constantly shaping and adapting its structure according to innovative approaches from the NGO's for expanding its network.

Course Workshops & Seminars

As mentioned before, countless events are organized to support the course structure as well as general knowledge of students. By doing so, it was aimed to provide additional contexts of game design to the students while giving them the chance to learn from field professionals via their seminars. These events are directly linked with BUG courses as modules to integrate the current know-how and practical utilizations with student knowledge, enhancing the overall capabilities of the participants including their networks from the field of both academia and industry. Approximately 10 workshops and seminars have been organized until 2020 and nearly all of them included seminars about the experiences of professionals regarding their game development processes and post-mortems. Those events are open

CHANGER
GAMER
PUBLISHER!



Photo by BAU



to undergraduate and graduate students for giving them the chance to meet and cooperate with industry professionals while studying.

International Workshops & Seminars

In Addition to course related workshops and seminars, foreign professionals from various fields are also invited to BUG events to provide a wider and more global approach for the games community. Until now, leading actors from the field of game design were invited to give workshops in order to support the course structure as well as present their game design journeys to students.

Master classes

Those events are sessions where pioneers from the game design industry share their experiences and knowledge with the selected students. In those events, leading actors from successful companies from the global industry attend to deliver their know-how and experiences to students. Thus, providing the necessary information and chief points regarding the real-life situations of game production. As to explain these events better, an example of a master class given by Marek Madej from CD Projekt Red, the art director of popular game Witcher 3, could be given. During the event, Madej shared his experiences including the production pipeline of his game studio and how they managed to develop the game while students were able to direct their questions. Another example could be Wojciech Setlak, from 11-bit studios which is famous for their games This War of Mine and Frostpunk. Setlak has shared his experiences for both of the popular games in his master class, similar to Madej. Moreover, the master classes also provide much needed privilege for students to converse with pioneers of the gaming industry, thus motivating them to cultivate innovative ideas and create their games in a passionate way.

Demo Days

Development and production is an essential and a crucial part of the whole game design department. Thus, all of the students are encouraged to not just learn the principles of game design in theory but to apply them in a practical sense. The students are, as mentioned before, expected to develop their own games while studying to better experiment and learn from their mistakes by doing. Additionally, students who are producing their own games are neces-

sary to exhibit their games to get feedback and support from the industry. Hence demo days, or as it is also called as Game Picnic events, are aimed to give the opportunity to exhibit student works to a wider audience including industry professionals and academia. Students from various classes are able to exhibit their work while other students and/or professionals test and comment on the ideas and games themselves. Until today, 4 demo day events have been organized with the students, all supporting the idea sharing process between students.

Post-Mortems

With a similar approach with Demo Day event, post-mortems are a valuable part of student projects in which they share their experiences, be it success or failure stories, with other participants. Differently, in post-mortem events, students present their final projects to a jury of instructors and invited professionals. Besides the experience of presenting their own projects and getting feedback from the jury, students gain self-awareness and learn to be open to criticism.

The Joint Educational Model

The Joint Educational Model (JEM) is an initiative that Bahcesehir University Faculty of Communication took to enhance the overall internship processes as well as guiding and encouraging students to work while studying. With the help of JEM, students have the opportunity to apply what they've learned in a real working environment. The model today consists of more than 20 companies that students could apply each semester. Essentially, the system is designed to support the students while they are working in a JEM company via credit benefits, while JEM companies are responsible for teaching students and grading them at the end of the semester. By doing so, both the firm and the student gains an important network which can even lead to various job opportunities before graduation.

With the help of the Joint Education Model, students have the opportunity to apply what they've learned in a real working environment.

In terms of the Department of Digital Game Design, JEM consists of 12 companies as of today, and the number is still increasing each semester. The majority of the JEM companies that support the department are game design and development studios in which the students are given the chance to work on tasks that the studios see

fit. As a result, students get the chance to work in a game studio for a semester while completing their mandatory internships and gaining extra credits. The model is fairly new to the department yet it proved very beneficial from the start. Both the students and the studios reported positive comments, indicating mostly the advantages of working while studying and how this situation helped them to understand industry dynamics. Moreover, the students get the chance to experiment and test their talents throughout the JEM structure. With the model, they can get the chance to learn their strengths and weaknesses by experiencing a real working environment. In return from the companies, the department gains a bigger network and reaches a wider community. Also, selected actors from the companies could be invited through the JEM model to give seminars and/or master classes to students.

//Innovations, Potentials & Outcomes

In general, all of the events are either sponsored by companies or the university itself while the organization is done by the department. This situation allowed for understanding and getting in touch with the community directly, creating a solid and direct bridge between academic personnel and the gaming community. Additionally, the events and meetings generated a valuable sense of association between independent game developers and the department. BUG being the link between community and the industry has yielded the benefit of supporting the overall gaming scene in Turkey while gaming industry gets the opportunity to head hunt potential successful students for their human resource needs. With the addition of BUG Kitchen space, professional gaming companies are invited to use the workstations next to students. By doing so, both the students and the companies have the advantage of directly observing each other in a working environment. This also gives the potential to make playtests, analysis and/or ideation sessions with the students which allow them to directly contribute to the production pipeline. More so, with this innovative approach, students who form up teams to create their own games get the chance to have their own workstations at the same space with other game companies and design their projects in a professional way, having the potential of forming their own companies while studying.

With the addition of BUG Kitchen space, professional gaming companies are invited to use the workstations next to students.

Another potential outcome observed is the benefits of the events such as game jams which directly contribute to the course structure and student project by increasing the sense of responsibility among students. With the help of those events, students can potentially create their own projects and exhibit it in front of an eligible audience getting feedback directly from the gaming community and instructors. Since the game design process is an iterative one, every event and project presentation contribute to the development processes of student projects.

What Went Right, What Went Wrong

The events and collaborations with the industry have all contributed to the overall course structure by enhancing the knowledge given in courses as well as supplementing them. With the help of game jams and/or other project related events, it was possible to promote student projects. Additionally, those events had a significant positive effect on their motivation for producing their ideas and implementing the knowledge that they have learned throughout the courses. Moreover, the masterclasses, post-mortems and other related seminars have all contributed to the course structure by suggesting outcomes that should be added to course materials and topics such as the production pipeline, marketing, business modelling etc.

Nevertheless, these events also took a toll on the department resources in terms of both students and lecturers since they require an extra effort and organizational coordination. Moreover, students who attend the events seem to lose reluctant and losing the motivation to attend whenever those organizations become too frequent. Because of these factors affecting both students and the department human resources, it was understood that the number of events and organizations should be limited depending on the human resource and student motivation.

Expectations From Industry

Until today, all the collaborations with the gaming industry in Turkey and abroad, have proved to be essential for the course structure. Additionally, collaborations are proved to be important for the production stage of the student projects. Some of the industry professionals offer their expertise via mentorship, while others could even finan-

cially support student projects directly by directly getting involved with the production processes.

Following these aspects, it is expected to see further support from the gaming industry for supporting the course structure as well as student projects for the coming years. By including professional game companies within the BUG structure, it is expected to receive better collaborations and opportunities for the students to work and learn from the direct contact that has been provided. By providing actual job opportunities to department students, the gaming industry in Turkey could overcome the much needed human resource deficit.



Photo by BAU

Digital
GAMES
AND
POLITICS

22.02.19-
16.03.19
Opening: 19:00



//Constraints & Needs

One of the major problems encountered is the brain drain. Instructors with a PhD who were giving courses in the undergraduate and graduate programs moved to other countries. Among these were the head of another game design department from Bilgi University, Tonguç Sezen, who moved to Germany with his wife. And his wife Diğdem Tonguç is also an academician of game studies giving courses in the graduate program. Another instructor Sercan Şengün went to MIT for his post-doc studies and later found a permanent position in the US.

Again brain drain: Talented alumnus can prefer working abroad; so we lose the capable ones who may teach as well.

The owner of an advertising agency which also design mobile games and an instructor in the graduate program, Sertaç Öğüt, moved to the UK. Sercan Altun and Arda Çevik, graduates of the master program and also instructors of the undergraduate program, found professional positions in Canada and Germany. The experimental solution was to create online courses for these instructors

and they (those with a PhD) can also be master thesis advisors, even if they are not living in Turkey.

Another human resources constraint is that it is very difficult to find scholars with a PhD who can work in a game design department. People who design and develop games usually do not have PhDs and we could not recruit them as full-time faculty members. People with a PhD who can give courses in the graduate and undergraduate programs became the major human resources problem. Turkey still does not have a game-related PhD program and the Council of Higher Education in Turkey imposes another constraint: when any department recruits a full-time member, that scholar should have a

PhD from the corresponding field of the department. For example, even if the graduate and undergraduate programs of BAU are under the Faculty of Communication, the undergraduate program is classified by the Council of Higher Education as an applied sciences program and therefore the instructors of the department should also have a PhD in applied sciences. This means that you can recruit people with a PhD from the literature, cinema or any other social sciences area as a full-time member of the department.

The diverse nature of graduate students created another problem: the program has students with different talents, such as developers, designers and artists, and how are they all going to write a master thesis? Most of the students had no prior experience in statistics and were not capable of conducting a quantitative analysis in their studies. They also didn't want to deal with mathematical equations, SPSS or any other statistical software. Thus, the "Research Methods" graduate course was shaped according to the diverse nature of graduate students. It was not a standard statistics and SPSS course that focuses on quantitative analysis but the course is given with the aim of writing a thesis proposal for every student. One to one feedback is given by the instructor in each step and students were introduced with different quantitative, qualitative and mixed research designs. Comparative studies and content analysis were advised to the students who are coming from the design and art side, and this worked quite well.

Lastly the investor eco-system focusing on the game industry is not mature and culturally developed enough to discover the success potential high games and teams to meet opportunities with them. When asked, investors usually make excuses about the unstable state of Turkey in terms of economy and politics which is sad but true, and also a cliché. Recent developments like Game Garage, Gamer's Cube and Game Dev accelerator hubs and funds; İstanbul IT Valley's winter and summer bootcamps; and incubation centre ATOM are encouraging both developer and publisher studios as well as government components which are influencing local and global investment networks.

The diverse nature of graduate students created another problem: the program has students with different talents, such as developers, designers and artists, and how are they all going to write a master thesis?

//SWOT Analysis

Strengths

- » Being the first university department and laboratory to get the gaming community together under the roof of BUG.
- » Ability to adapt in an agile way to changing game development scene via industry collaborations.
- » BUG is a well-known Game Lab in İstanbul, having the benefit of better networking between the community, students and professionals at the same time.
- » University supports the department; provides a technical ease of purchase if needed.
- » BUG being the hub for community and students, leading industry professionals and companies are aware of the developments in gaming education, hence provide direct support to the department.
- » BUG is an active attendee for various game related events in İstanbul. By doing so the newcomers to the field become aware of the opportunities that the lab is providing to them.
- » Since the department is under the roof of the communication faculty, all of the students get the chance to get additional knowledge from other departments of the faculty at the same time, having the benefit of improving themselves further.
- » The department offers a sandbox system in which the students could create their educational paths according to their strong sides whether it being arts, design or development by taking correlated courses and choose related internships which in total can lead them to their potential careers.

Weaknesses

- » Much needed human resources in both academia and in the field of game design.
- » The department has no known successful games that are developed in-house.
- » Country's economic situation limits both technical and research related access.

Opportunities

- » Nearly non-existent competition in terms of academic department.
- » Industry collaborations via the JEM system could potentially increase the effectiveness of the course structure and student expectations.
- » Having academic programs in a pre-incubation environment closely connected to the industry help students develop their network.
- » Students can meet various kinds of professionals, researchers and enthusiasts by just sharing the same environment.
- » Besides course projects, they can be part of various R&D and sector projects being done in the same environment.

Threats

- » Brain drain: PhD holding academics in the field are choosing to work abroad instead.
- » Again brain drain: Talented alumnus can prefer working abroad; so we lose the capable ones who may teach as well.
- » Student population can affect the quality of the classes in future since the facilities and instructors are hardly enough now.

//Comments for the Partners

Charles University (CU)

Program Structure & Academic Research

- » Wide selection of courses with an engineering perspective
- » Excellent location in the middle of the capital city
- » Game studies research is highly up-to-date
- » Teaching and research staff very professional and talented
- » Innovative course and program structure for game development
- » Program can be strengthened with design and art courses
- » Project-based learning works quite well for students

Relations and Collaborations

- » Charles Games is an excellent and innovative idea
- » Good connections with local game scene
- » National Registers of Qualifications is very useful in terms of identifying all competences for different game careers
- » Local game companies willingness to support CU and its programs is noted
- » The existence of successful and talented game companies is a blessing for CU
- » The collaborations with national research centers is a great achievement
- » Talented industry professionals work as mentors for students

Jvaskyla University (JYU)

Program Structure and Academic Research

- » Big and comprehensive campus, conveniently located near the city
- » Several game related courses are open for every student

- » There are project oriented courses in which students develop their own projects
- » Very competent on game development but improvements are made on the aspects of game design and art
- » Production oriented perspective helps students to develop projects further than only prototypes
- » There are constructive collaborations with other universities
- » Aims to have further presence in the field of E-Sports
- » Several courses are similar to BAU. Collaborations are possible between course materials such as Games & Journalism courses
- » Multidisciplinary collaboration is encouraged within the course structures
- » Up-to-date content mainly focusing on engineering and game culture studies but are not limited to those
- » A gamified framework of some courses are innovative (this could be applied to some other courses with ease if re-designed accordingly)
- » A Game Studies and Game Design study module on game studies includes two compulsory and several elective courses. Students are able to take those for completing the module
- » There is no specific department for game studies, instead all the students could choose the game studies module if they wish so

Relations and Collaborations

- » The national community supports the field of games and game development
- » Digi Game Center is a very good approach for connecting students and their projects with professionals in the gaming field
- » E-sports field is highly encouraged
- » Motivated to hire international professionals
- » The Finnish player base is mostly motivated on developing mobile games
- » The university has a rather interesting collection of old consoles and mobile gaming devices which keeps on growing and is used for research purposes
- » A well-developed mobile game market is present

University of Kazimierz Wielki (UKW)

Program Structure and Academic Research

- » UKW's game education structure GAMEDEC has a heavy emphasis on boardgames which creates a solid foundation for game design.
- » More courses in English are needed to have more exchange students coming from other universities which could result as a much more diverse and creative study environment.
- » GAMEDEC covers niche areas like LARP design too.
- » Students need more technical skills to prototype and iterate more.
- » Dual Work-Study is a good, executable idea, it just needs some time.

Relations and Collaborations

- » Great alumni and community support. Guest lectures and mentoring work well.
- » Pub Crime is a very good case study in terms of how students and instructors collaborate and can work on a live project.
- » Bydgoszcz is not a big city which makes UKW advantageous to build relations with the local companies especially for internship and recruitment.

//Intro

GAMEHIGHED is becoming a great playtest environment for our programs, and BUG structure. All of the things we experimented and experienced so far to build our educational and industrial models and approaches make great sense now. And it is also great to see that we're sharing some of the same problems with the other universities and countries which unites us to search ways for solutions and innovations to have a clear plan and understanding regarding the needs of gaming industry.

During our visits we're really inspired by and hopefully can import as models and approaches in future:

- » Charles Games which can be a very good example for a university company. (CU)
- » Various labs of different departments at Charles University join forces in developing games for different purposes like health care and education. (CU)
- » Centre of Excellence structure which can be an efficient funding model for game studies in Turkey too. (JYU)
- » Digi & Game Centre which is an incubation centre with a collective conscience for internship and other opportunities. (JYU)
- » Having a broad multidisciplinary approach from performance arts to esports and journalism. (JYU)
- » Working closely with the industrial partners can lead students to be actually become part of actual projects like Pub Crime. (UKW)
- » Having a strong emphasis on boardgames supported by the community contributes a lot to the GAMEDEC in terms of game and narrative design. (UKW)

Having all those on mind, as a first step we made Erasmus agreements with our partners. I think with the upcoming long study visits of the project, we will be able to have a better sense of each other's works and actually have time to discover potential future collaborations and make action plans accordingly.

CU INPUT /Czechia

Charles University (CU)

Prague

Authors: Jakub Gemrot, Lukáš Kolek

//CU Executive Summary

Game Development master's program opened at the Faculty of Mathematics and Physics, Charles University (FMP CU), Prague has been born on the foundation of School of Computer Science. As such, it is focused on technical aspects of game development such as programming, 3D graphics and real-time rendering and AI. The program did not emerge overnight. Game development education had to be proved first in order to recognize its importance for the university; activities included opening proof-of-concept courses (Computer Games Development, Human-like Artificial Agents), setting up interdisciplinary teams, securing financing and medializing the outcomes of projects using games (Evropa 2045, Attentat 1942), publishing academy papers in game-related areas, and receiving positive feedback from students participating both on courses and projects. All those activities built trust between members of the faculty and educators seeking to establish new curricula and led to opening the master's program in the winter semester 2015/16.

The biggest challenge for computer game development curricula is to decide how to focus the studies. As it is inherently an interdisciplinary subject, it is probably impossible to cover it in-depth in the context of single program and the most probably even in the context of single university. Therefore, one has to prepare courses that briefly touches all the areas of game development, in order for students to understand its breadth, and then offer courses and information required for a student to fit one to a few roles within the game development company in the end. If the target is game development itself, the courses also need to mix both theory and practice while also teaching methods that allows students to develop their soft

skills, as game development seldom happens alone. At FMP CU, the program is born out of the mould of School of Computer Science; therefore originally, the program built heavily upon programming and computer graphics courses already offered at the School. We started with a a) Computer Games Development course, team-oriented course in which students are creating game prototypes, b) Game Development Middleware course in which students are taught the practice of various game engines and frameworks, and c) Human-like Artificial Agents which can be viewed as multi-agent systems applied to games.

To provide our students with a comprehensive development experience, Computer Games Development course, game jams and our game seminars are also opened and promoted at other faculties and universities in the area. (University of West Bohemia; Academy of Arts Architecture and Design; Film and TV School of The Academy of Performing Arts; Faculty of Arts, Charles University). It allows for the creation of multidisciplinary teams including not only programmers, but also graphics, sound designers, animators, game designers and scriptwriters simulating the small studio. We are also organising public events for the local game development community thus creating a space where students can meet with local professionals. In particular, we organise the largest game jams in Czech Republic in cooperation with industry partners, we organise Gamedev talks with industry specialists and participate in local game development conferences.

As a result, one can informally invite industry partners to participate in education. Local professionals act as mentors for our students, giving lectures or talking at our events. (e.g. SCS Software, Amanita Design, Warhorse Studio, Geewa, Gold Knights, Beat Games etc.). We have also established video game incubator Charles Games s.r.o. to continue developing our own games and to support the chosen student projects in their commercial release, if they opt for.

List of academics, companies, etc. surveyed during the meetings:

Academy

Mgr. Jakub Gemrot, Ph.D., *Faculty of Mathematics and Physics, Charles University*

Mgr. Lukáš Kolek, *Faculty of Mathematics and Physics, Charles University*

Mgr. Vojtěch Černý, *Faculty of Mathematics and Physics, Charles University*

Mgr. Vít Šisler, Ph.D., *Faculty of Arts, Charles University*

Mgr. Jaroslav Švelch, Ph.D., *Film and TV School, The Academy of Performing Arts, Prague*

doc. Ing. Adam Sporka, Ph.D., *Czech Technical University, Prague*

Mgr. et. Mgr. Iveta Fajnerová, Ph.D., *National Institute of Mental Health, Prague*

Industry: Individuals

Vladimír Geršl, *Gold Knights*

Petr Mácha, *Bohemia Interactive Simulations*

Daniel Vávra, *Warhorse Studios*

Jan Kunt, *About Fun*

Miloš Enderle, *Geewa*

Michal Harangozo, *Charged Monkeys*

Industry: Visit to Companies

SCS Software

Amanita Design

////II

INDEX

77	INTRODUCTION
91	PROGRAM STRUCTURE & ACADEMIC RESEARCH
102	RELATIONS & COLLABORATIONS
106	CONSTRAINTS & NEEDS
107	SWOT ANALYSIS
109	COMMENTS FOR THE PARTNERS
113	CONTEXT OF OTHER ACTORS OF GAME DEVELOPERS EDUCATION IN CZECH REPUBLIC
127	OUTRO



Photo by CU

//Introduction

Charles University was founded in 1348, making it one of the oldest universities in the world. Yet it is also renowned as a modern, dynamic, cosmopolitan and prestigious institution of higher education. It is the largest and most renowned Czech university, and is also the best-rated Czech university according to international rankings. There are currently 17 faculties at the University (14 in Prague, 2 in Hradec Králové and 1 in Plzeň), plus 3 institutes, 6 other centres of teaching, research, development and other creative activities, a centre providing information services, 5 facilities serving the whole University, and the Rectorate—which is the executive management body for the whole University. The key priority of Charles University is to continue to enhance its prestigious status as a research university. To achieve this aim, the University focuses strongly on research activities. Charles University can boast a number of outstanding research teams which are involved in close collaboration with international research institutions. Students can also become involved in the University's research work at each of the individual faculties. The University is the best-performing research institution in the Czech Republic; this is reflected in the analyses of research output carried out by the Czech Research, Development and Innovation Council. Having amassed almost half a million points for its research activities (according to the current national research assessment methods), Charles University is far ahead of the institution occupying second place. For many years Charles University has been keen to incorporate the results of its research and development work into its teaching, and to ensure the greatest possible involvement of research staff and students in Czech and international projects. The

success of the University's research policy is reflected in rankings based on research achievement, which demonstrates that the University can compete strongly with many prestigious institutions outside the Czech Republic. Charles University staff have participated in a range of major international research projects – including the CERN (European Organization for Nuclear Research) programme.

The creativity of the University's staff and students is reflected in a huge range of research and applied projects, as well as in valuable works of art and a wealth of publications. The University has more than 7,900 employees; of this number, almost 4,500 are academic and research staff.

Charles University has nearly 50 000 students—roughly a sixth of all students in the Czech Republic – enrolled in more than 300 accredited degree programmes that offer over 630 different courses. More than 20,000 students are studying in Bachelor's degree programmes, almost 25,000 in Master's programmes, and 8,000 in PhD programmes. The University has over 7,000 students from other countries. Every year, just under 9,000 students complete their studies; Charles University graduates enjoy one of the highest employment rates of any population segment in the Czech Republic. Every year a diverse range of lifelong learning courses are attended by more than 16,000 participants.

Charles University collaborates with a broad spectrum of renowned universities from all over the world, and one of its priorities is to enable every one of its students interested in studying abroad to spend some time in another country. International cooperation has significantly strengthened the University's international profile; these international links have also supported the University's efforts to achieve high standards of excellence in joint international research projects, its participation in many prestigious international organizations and university networks, and its active support for international student and academic staff mobility.

The Times Higher Education World University Rankings for 2016–2017 ranked Charles University in 305th place among its five hundred ranked universities, making it the only Czech university to feature in the top five hundred. The Academic Ranking of World Universities—the “Shanghai League”, which every year compares more than 1,000 of the world's best universities (selected from a total of over 17,000

institutions), has repeatedly included Charles University in the third hundred, i.e. among the 2 per cent top universities in the world and one of the 100 best universities in Europe.

More information is available at:
<https://cuni.cz/UKEN-10.html>

Faculty of Mathematics and Physics

The Faculty of Mathematics and Physics (FMP CU) is a well respected higher education institution ranking among the most prominent academic institutions in the Czech Republic. The word “Matfyz” – an abbreviation of the Faculty’s name in Czech – has become synonymous with scientific excellence and high quality education. For many years, the individual subject areas taught at the Faculty of Mathematics and Physics have occupied the leading positions in the university rankings presented by the principal national media. More than 400 students are awarded a degree at FMP CU every year and 100 percent of our alumni pursue a professional career within the field of their study.



Degrees are offered in the subject areas of Mathematics, Physics, Computer Science, and in Education (qualifications in relevant areas for primary and secondary school teachers). Classes are held in five different buildings in Prague.

A number of top-class organisations worldwide as well as renowned world universities have welcomed FMP CU alumni among their members and students. Apart from supplying high-quality education in the first place, the Faculty also provides access to the latest trends and technologies. Among others, it guarantees the participation of the Czech Republic at the international research institute ILL Grenoble, enables experiments at the Trieste synchrotron, has a significant share in CERN. Importantly, the Faculty also strives to promote talented students in the field of applied mathematics in cooperation with RSJ Algorithmic Trading, one of the largest companies in the world’s financial market.

More information is available at:
<https://www.mff.cuni.cz/en/school-of-computer-science/about-school>

Up-to-date news are available at (in Czech only):
<https://www.matfyz.cz/>

79

Department of Software and Computer Science Education

The Department of Software and Computer Science Education (KSVI) is responsible for the introductory programming courses for both the School of Computer Science and the School of Mathematics at the Faculty of Mathematics and Physics of Charles University. The courses are provided by faculty members who are known for



outstanding instruction as demonstrated by numerous faculty-wide teaching awards.

The department guarantees the teacher training program specialized in computer science education as well as study programs focused on computer graphics, computer vision and computer game development at both the undergraduate and graduate levels.

More and up-to-date information are available at:
<https://ksvi.mff.cuni.cz/index.en.php>

<https://www.mff.cuni.cz/en/school-of-computer-science/about-school>

The department includes three research groups: the Computer Graphics Group, the Game Development Group and the Advanced Multimedia Learning Laboratory. All groups are contributing to the computer game development education at our department.

Advanced Multimedia Learning Laboratory



Cyril Brom, currently an associate professor at KSVI, in collaboration with colleagues from the Faculty of Arts of Charles University and the Institutes of Psychology and Physiology of the Czech Academy of Sciences has developed his own research direction with his students, focused on psychological-pedagogical experiments. His group investigates the educational effect of various computer-based educational material, especially the question of whether educational outcomes are correlated with positive affect arising from the educational experience. New technologies include e.g. the analysis of cortisol levels as a psycho-physiological correlate of negative affect, and following eye movements to determine whether some aspects of educational material can be distracting to students. This is not only ground-breaking research for the Czech Republic, but has also earned international acclaim, as demonstrated by regularly published results in recognized journals with a high impact factor (Computers & Education, Computers in Human Behavior). What is more, according to available data, no Czech author had published in these journals before Brom. The research has contemporary and wholly practical uses, as shown by the results of implementation projects. Applications developed in this research program (Europe 2045, StoryFactory) are used in high schools in the Czech Republic, and the most successful (Czechoslovakia 38–89) has achieved exceptional international success, as demonstrated by a series of awards at conferences and competitions in Europe and the USA.

This research group, including our young colleague Tereza Hannemann and a series of doctoral students, was joined in mid-

2018 by Ján Antolík, a graduate of the Math-Physics Faculty, who brings his extensive international experience to the team.

More and up-to-date information is available at:

<https://ksvi.mff.cuni.cz/amulab/>

Computer Graphics Group

The Computer Graphics Group belonging to KSVI can rightfully be considered as one of the world-leading research teams in the area of computer graphics focused on the synthesis of realistic images. The group's work in recent years has had a significant influence on the development of this field and many of its results are in use by prestigious firms (Weta Digital, Pixar Animation Studios, Chaos Group). The group's founder Josef Pelikán has been building up the field of computer graphics at the faculty since the 1990s. His passion for the discipline and lively presentations are almost legendary, and he is complemented by two outstanding scientific figures. Alexander Wilkie focuses on the physical aspects of light transport, modeling the appearance of materials and color theory. Before joining the Math-Physics Faculty he worked as an assistant professor at the Technical University of Vienna, where he also earned the title of Ph.D. and a habilitation. Elena Šikudová, who joined KSVI in 2017, expanded the group's research and teaching capabilities on topics related to computer vision.



More and up-to-date information is available at:

<https://gamedev.cuni.cz/>

Computer Game Development Group

Cyril Brom may be considered to be the founder of teaching and research at our faculty in the area of computer game development. At his initiative, the new study branch Computer Graphics and Game Development was created several years ago in the Master of Computer Science program, in collaboration with the computer graphics group at KSVI. As part of the reform of the degree plans of the Bachelor of Computer Science program, which occurred while preparing for institutional accreditation, computer games were included in the new specialization Computer Graphics, Vision and Games in the new Bachelor of Computer Science program, and also into the modernized doctoral study branch Computer Science – Visual Computation and Computer Games. Cyril Brom also has significant accomplishments in teaching and research in this area. He is the author or co-author of 115 reviewed publications, a considerable number of which are related to artificial intelligence in computer games, and in the past two years four of his doctoral students have successfully defended their dissertations in this area. However in 2017





Photo by CU



More and up-to-date information is available at:
<https://gamedev.cuni.cz/>

he decided to focus his future efforts in a more educational direction. The instruction of key subjects and the leadership of game-related projects and research have been taken on by his student Jakub Gemrot, the leader of the successful project Pogamut and the lead programmer of award-winning *Attentat 1942* game. He is currently focusing on the development of the video game development study program, including organisation of community events like game jams and seminars, which are open to the public.

New Media Studies at Faculty of Arts



New media studies is an MA study programme at the Faculty of Arts at the Charles University in Prague (FA CU), which is situated on the border of the humanities, science and technology. New media deals both with the theory of the new technologies influence on society and its possible application. The students include BA graduates of librarianship, journalism, aesthetics, marketing communication or IT.

The students can choose from three specializations:

Game studies: Game studies critically analyse the medium of computer games and focus on their cultural, social and political aspects. The topics include game theory, computer games history, design and development, game technology analysis, computer games application in education and the relationship between computer games and new media.

Digital humanities: The digitization process has expanded the amount of data to the extent of it becoming virtually impossible to process without computers. The computational turn of computer technology and their mediation of data processing expand the possibilities of utilising the data. Due to high-performance software, the exploratory data analysis enables the researcher to browse a great amount of data and thus to find a greater number of hypotheses worth further testing. The gradual digitalization process of the human world and its history facilitates entirely new possibilities of research in the humanities and social sciences.

Arts, Culture and New Media: This specialization offers a complex insight into the relationship between arts, new media and technology. The aim of the lectures is to identify and follow the main trend in the arts utilization of new technology. The students will be familiarized with art projects and lead to analyse academic texts and thus

to acquire the skills to criticise and discover the creative possibilities of new technology. This specialization includes subjects such as Contemporary Arts and new media, Media Archaeology and Cyber-culture.

Game studies are officially part of the curriculum since 2016. However, several courses dealt with game studies and game research since 2009. Also, students of New Media Studies can attend practical courses focused on game development taught at FMP CU and students of FMP CU can attend Game Studies courses at FA CU.

More and up-to-date information is available at:
<https://uisk.ff.cuni.cz/en/new-media-studies/>

Industry

This part is comprehensively covered by Czech Game Developers Association report.

Education

Even though the game development industry is having a long tradition in Czech Republic (e.g. Pterodon, ALTAR Interactive, Bohemia Interactive Studio, IDEA Games, Illusion Softworks, Amanita Design and others), the systematic education at every level was lacking for a long time. The first university-level game development course was opened at the Faculty of Mathematics and Physics of Charles University (FMP CU) in 2006/07. It was created in collaboration with the industry and based on learning-by-doing principle. It was a semester course (6 ECTS credits) where students were forming teams of 3–5, in which they had to design, implement and present a digital game prototype. As FMP CU is having a strong tradition in AI education, a course devoted to gaming AI, Human-like Artificial Agents, was opened in 2007/08. However, these courses were rare cases and no new courses were created until ac. year 2014/15.

Since 2010, people behind the course at CU started to collaborate with New Media Studies at Faculty of Arts, Charles University (FA CU). As a result, a serious game called Evropa 2045 was developed (Europe 2045). It was a role-playing top-down simulation of the European Union aimed at teaching the basic mechanics behind EU politics. It was aimed to be used at high schools and the game was played by many students in Czech Republic back then. Its long-term educational effects on its players were comprehensively researched with the help of funding by the Czech Grant Foundation. The project brought many people from different areas under one roof and it

arguably led to the development of game development education at FMP CU. The result was an accreditation of Computer Game Development 2-years master's program under the School of Computer Science at Faculty of Mathematics and Physics, CU in 2015/16 and Game Studies 2-years masters specialization at Faculty of Arts, CU (2016/17).

Other Game Development Related Programs in Czech Republic

Alongside, other universities and colleges in Czech Republic started to be interested in game development education as well; CU started to collaborate with some of them, namely University of West Bohemia (Pilsen), Academy of Arts Architecture and Design (Prague), Film and TV School of The Academy of Performing Arts (Prague).

In 2009, the Faculty of Arts, Masaryk University, Brno opened the first game-related course called Game Studies as part of their bachelor program Theory of Interactive Media. Currently, the program also contains courses on critical game analysis and digital game prototyping.

More information available at:

<https://www.muni.cz/en/bachelors-and-masters-study-programmes/24621-teorie-interaktivnich-medii>

In December 2015, the Faculty of Fine Arts, Brno University of Technology opened a Studio of Game Media a 4-year long bachelor program.

More information available at:

<https://www.vutbr.cz/en/students/programmes/branch/12808>

Around the year 2016, Studio of Animation and Interactive Art – Ladislav Sutnar Faculty of Design and Art – University of West Bohemia became interested in production of animations and art for games. It resulted in collaboration both with the Faculty of Informatics of West Bohemia University as well as with FMP CU.

More information available at:

<https://ait.fdu.zcu.cz/en/>

In 2016, Czech Technical University also accredited a bachelor's program in Computer Graphics and Games. The program focuses on the game programming and computer graphics.

More information available at:

<https://oi.fel.cvut.cz/en/bachelor-specialization-computer-games-and-graphics>

In 2017/18, the Higher Art College in Jihlava opened a 3-year bachelor program oriented on game art production.

More information available at:

<https://www.vosg.cz/ateliery/31-her-ni-tvorba.html#zalozka>

In 2019, Faculty of Informatics, Masaryk University, Brno opened Computer Graphics and Visualization master's specialization focusing on computer graphics and 3D rendering.

More information available at:

https://www.fi.muni.cz/catalogue2019/?program=nmgr_viz_cz

Currently, the Academy of Arts, Architecture and Design, Prague, seeks to develop a new program focused on arts in video games as

well as the Film and TV School of The Academy of Performing Arts, Prague, that seeks to open Game Production 2-years M.A. program.

The Faculty of Fine Arts and Music in University of Ostrava is running a Virtual digital graphics studio that is offering a double degree program together with University of Silesia, Katowicze, Poland. More information available at: <https://fu.osu.eu/kgk/> and http://admission.us.edu.pl/english/Games_Graphics

With respect to the art and animation, there are two more universities providing programs that are relevant to game development: Studio of Animation running under Faculty of Multimedia Communications, Tomáš Baťa University in Zlín is providing Bachelor and Master program Theory and practice in audiovisual art that includes animation as one of the focus of studies, <https://fmk.utb.cz/en/faculty/about-us/studios-and-departments/animation/about-us/>, and Film Academy of Miroslav Ondříčka in Písek is providing both bachelor's and master's program in Multimedia production including new media, <https://www.filmovka.cz/cs/famo/studium>.

Finally, Silesian University in Opava is seeking to open a game development related study program as well and is doing so in collaboration with 2KCzech company (also known as Hangar 13).

Communities

Game Development communities are mostly concentrated in the two largest cities of the Czech Republic—Prague and Brno. Both cities have the highest number of game development companies and universities with programs or courses focused on game development education.

Prague

Prague game development community is currently formed around several institutions:

1. Faculty of Mathematics and Physics of Charles University

Its lecturers and students of game-focused courses participate actively in community building since 2015 when the Master's programme in Computer Graphics and Game Development was established (Gamedev Cuni). The institution has been organising game jams since 2015. During the 9 game jams, almost 119 games were

created. The institution currently organises game jams for almost 100 participants every semester in collaboration with industry partners.

FMP CU also participates in so-called Game Dev Talks and Meet-ups, which are community events for game developers and students about the current issues and experience within the local industry. Since recently, Gamedev Cuni started to organise Game Development Seminars with industry experts. These seminars are open publicly and tackle the recent issues and challenges in game development. They are slowly establishing themselves as regular meetings for the “new wave” of Prague game development community.

2. *České hry*

Prior to the creation of the Czech Game Developers Association, the organisation *České hry* used to organise Gamedev Talks and Meet-ups in Prague to help to establish the community. They are also responsible for the oldest international Czech game conference—Game Developers Session with more than a thousand visitors each year. Since 2010, it has been held in Prague. Apart from that, the organisation is currently focused on documenting Czech game history.

3. *GDACZ*

Czech Game Developers Association was established recently, but it plans to further extend the meetings and educational events helping developers. It is currently closely collaborating with Gamedev Cuni to organize public events and connect industry professionals with the community.

4. *GEEWA*

Game Studio Geewa is organising a monthly meeting called “Game Beer” for informal networking and meeting of industry professionals.

5. There are multiple annual events focused on board games and game culture happening regularly in Prague. *Žižcon* is a board game festival happening in the unique spaces of the building of Church of the Czechoslovak Hussite Church. *Deskohraní* is another board game festival and tournament in Prague.

[Brno](#)

Game development events in Brno were depending on students and alumnis of Masaryk university in Brno collaborating with local industry.

- » Students and Alumnis of Faculty of Arts, Faculty of Social Sciences and Faculty of Informatics formed an organisation called MU Game Studies (MUGS) in 2008. It was initially formed around the interest of students in game development and it evolved in founding a civil society in 2012. MUGS is found by students and for students. As such MUGS is helping university students with their studies, mainly scouting for Bc. and Msc. thesis topic focused on games and pairing students with supervisors. MUGS is responsible for the annual game-focused festival Gamer Pie, which is well-known among the game community hosting mostly the Indie scene and multiple talks about various aspects of game development and game studies. This group participates in academic conferences such as Central & Eastern European Game Studies (CEECS) conference, which was founded under the aegis of MUGS.
- » Gamedev Area is an initiative with the aim to support game developers in the region. It is regularly organising one of the biggest Czech international game development conferences—Game Access Conference inviting international and local game developers and professionals. Gamedev Area aspires to be an umbrella framework for all the cultural events related to the game industry. It is also organising regular meetings of the local game industry (so called Gamedev Area Meetups: <https://www.facebook.com/pg/GameDevArea/events>). For more updated info, see <https://gamedevarea.com>
- » Studio of Game Media at Faculty of Fine Arts, Brno University of Technology (FFA BUT). Along side Game Media FFA BUT, a studio called "Ateliér Duchů" is helping students to realize the full potential of their university (gaming) projects. More info is available at <http://atelierduchu.com/en/about>.

Třeboň/Liberec

Anifilm is an international festival of animated movies happening annually in Třeboň since 2010. This festival incorporated Game days to its structure almost since the beginning (2011). Game days provide game developers and the public with the opportunity to showcase the recent games, attend game-oriented workshops and lectures.

The best Czech game projects are annually awarded by the expert jury. Since 2017, these awards included international game production. From 2020, Anifilm moved its location to Liberec.

Kladno

Kladno has already hosted the third annual festival of board game and digital game festival Herní Čas. There are almost 500 visitors each year. The festival is mostly focused on board games, but in 2019 it also showcased a selection of retro and arcade games, escape games and several invited talks about the game culture. The aim of the festival is bringing the general public closer to the game culture.

Plzeň

In 2019, Plzeň hosted for the first the Co.Con festival bringing together fans of comics, PC games, board games and cosplay. The first year of the festival was successful and organisers plan to establish it as an annual event.

//Program Structure & Academic Research

Initial Vision, Starting Goals and Current Situation

Innovations accomplished/planned for the program(s)

Create practical courses focused on game development that promote interdisciplinary cooperation.

The aim was to establish practical courses focused on creation of games by interdisciplinary teams. Gamedev CUNI students are mostly familiar with technical skills related to game development needs. Therefore, we have gradually opened our courses to other faculties and institutions and the course currently welcomes also students of New Media Studies at the Faculty of Arts of Charles University, Film and TV School of the Academy of Performing Arts in Prague, Academy of Arts, Architecture and Design in Prague Studio of Animation and Interactive Art from Faculty of Design and Art – University of West Bohemia. Regular cooperation with these various institutions allows us to create teams of students with knowledge in programming, game design, animation, graphics, sound design and marketing. They form an equivalent of an indie studio in the controlled environment of the university supervised by our lecturers learning from each other in the project-based education.

There are currently two main courses focused on practical creation of game projects—One semester-long Game Development Course supervised by mentors from the industry delivering digital game prototypes and Practical Game Development Course organised as

48-long hackathon in game development on the chosen topic (i.e., game jams).

To promote networking among the students, we also organise Seminars from Game Development with industry experts on the current issues in game development. Those seminars are promoted among the students of all the mentioned institutions and also open to public.

Next year, we plan to open more courses for students from various institutions oriented on game development skills, namely the Introduction to Game Design, Game User Experience and Artificial Intelligence for Computer Games. The first course objective is to introduce basic game design principles for students with various specialisations in the project based-manner. The second will be focused mostly on practical evaluation of game design decisions and mechanics. The last will build on the course Introduction to Artificial Intelligence and will put classic AI algorithms in the context of real-time (gaming) systems.

Closely cooperate with game development industry

The aim was to create courses at Gamedev Cuni in collaboration with professionals from Czech game industry. There are currently four courses with participation of Game Industry experts (Computer Games Development—Martin Klíma, Warhorse Studios; Otakar Nieder, Bohemia Interactive Simulations; Human-like Artificial Agents—Petr Mácha, Bohemia Interactive Simulations; Adaptive Music and Interactive Audio—Adam Sporka, former Warhorse Studios; Game Development Middleware—Radek Píbil, Grip Digital).

In the Computer Games Development course, Martin Klíma and Otakar Nieder are giving lecture on game design, game production and game programming. More game industry veterans are also involved in the course as mentors. Each team of students (3–5 people) is chosen by one mentor.

In the Human-like Artificial Agents course, Petr Mácha is leading half of the labs where students are experimenting with creation of complex behavior trees for within the context of the game environment of NOTA (real-time strategy game).

In Adaptive Music and Interactive Audio, Adam Sporka is lecturing about game audio, i.e. design, production, and implementation of

sound effects and music in video games. Finally, a few labs of Game Development Middleware are lead by Radek Píbil, teaching technical aspects of C++ game development in Unreal Engine 4.

We regularly showcase the best student games created in our courses on international game conferences in cooperation with Czech Developers Association (e.g. Gamescom 2019, Game Access, White Nights Berlin) as part of the Czech delegation. In cooperation with Game Developers Session, we also showcase the best student games on this festival. GDACZ is also a partner of our game jam events and they host a ceremony during the main event of GDS conference in which we announce the best student games. At the same time, organisers of Gamedev Access in Brno allow our students to present their game within the respective booths on the international event and Indie pitch. In future, we would like to continue to improve the quality of our student games and let them regularly showcase these games on the most prestigious industry events.

“Recently, it is evident that the interest of Czech game studios in the educational sector is growing. The same is true of the gaming community in the Czech Republic.”

*—Michal Berlinger,
Amanita Design*

Necessary descriptions and informations

Starting with ac. year 2020/21, we are updating our Msc. specialization in Computer Games Development. We plan to evolve the current running specialization of computer science program into a full 2-year study program. New study program is containing several new courses, some of them will be developed in the scope of the GAMEHIGHED grant. Follows the study plans for 4-semester masters study including summer internship in game development company with total of 126 ECTS credits; there are a few optional courses that can be dropped out if a student would like to target traditional 120 ECTS credits plan. Further information regarding courses of the study program can be publicly accessed from within the information system of FMP CU available at: <https://is.cuni.cz/studium/eng/predmety/> [11.2.2020] entering course codes as they appear below.

YEAR 1	WINTER SEMESTER - ECTS CREDITS	ECTS	30	
GAME DEVELOPMENT FOCUSED COURSES				
Code	Course Name	Type	ECTS	Exam.
NCGD004	Introduction to Game Design	Elective	3	C+Ex
NCGD003	Gameplay Programming	Elective	4	C+Ex
NCGD009	Adaptive Music and Interactive Audio	Elective	5	C+Ex
NCGD008	Practical Course on Managed Game Development	Elective	3	C
NCGD010	Seminar on Computer Games Research Methodology	Optional	3	C

MATH, THEORETICAL CS, AI COURSES				
Code	Course Name	Type	ECTS	Exam.
NAILO69	Artificial Intelligence I	Optional	4	C+Ex
NTIN090	Introduction to Complexity and Computability	Obligatory	5	C+Ex
NMAI060	Probabilistic Methods	Obligatory	3	Ex

YEAR 1	SUMMER SEMESTER - ECTS CREDITS	ECTS	38	
GAME DEVELOPMENT FOCUSED COURSES				
Code	Course Name	Type	ECTS	Exam.
NCGD001	Computer Games Development I	Elective	6	C+Ex
NCGD006	Practical Course on Rapid Game Development	Optional	2	C
NAIL122	Artificial Intelligence for Computer Games	Elective	3	C+Ex
NAIL123	Procedural Content Generation for Computer Games	Elective	3	C+Ex
NPGR033	Computer Graphics for Computer Games	Elective	5	C+Ex
NPGR019	Realtime Graphics on GPU	Optional	4	C+Ex
NSWI158	Seminar on Computer Games	Optional	3	C
NPRG071	Firm Project	Obligatory	6	C

DIPLOMA THESIS				
Code	Course Name	Type	ECTS	Exam.
NSZZ023	Diploma Thesis I	Obligatory	6	C

YEAR 2	WINTER SEMESTER - ECTS CREDITS	ECTS	28	
GAME DEVELOPMENT FOCUSED COURSES				
Code	Course Name	Type	ECTS	Exam.
NCGD002	Computer Games Development II	Optional	3	C+Ex
NCGD007	Practical Course on Native Game Development	Elective	3	C
NCGD005	Game User Experience	Elective	3	C+Ex
NAFF003	Introduction to Game Studies	Elective	4	C

MATH, THEORETICAL CS, AI COURSES				
Code	Course Name	Type	ECTS	Exam.
NTIN066	Data Structures I	Obligatory	6	C+Ex

DIPLOMA THESIS				
Code	Course Name	Type	ECTS	Exam.
NSZZ024	Diploma Thesis II	Obligatory	9	C

YEAR 2	SUMMER SEMESTER - ECTS CREDITS	ECTS	30	
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GAME DEVELOPMENT FOCUSED COURSES				
Code	Course Name	Type	ECTS	Exam.
NAFF004	Contemporary Issues in Game Studies	Elective	4	C
NAIL068	Human-like Artificial Agents	Elective	6	C+Ex

MATH, THEORETICAL CS, AI COURSES				
Code	Course Name	Type	ECTS	Exam.
NAIL106	Multi-agent systems	Elective	5	C+Ex

DIPLOMA THESIS				
Code	Course Name	Type	ECTS	Exam.
NSZZ025	Diploma Thesis II	Obligatory	15	C

SUMMARY - ECTS CREDITS				126
	Course theme		ECTS	
	Game development focused courses		73	
	Math, Theoretical CS, AI courses		23	
	Diploma thesis		30	

GAME DEVELOPMENT FOCUSED COURSES				126
	Course type		ECTS	
	Obligatory		50	
	Elective		57	
	Optional		19	

The study plan can be divided into three types of courses: game development related, theoretical courses and diploma thesis related.

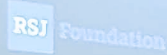
The idea of the program is to first teach all rudimentary skills for successful game development (1. yr. winter sem.: NCGD003 Gameplay Programming, NCGD004 Introduction to Game Design, NCGD008 Practical Course on Managed Game Development and NCGD009 Adaptive Music and Interactive Audio), then let students form interdisciplinary teams (1. yr. summer sem.: NCGD001 Computer Games Development I) while providing them with specific game develop-

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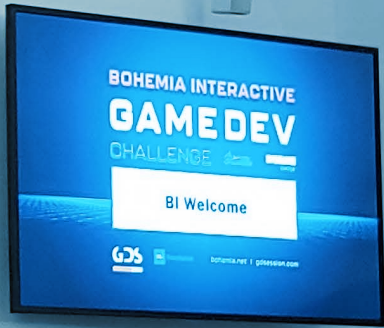
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ment skills (NAIL122 Artificial Intelligence for Computer Games and NAIL123 Procedural Content Generation for Computer Games) including deep understanding of real-time rendering both theoretically (NPGR033 Computer Graphics for Computer Games) and practically (NPGR019 Realtime Graphics on GPU).

The second year is then devoted to the further development of the game prototype created during the course NCGD001 Computer Games Development I. Ideally, students should base their master thesis upon the game prototype from NCGD001 while also trying to extend it into a full game vertical slice (in context of NCGD002 Com-

"Every year, we see growing interest of students in game development and game design courses."

—*Vit Sisler, Charles University*

puter Games Development II). To help students with the scientific part of their thesis, we plan to teach students how to formally test and evaluate their game prototypes in NCGD005 Game User Experience.

As there is a long tradition of teaching artificial intelligence at our faculty, study plans are complemented with AI-related courses (NAIL069 Artificial Intelligence I, NAIL106 Multi-agent systems) including their game-related adaptation (NAIL122 Artificial Intelligence for Computer Games, NAIL068 Human-like Artificial Agents). In the new study plan, we also seek to strengthen the bonds with the New Media Studies of the Faculty of Arts CU by enlisting their game studies courses (NAFF003 Introduction to Game Studies, NAFF004 Contemporary Issues in Game Studies) as elective for our students.

Finally, obligatory courses that are required to be included in all study plans at our study branch (NTIN090 Introduction to Complexity and Computability, NTIN066 Data Structures I) ensures that our students are having good understanding of computer science foundations and statistical methods required to design and evaluate experiments with human subjects (NMAI060 Probabilistic Methods).

As such, the intended study plan seeks to produce game developers, which are highly versatile having both theoretical and practical knowledge from the three pillars of game development: implementation, game design and game studies.

Finally, this depicted walkthrough is not mandatory for students to follow. There are only a few obligatory courses students have to

choose, but they are free to form their study plans as they see fit. E.g., if a student is more interested in parallel programming, they can swap NAIL106 Multi-agent systems with a course NPRG042 Programming in Parallel Environment on parallel programming offered by another department of our faculty.

Outcomes so far in terms of projects, publications, etc.

- » 92 student games were created within our Game Development Course in interdisciplinary teams (19 of those during the last year).
- » Our student games are regularly showcased at international festivals and conferences as Game Developers Session, Game Access in Brno. Last year, for the first time, also at Gamescom 2019 as a part of Czech National Booth).
- » 119 games were created on our games within the Course Practical Game Development (61 of those were created during the last year).
- » The best game jam games within the course Practical Game Development are newly showcased at Game Developers Session.
- » *Attentat 1942* (released 2017) and *Svoboda 1945* (planned release Q3 2020) are commercial games created in cooperation of students and young scholars from Faculty of Mathematics and Physics of Charles University, Faculty of Arts of Charles University and the Institute of Contemporary History of Czech Academy of Sciences. *Attentat 1942* was critically acclaimed (Metascore 75) and received multiple prestigious awards and nominations (e.g. Best Learning Game at Games for Change 2018, Most Amazing Game at A-MAZE festival 2018, Best Educational Game at TIGA Awards, 2018, IGF nominee at 2018).
- » *Czechoslovakia 38–89* series was created in cooperation with the Faculty of Arts of Charles University and the Institute of Contemporary History of Czech Academy of Sciences. It is an educational video game series about Czech contemporary history. The series was well-received among students and teachers. It was successfully implemented into the Czech high-school educational system.
- » *Evropa 2045*—In cooperation with Faculty of Arts and Generation Europe, we have developed an educational video game about the European Union which was used and tested in more than a hundred of Czech schools.

- » Charles Games—Based on the cooperation with Faculty of Arts at Charles University, we have established a university spin-off focused on distribution and development of our own video games. Charles Games also functions as an incubator for student games with a potential for commercial success.
- » Pogamut and NOTA—We are running a unique course that teaches technical implementation of behaviors for intelligent virtual agents, i.e., a course that is focusing on high-level control of virtual characters. Unlike other game development courses, NAIL068 Human-like Artificial Agents starts with a game environment fully implemented and virtual characters ready to be controlled. Students are then taught and experimenting with behavior implementation for concrete game modes (e.g. capture-the-flag in first person shooter game or tactical scenario in real-time strategy games). We use two unique tools—Pogamut 3 and NOTA—for the course we have developed and maintain ourselves. By the end of the course, students are able to produce bots that outperforms native bots in Unreal Tournament 2004 and NOTA.

Methods executed/experimented to match expectations

Project-based education proved itself successful for students and attractive for collaborators from the industry.

Game jam format is a form of education teaching time management and ability to develop under time constraints. It is cherished by our students. Our game jams are becoming known nationwide attracting both new students and industry experts scouting for potential new employees.

Interdisciplinary approach in our projects brought together technical fields and humanities resulting in successful and unique projects.

What Went Right (highlight successes that met the expectations and goals)

Czech industry partners are cooperating with us. Students and the game development community are interested in our courses and events. We have ensured short-time funding to sustain our curriculum. We succeeded to modernize our curriculum and include broader selection of gamedev courses for next year. Our plans for international collaboration were realised within the successful Erasmus+ collaboration.

What Went Wrong (highlight misjudgements, failures or missed opportunities)

As the field of game development is becoming more popular and economically significant, there are also more possibilities for Gamedev Cuni for collaboration and new projects. However, the scope of activities within the Gamedev Cuni is getting significantly larger each year, yet we still struggle to ensure reliable and sufficient financing for our team members in a long-term perspective. We are currently trying to secure funding in order to broaden our team to respond to new cooperation possibilities. The main struggle of Gamedev Cuni is to balance available human resources with projects we would like to participate in.

//Relations & Collaborations

With the industry and communities

We have active collaboration with the industry through and beyond Czech Game Developers Association. We regularly organise GameDev talks inviting representatives of Czech professional game development community, they participate in our courses and consult our materials. In Prague, Gamedev Cuni is currently organising GameDev talks as the biggest regular events for the game developers community. Gamedev Cuni also organises the biggest game jams in Czech Republic. We actively collaborate and showcase our work at both major Czech game conferences. Our courses and events are open for all students of game development from all the relevant institutions in Prague and adjacent areas, events are typically opened to public as well.

Routine activities taking place

Game Jams, GameDev Talks, Seminars from Game Development

Innovations, Potentials, Outcomes so far

Presentations open to the public, active collaboration with educational institutions focusing on Game Development in Prague and adjacent areas, Gamedev Cuni is a known brand, Producer of successful games.

Expectations from them and vice versa

Community building, networking between our students and game development industry, transfer of knowledge

Methods executed/experimented to match expectations

Organising events focused on game development, game jams open to public

What Went Right and What Went Wrong

We have succeeded in establishing Gamedev Cuni as the main point for all the educational activities in Prague. We have currently established Charles Games, s.r.o., university spin-off for development of games and student incubator, to further develop the relations between the university and external partners. We are currently strengthening our cooperation with Czech Game Development Association to help us finance our community events. This possible collaboration would solve our biggest issue. We are currently depending on funding from external and irregular sources of income to organise the community and student events, such as Game jams or Gamedev talks.



Photo by CU



//Constraints & Needs

To summarize points from previous sections.

- » Lack of funding.
- » Lack of employees.
- » Lack of interest of the local game development industry to teach practical seminars that current study program does not cover enough (physics simulation, network programming, commercialization of games).
- » Technical solutions for game development are moving fast and it is time demanding to maintain teaching materials for technical courses that include hands-on experience up to date.
- » Lack of international collaborations and connections with international game development companies (e.g. Unity, Epic, Microsoft, Sony, Nintendo, etc.)

//SWOT Analysis

Strengths

- » Gamedev Cuni is an established brand in the Czech game development community.
- » Gamedev Cuni created community around its activities.
- » Gamedev Cuni created critically acclaimed video games, one of them is selling worldwide and has international recognition.
- » Gamedev Cuni has strong ties with the local industry.
- » Gamedev Cuni host and coordinate interdisciplinary courses in game development in Prague and adjacent areas

Weaknesses

- » Gamedev Cuni currently has only 2 internal employees and 1 PhD student.
- » Gamedev Cuni has limited space capacities to host larger events.
- » Video games are not acknowledged as students' final work.
- » FMP CU does not have a comprehensive Bachelor curriculum for game development.
- » Our master's program require non-trivial technical knowledge to enter.

Opportunities

- » There is a growing demand for a formal education in game development.
- » With the lack of skilled employees, industry partners are willing to cooperate on education.
- » Research of video games is an emerging field worldwide.
- » Video games are qualified as cultural products in the system of distribution of higher education finance.

- » Increasing quality of Gamedev Cuni games also increases the possibilities of commercial success.

Threats

- » Lack of external financing for our community building events.
- » Lack of grant calls related to games in the Czech Republic.
- » Lack of students due to the demographically weaker years.
- » Financially and career-inviting environment in the game industry for our internal employees.
- » End of support to an independent video game scene in a Prague.

//Comments for the Partners

for each institution including OBSERVATIONS, SUGGESTIONS, SIMILARITIES, DIFFERENCES, etc.

UKW

- » Game education at UKW (GAMEDEC) is a comprehensive program with a broad focus on video and board game design and game production. It is relatively young and very unique in Polish context. In general, it is mostly rooted in humanities and less on technical skills. However, there are courses focused on Unity prototyping etc.
- » Establishment of the GAMEDEC program was mostly done due to the personal efforts of its former and current staff despite the institutional barriers.
- » Students of GAMEDEC must be self-sufficient in video game development as they often do not have any graphical or programming skills. However, they create several board game prototypes during their studies and they gain experiences from industry professionals and their projects.
- » GAMEDEC is collaborating with multiple industry partners and alumni on its courses and curriculum. Bydgoszcz is a relatively small city in Poland, however it has headquarters and branch offices of several game companies. These companies are actively collaborating with GAMEDEC through GAMEDEC alumni or through a broad network of contacts of GAMEDEC staff
- » Industry professionals are teaching several courses at GAMEDEC. These professionals are often those employing the students in their home companies.

- » GAMEDEC students are regularly doing internships in international game companies abroad and within Poland. Students are usually hired for positions related to game design or marketing.
- » Game culture is thriving in the city as there are regular pub quizzes, escape rooms game meetings, several game companies and game-oriented educational program.
- » Even though that students do not have any limitations in using English as their professional language, the GAMEDEC program is only in Polish language. This fact limits possible cooperation in exchange of researchers and students among partners in GAMEHIGHED. Courses are also created in Polish languages. As such, they are not easily transferable to other partner institutions.
- » During our interviews, students often mentioned that they lack stronger technical background or someone in the team leading the programming part during their video game development. It would allow them to focus on game design. It also limits their capabilities to deliver video games as projects within the study. This could be solved by cooperation with technical universities in the area.

JYV

- » University of Jyväskylä started to focus on video and board games within the digital culture program. They intend to get a new game-focused accreditation as a part of the GAMEHIGHED project.
- » They are currently running several practical courses focused on fast video game prototyping and one larger course simulating game development in an indie studio. This is to some extent similar to our program and both institutions can profit from exchange of staff and researchers
- » Local staff is especially strong in their research activities (HR Excellence in Research) and international collaboration. The team collaborating on game focused courses and possible future accreditation is much broader than ours.
- » We have also observed a significant collection of historical game hardware. They also conduct a comprehensive course on game history. In the scope of this course, their students gather data about the chosen games and particular trends. With an adequate tool, it will allow them to conduct comprehensive data-driven research on genesis of video games trends

- » We see a significant potential to collaborate on research activities of game based learning, psychological aspects of video games and media effects.
- » Several Alumni of game focused courses are working in the game industry or running their own companies. They have a very positive relation with the program, but they are not included in the educational process.
- » Game industry is flourishing within the country. In general, it is more focused on mobile gaming than the Czech industry oriented towards PC games. However, it is not easy to profit from this trend at the University of Jyväskylä as the biggest game companies are mostly concentrated in Helsinki or Tampere. Therefore, game culture and communities seems to be limited in Jyväskylä.

BAU

- » Game development program at Bahçeşehir university is running under the Faculty of Communications as a new form of communication, which is a very interesting context on how to frame games in general.
- » The program is part of the "BUG" Lab label (stands for Bahçeşehir University Game Lab), whose aim is broader than to provide game development education; it is meant to bring people from the academia, the industry and the indies scene together. As such it allows people to match needs with demand in a natural way. It is inspired by the Bauhaus Project.
- » It must be noted that the program is a result of extraordinary and patient effort of Guven Catak, who was able to bring many people to the BUG project and who keeps expanding its activities for many years now.
- » The strategy of BUG was always "to form the community first" and then "to answer the community needs".
- » BUG activities are strongly project oriented including pro-bono work, which helps to create a good name for the lab, or workshops and summer schools, which can be 7-weeks long. As a result, students studying with BAU have many opportunities to apply their new skills outside the university during their studies allowing them to transfer to the industry smoothly after they graduate.
- » Technically, an education takes place in a single almost open-space floor of the university building, which can be reconfigured as required. In contrast to our context, where all classrooms are

shared, students at BAU can identify with the space dedicated for game development education. We anticipate it has a positive effect on collaboration between students.

- » BUG is staying closely in touch with their alumni, which are often returning to BAU to share experiences they have gained within the industry with new students.
- » The research done in the context of BAU is focusing on game based learning, psychological aspects of video games and media effects. A lot of student projects are transformed into publications in the end, which is both very effective and rewarding for students.
- » As the result of all those activities, BUG Lab is recognized and supported both on the faculty (the deanship) and the university (rectorate) levels.

//Context of Other Actors of Game Developers Education in the Czech Republic

To position game development education effort at FMP CU into a broader context, we have administered a questionnaire for representatives of other game-oriented educational institutions in Czech Republic. We have collected responses about their experiences in incorporating game development courses and specializations into their study programs.

The form contained 8 open questions providing insight into their game development education context:

1. Are you providing any gamedev program(s)/curriculum(a) and if so, of what kind?
2. What is the focus of your program/curriculum/activities and the main benefits for students to take part in them?
3. What is/was your initial vision, the goal and current situation?
4. Who do you collaborate with (externally) in the context of your program/curriculum?
5. What are your current constraints and needs?
6. Anything you are in particular happy with? (Things going/went right?)
7. Anything you are in particular UNhappy with? (Things going/went wrong or deadends?)
8. Anything else on your mind that does not fit in any questions from above? *Not answered in any response.*

We have received 9 responses in total together with consent to publish those data. Each response is associated with a code as pre-

sented below we use to indicate the origin of answers under each question. Some respondents have given us the consent to publish their names.

Respondees:

1. MCU

University of Ss. Cyrilus and Method in Trnava (MCU), Slovakia
Department: Interactive media theory (MU), Digital games theory (UCM)

By: Silvestr Buček

2. FAMU

Film and TV School of The Academy of Performing Arts, Prague, Czech Republic

3. ZCU1

University of West Bohemia, Ladislav Sutnar Faculty of Design and Art, Pilsen, Czech Republic

Department: Studio of Animation and Interactive Art

By: Martin Vaňo

4. ZCU2

University of West Bohemia, Ladislav Sutnar Faculty of Design and Art, Pilsen, Czech Republic

Department: Studio of Animation and Interactive Art

By: Vojtěch Domlátil

5. UCC

University of Creative Communication Prague, Prague, Czech Republic

Department: Animation

By: Martin Vaňo

6. UMPRUM

Graphic Design and Visual Communication, Prague, Czech Republic

Department: Graphic Design and Visual Communication

By: Zdeněk Kvasnica

7. CTU

Czech Technical University in Prague, Faculty of Electrical Engineering, Prague, Czech Republic

By: Jiří Bittner

8. FACU

Faculty of Arts, Charles University, Prague, Czech Republic

Program: New Media Studies

9. MU

Faculty of Arts (FAAV MU) and Faculty of Informatics (FI MU), Masaryk University, Brno, Czech Republic

Program: Theory of interactive media (FAAV MU) and Visual informatics (FI MU)

By: Zdeněk Záhora

1. Are you providing any gamedev program(s)/curriculum(a) and if so, of what kind?

MCU: Mostly theoretical programs: Language of Games, Game Studies, and Game analysis.

FAMU: We are preparing to open game design program in September 2020

ZCU1: Game development and game design

ZCU2: Game design courses led by Martin Vaňo and game development courses by Petr Vaněček. We also enthusiastically cooperate with Charles University and their game development course.

UCC: Theoretical course on game design/development.

UMPRUM: Art & design in Game Dev education—the program is currently in development at UMPRUM.

CTU: Computer games and graphics specialization within the Open Informatics bachelor study program

FACU: Game studies, game design

MU: Program(s) 2019 Visual informatics—Game Dev—MSc. specialization

Course(s):

2009: Game Studies—<https://is.muni.cz/predmet/phil/jaro2009/IM082>

2009: Computer Games Critical Analyses—<https://is.muni.cz/predmet/phil/podzim2009/IM090>

2014: Digital Games—<https://is.muni.cz/predmet/phil/jaro2014/VIKMB31>, <https://is.muni.cz/predmet/fi/podzim2014/PV255>

2014: IM136 Reading and Writing Game Studies Texts—<https://is.muni.cz/predmet/phil/podzim2014/IM136> (ended in 2016)

2015: Applied Game Studies—<https://is.muni.cz/predmet/phil/jaro2015/IM137>

2017: Digital games prototyping—<https://is.muni.cz/predmet/phil/podzim2017/im149>

2018: Digital games II—<https://is.muni.cz/predmet/fi/jaro2018/PV266>

2018: Visual Styles of Digital Games—<https://is.muni.cz/predmet/phil/podzim2018/IM167>

2018: Japanese Digital Games—<https://is.muni.cz/predmet/phil/podzim2018/JAP233>

2018/2019: Game Design I. II.—<https://is.muni.cz/predmet/fi/podzim2018/PA215>

2. What is the focus of your program/curriculum/activities and the main benefits for students to take part in them?

MCU: I mostly focus on the relationship between games and society (economy, politics etc.) and the structure of games.

FAMU: The main focus is on game design—storytelling, game mechanics, game history, and psychology. There is also an important practical part where students will make and evaluate their prototypes and doing internships in the game industry.

ZCU1: Theoretical background and practical development of a small game project in multidisciplinary teams (IT + Art).

ZCU2: Game development. In case of our studio animation for games in particular.

UCC: Theory with practical exercises doable without programming knowledge, i.e. game designing, pitching, writing, etc.

UMPRUM: Training in conceptual thinking in art & design in game development. The concept is about very close collaboration with The Charles University and the main benefit (in the concept) is the collaboration (work flow from the concept to playable prototype).

CTU: The Open Informatics program in which our specialization is rooted provides a solid background in maths and informatics. We shape the computer games and graphics specialization to additionally provide a basic technical background for game developers. We focus more on computer graphics part of game development.

FACU: Theoretical study of games, practical course on game design

MU: The main focus is to create games and ideally publish them. Benefits are consequential—depends on the phase of the development (pre, production, post, mkt). The secondary focus is to be able to conduct applied research. Benefits are mainly critical thinking.

3. What is/was your initial vision, the goal and current situation?

MCU: To teach students the similarities and differences between games and other media.

FAMU: The goal is to increase the design quality and art potential of Czech gaming industry.

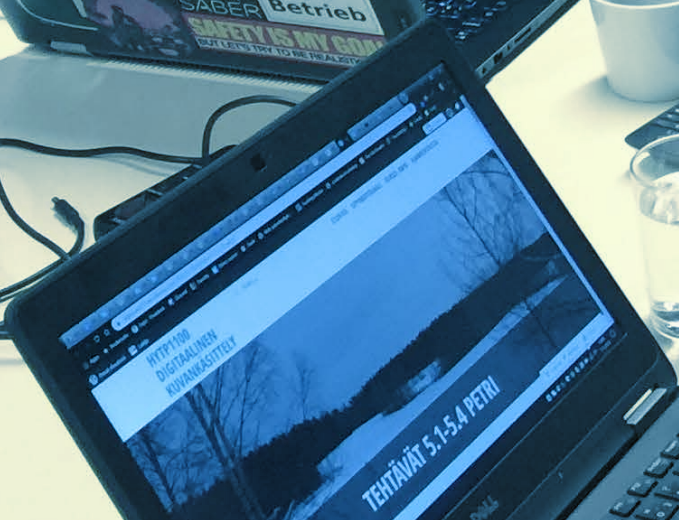
ZCU1: No initial vision, currently enhancing course to 2 semesters plus a tools (Unity) workshop. We are aiming for a stand alone atelier in the near future.

ZCU2: The goal was to create computer games by means of cooperation with other professions in our faculty (illustration, interactive design) and with the faculty of applied sciences (programmers). The goal is fulfilled, but I must admire the cooperation with Charles University, which connects many universities, talented students and many programmers, which are supported by professionals from the game industry. Thus, the results of this cooperation are of very high quality.

UCC: No vision, currently developing plans for two semesters instead of one.



Photo by CU



GAME AUDIO



doc. Ing. Adam J. Sporka, Ph.D.

welove.audio GmbH · Warhorse Studios · Charles University



UMPRUM: Research and development in the new ways in visual arts. The global idea was / is to learn from the classic art techniques and move to new media—game development is the right way in this way of thinking, because in the end (product) is the perfect collaboration with the art world and the technical thinking.

CTU: Our vision was to allow students interested in game development to start their specialization early, already during their bachelor studies. This vision turned into including our specialization in the Open Informatics program. The specialization was approved in 2016, and now we already have the first wave of graduates.

FACU: Theoretical study of games, practical course on game design.

MU: To grow as an ecosystem of city-industry-higher education.

4. Who do you collaborate with (externally) in the context of your program/curriculum?

MCU: With other teachers and people from the commercial sphere.

FAMU: We collaborate with other Universities in Prague or Pilsen like Charles University, UMPRUM, ZČU. We also collaborate with game industry professionals who will be teaching some parts of the program.

ZCU1: Petr Vaněček from Applied Sciences Department (katedra) is collaborating with me on bringing students together from both departments and in teaching the curriculum.

ZCU2: see above

UCC: N/A

UMPRUM: Jakub Gemrot, Lukáš Kolek—Charles University

CTU: We were shaping the curriculum using the feedback from colleagues from other universities with similar programs (in particular TU Wien, University of Cyprus, Breda University of Applied Sciences) and several colleagues working in the game industry.

FACU: Game development companies, NGOs

MU: With the local game companies (BI, Madfinger) and city institutions.

5. What are your current constraints and needs?

MCU: Lack of conclusive literature.

FAMU: We are currently trying to push the opening of the program and finding a good place where to teach it. Ideally with cooperation with other universities in Prague.

ZCU1: Administrative—we need all students to have enough time to work on the project and be graded for it—that way they stay focused during the whole course and do not drop out and effectively render the team useless.

ZCU2: More students interested in computer games and contemporary animation techniques.

UCC: N/A

UMPRUM: Right now we have to stabilize the new program, find the studio for it and finish all necessary steps to run the program properly.

CTU: We are constrained by the length of the bachelor program. Combined with the fact that the specialization starts since the second year of studies, there is a relatively short time to schedule the courses that make our curriculum.

FACU: Finances, employees and space

MU: Constrains: manhours-teachers, managers-coordinators, researchers (ecosystem, creative industry)

Needs: manhours-teachers, managers-coordinators, researchers (ecosystem, creative industry)

6. Anything you are in particular happy with? (Things going/went right?)

MCU: Big interest of students and paradigm shift between stakeholders when thinking about games.

FAMU: N/A

ZCU1: Our multi department cooperation is an example for others and is recognised as such by the university.

ZCU2: see above

UCC: We are just solving a problem of many illustrators and other visual artists in our faculty course combined with few programmers.

UMPRUM: N/A

CTU: We decided on a top-down teaching model: during the introductory course to game development students work in teams on their own game using the Unity engine. Therefore the students have hands-on experience relatively early during their studies. In the following semesters, they go deeper in the respective topics (real-time graphics, artificial intelligence, GUI development, 3D modeling).

FACU: Success of our students beyond academia.

MU: Number of alumni in companies.

7. Anything you are in particular UNhappy with? (Things going/went wrong or deadends?)

MCU: Little collaboration between universities and weak connection to the commercial sphere.

FAMU: We are struggling with the conservative part of the school that is currently blocking us from the program opening. But we will break through it.

ZCU1: Students dropping out from projects as mentioned above.

ZCU2: We are just solving a problem of many illustrators and other visual artists in our faculty course combined with few programmers.

UCC: No programming knowledge on the part of the students—no development possible.

UMPRUM: UMPRUM and the old fashion way of thinking.

CTU: So far most things go well.

FACU: Lack of time and resources to work with our students more intensively.

MU: Too much opportunities but too little time.

Alumni

What were your expectations when you have enrolled into the Computer Games Development specialization at FMP CU?

A1: To get some knowledge about computer development which I have very little prior to this study.

A2: Despite having very little programming and computer games development knowledge and experience. I expected to learn various skills and knowledge that would allow me to become an engineer in video games business.

A3: I wanted to learn about all the various topics associated with game development. I also wanted to work on related projects and assignments. Last but not least it is great to be a part of the community of people in gamedev.

A4: To get into game development and to learn programming.

What do you appreciate about your studies of Computer Games Development at FMP CU?

A1: Its practical aspect. Lectors often tried to get in contact with people from real companies which I found useful, interesting and motivating as well.

A2: Variety of subjects and topics covered during the studies. Lots of possibilities for projects and programming tasks related to game development.

A3: Since gamedev is really broad in programming skills and tasks necessary, however, it also requires an extremely deep understanding of the problems as we often work on the bleeding edge of technology I really appreciated that both of these bases were covered.

The breadth was covered by various special assignments and lectures specific for gamedev such as Game development itself, Gamedev Middleware, LD jams, PC graphics and Human-like artificial agents.

And since we talk about FMP the expertise in all of these lectures was extraordinary and there were also many lectures about very specialized topics such as High-performance programming or re-

al-time ray-tracing which are relatively narrow in scope but study the concepts very deeply.

Some people from other universities say that what they learned has nothing to do with what they do, I really appreciate that it is not the case for FMP at least for me I use and expand upon my knowledge from my studies on a daily basis.

A4: The game development course was very good.

A lot of opportunities to actually meet people from the industry.

The passion of the people behind Computer Games Development at FMP CU.

What have you missed or what would you improve during your studies of Computer Games Development at FMP CU?

A1: United sources of study materials. Even if it would be a webpage with all subjects and links to teachers and pages, it would be enough. Sometimes its hard to navigate among teacher personal pages and look for the right materials for the subject.

A2: Although, I believe it is hard to accomplish, I would try to remove or at least decrease the importance of some mandatory subjects that are not directly related to computer games development.

A3: From the perspective of specific lectures, I missed some deeper, probably two-semester dive into game engine development and making games from scratch in general. I like the high-level view of using engines and understanding specific techniques (in rendering for example) but to my nature, it is much closer to do things from scratch or at least study it.

I know the topic is deep and wide but such is the whole gamedev. I can see a one or preferably two-semester course where the students would expand and apply their knowledge from all other fields in creating a custom engine and potentially a simple game in it. I can see it being guided by the lecturer but the students who feel adventurous may want to diverge and make some modifications and improvements on their own. The assignments would probably be making some subsystems to the engine where the basic version of each subsystem should not be too difficult to make but each student

may want to individually modify and expand upon certain subsystems they deem interesting.

From a more general point of view I feel like the overall studies missed a more cohesive structure where the courses would be tied closer to gamedev which is very broad on its own. For example, I think it is important to teach data structures and I think it was done well from the theoretical standpoint even including some parts discussing caches. But from the practical side, none of the data structures we implemented are any useful and considering the amount of work needed it felt like wasted time. And I am not talking about having the assignments easier, maybe just instead of implementing cuckoo hashing we could implement swiss or robin-hood hash table commonly used in practice. And instead of splay tree, a KD-tree in 3D where spatial queries are performed would be much more useful in my opinion.

A4: More organized study programme. More courses directly related to game development (but that is getting better year by year)

How would you describe your studies of Gamedev Cuni?

A1: Practical and theoretical, its important to plan you study at the beginning of the study and think about the state exams at the beginning - you need to select some subjects and its good to have this planned all the way from the beginning. Otherwise there are plenty of interesting subjects. Sometimes its a bit more time demanding then I would like, but at least you work with practical stuff, not some prehistoric things.

A2: You get the opportunity to work on game projects with other game enthusiasts, not only from the faculty, but also across universities. You learn about computer games from specialists in the field.

A3: If you want to really understand the core concepts and mathematics behind game development and are not afraid of challenge this is the right place for you. There is a broad range of topics and experts in their respective fields ranging from AI, Rendering, and low-level optimizations to the theoretical basis of it all.

A4: It's a great study programme, which can help you getting into the industry.

Would you recommend enrolling to studies of Computer Games Development specialization at FMP CU to your past self?

A1: Yes

A2: Yes

A3: Yes

A4: Yes

Do you currently work in game development related field or company?

A1: No

A2: Yes

A3: Yes

A4: No

//Intro

With respect to the GAMEHIGHED project, we will mostly profit from transfer of knowledge related to game design courses and theoretical game related courses. The international cooperation will help us to establish bachelor curriculum and significantly improve our master's curriculum. It is essential that we create our IOs related to game jams in cooperation with our international partners. As such, we can create materials with the ambition to be implemented in various technical, cultural and educational backgrounds. Our aim is to create a comprehensive package of theoretical implications and practical materials on how to organise game jams on various sites and within various contexts. We, as educators, feel that game jams are an indispensable tool for teaching game development and it is a tool every institution entering the field of game development education can easily begin with. As they say, one cannot really fail a game jam. Secondly, we believe that the focus of modern curricula should not only be internal (providing quality education for students) but also external (collaboration with the industry and opening certain lectures and events to general public). Only with this mindset can one create a thriving education ecosystem.

GDACZ INPUT Czechia

Czech Game Developers Association (GDACZ)

Prague

Authors: Pavel Barák, Lucie Jehličková

//GDACZ Executive Summary

Czech Game Developers Association (GDACZ) was established in 2018 as a non profit organisation, that connects and represents companies and individuals making video games. Among its members are major and most successful studios as well as startups. Main focus of GDACZ is to protect and promote the interests of its members, as well as monitor and analyze Czech game development industry. The Association also focuses on Czech gaming scene and its communities to improve the overall gaming environment. It is an important negotiator with the government in terms of better conditions for game development. Currently the Association has got 18 members and they employ more than 60% of all the employees within the Czech game development industry. In case of revenues members of GDACZ generates more than 70% of overall revenues for all czech gaming companies and individuals combined.

There are around 110 Czech game development studios and they employ around 1600 developers. If we consider the size of Czech Republic this is quite a high number, which makes the country one of the leaders in the Central and Eastern European region. Among the key characteristics of the local industry are constant growth, high quality products under unfavourable conditions, mature community and being a leader in Central and Eastern European region. The biggest issue to further develop the industry is the lack of skilled developers. Game development in Czech Republic is heavily oriented on export. Over 99% of Czech games are sold abroad. Video games are currently the biggest cultural export article in Czech Republic. Revenues in the video game sector in 2017 were almost CZK 2.3 billion (EUR 88 million), in 2018 it was over CZK 3 billion (EUR

116 million) and it is expected to be more than CZK 3.5 billion in 2019 (over EUR 135 million).

GDACZ and its members are actively collaborating with Czech major universities such as Charles University, Czech Technical University, Film and TV School of the Academy of Performing Arts in Prague, Masaryk University and others. Industry professionals from our member's companies are visiting these universities to give a talk or lecture on various topics from game development. Extended collaboration is between the association and Charles University, where it is helping them find and connect with experts from the industry to become mentors for student teams. During 2019 GDACZ established a special program within its own rules called "Developers Club". This club is a free of charge member based program for developers with various benefits.

The biggest constraint in the Czech game development industry is a lack of talent or in general lack of qualified people. Czech gaming companies have open positions for more than 200 people, but game related universities generate only a couple dozen graduates per year. There is also only a 3% unemployment rate. The need for new game related university programs is very significant. Among other issues that should be improved in the future are lack of financing for startup studios and young entrepreneurs, legislative problems and delays in employing foreigner employees outside of the EU and another legislative issue with czech students attending internship, which allows internship only for a couple days a week for one semester.

The primary interest of GDACZ relating to GAMEHIGHED is to strengthen the connection between the academia and the industry regarding the education of potential new employees in order to improve the match between game industry needs and the skill set of HE graduates.

During the CU/GDACZ study visit these academics, industry professionals and companies, were surveyed:

Academy

Mgr. Jakub Gemrot, Ph.D., *Faculty of Mathematics and Physics, Charles University*

Mgr. Lukáš Kolek, *Faculty of Mathematics and Physics, Charles University*

Mgr. Vojtěch Černý, *Faculty of Mathematics and Physics, Charles University*

Mgr. Vít Šisler, Ph.D., *Faculty of Arts, Charles University*

Mgr. Jaroslav Švelch, Ph.D., *Film and TV School, The Academy of Performing Arts, Prague*

doc. Ing. Adam Sporka, Ph.D., *Czech Technical University, Prague*

Mgr. et. Mgr. Iveta Fajnerová, Ph.D., *National Institute of Mental Health, Prague*

Industry: Individuals

Vladimír Geršl, *Gold Knights*

Petr Mácha, *Bohemia Interactive Simulations*

Daniel Vávra, *Warhorse Studios*

Jan Kunt, *About Fun*

Miloš Enderle, *Geewa*

Michal Harangozo, *Charged Monkeys*

Industry: Visit to Companies

SCS Software

Amanita Design

////II

INDEX

139	INTRODUCTION
141	SHORT HISTORY
150	TIMELINE & MILESTONES
151	RELATIONS & COLLABORATIONS
152	CONSTRAINTS & NEEDS
154	SWOT ANALYSIS
156	OUTRO



#czechgaming

CZECH REPUBLIC



Charles Games



SILICOMRA



Photo by Pavel Barák

//Introduction

Czech Game Developer Association

Czech Game Developers Association (GDACZ) was established in 2018 as a non profit organisation, that connects and represents companies and individuals making video games. Among its members are major and most successful studios as well as startups from Czech Republic.

Main focus of GDACZ is to protect and promote the interests of its members, as well as monitor and analyze Czech game development industry. The Association also focuses on Czech gaming scene and its communities to improve the overall gaming environment. It is an important negotiator with the government in terms of better conditions for game development.

Main activities of GDACZ includes:

- » collect and publish data on game development industry in Czech Republic
- » help to implement beneficial projects for Czech game developers
- » work on better environment for game development in Czech Republic
- » negotiate with government departments for education, culture, industry, trade and foreign affairs
- » protect and promote the interests of our members

Currently the Association has got 18 members and they employ more than 60% of all the employees within the Czech game development industry. In case of revenues members of GDACZ generates

more than 70% of overall revenues for all czech gaming companies and individuals combined.

Within the first two years of its existence the GDACZ was able to achieve many successful projects and goals. These can be divided into 4 areas: education, financing, medialization and international cooperation.

In the field of education GDACZ partnered up and started cooperating with major universities in Czech Republic including Charles University, one of the other partners of GAMEHIGHED project. This cooperation usually includes providing industry experts as mentors for students, giving a talk from industry professionals or attending panel discussions. Research of possible internships and providing topics for bachelor and master thesis was also started. Another major project was establishing the first 3 new game related job descriptions within the National Register of Qualification. These documents provide basic information for public schools as well as private educational institutions, that can help them define requirements for future employees of such job positions.

In financing GDACZ managed to incorporate the game industry into the newly prepared Innovations strategy of Ministry of Culture and Ministry of trade and business planned for years 2021 – 2030. This should lead to new funding programs for gaming companies and other organizations in the game development industry.

To promote and medialize gaming culture and gaming industry GDACZ developed in depth research/study describing the industry and providing overall data of the current situation in Czech Republic. GDACZ also promoted games internationally through national pavilions at various events.

In terms of international cooperation GDACZ established many partnerships with all the major game development associations throughout Europe and initiated special memorandum of cooperation in central and eastern europe between 9 countries. This helped to share talent and knowledge in this region. GDACZ also became a member of European Game Developers Federation (EGDF), which helps to protect its interests on EU level. Another projects include foreigner missions in various countries as well as incoming missions of representatives of games industry from abroad to Czeh Republic.

More information: www.gda.cz

Study "Czech Video Game Industry 2018": <https://gda.cz/wp-content/uploads/2019/08/CzechGamesIndustry.pdf>

//Short History

Industry

History of the Czech game industry

The Czech video game industry is based in the country's rich traditions of arts and animation. It is living proof of the critical role of content in the use of technologies, whether in the form of narratives, story lines or imagery.

The global success of Czech games began in the late 1990s with the release of the game *Hidden & Dangerous* (1999) by Illusion Softworks (subsequently bought and renamed to 2K Czech). 2K Czech went on to develop the most well-known Czech game series, *Mafia* (first edition—2002, second edition—2010, third edition—2016). Other global hits include *Operation Flashpoint* (2001) by Bohemia Interactive, *Vietcong* (first edition—2003, second edition—2005) by Pterodon and *Samorost* (first edition—2003, second edition—2005, third edition—2016) and *Machinarum* (2009), both by Amanita Design. Czech game companies keep pace with global trends and Czech games are becoming a strong export commodity of the Czech Republic. Even though this sector has lacked state support to date, video games have brought the Czech Republic much more global fame than music or film, particularly in recent years.

For example, the Czech game *Beat Saber* is currently the global leader in virtual reality games. The PC version of this game was released in mid 2018 (Oculus Rift, HTC Vive, Windows Mixed Reality) and the Playstation version in November 2018 (PS VR). According to reports published by Sony, *Beat Saber* was by far the most sold



Photo by Pavel Barák

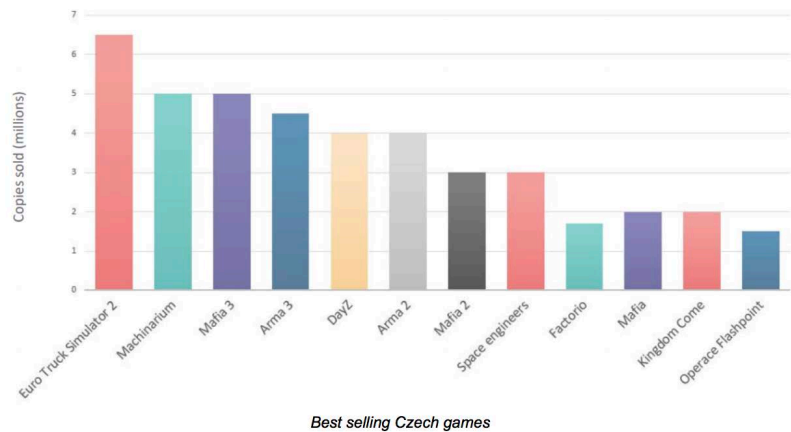


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Ministry of Education, Youth and Sports of the Czech Republic
Ministry of Education and Science of the Slovak Republic

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Playstation VR game in its two release months in 2018. And according to our estimates, within six months of its PC release Beat Saber achieved the largest global sales of any VR game in history. This game has received a number of global awards, including the title VR Game of the Year both from renowned global magazines and academics (D.I.C.E. Awards).

Over 50 million players around the world have bought Czech PC and console games sold through classic or digital distribution. We estimate that mobile games by Czech developers, where the F2P model enables the basic edition of the game to be distributed free, have reached over half a billion players worldwide. The company Madfinger Games, whose games have been downloaded by more than 200 million customers, is a leader in this field.

Video games have a very broad spectrum of uses. Aside from the entertainment industry, they are commonly used in the armed forces, healthcare industry, science and education. For example, the Czech company Lipa Learning focuses on educational and instructional games for mobile phones and tablets. The target groups for these games are children of preschool age and children in the first level of elementary school.

They teach children basic knowledge in fun ways and improve their motor skills and pre-writing preparation. Games by the company Friml have a similar focus. Some game development companies incorporate elements of Czech cultural heritage in their work and their games have a considerable cultural dimension. For example, after the number of visits to historic monuments depicted in the video game Kingdom Come: Deliverance (Warhorse Studios – 2018) in-

creased dramatically, the Central Bohemia regional authority published a tourist guide based on the game.

Czech video games are also successful in global competitions. The 2017/2018 Central and Eastern European Game Awards (CEECA) included 9 nominations from Czech developers out of a total of 23 nominations (Attentat 1942, Beat Saber, Chuchel, Kingdom Come: Deliverance and Under Leaves). Another big success were two game Oscar nominations at the Independent Games Festival in San Francisco (Chuchel and Attentat 1942).

Key characteristics

- » Constant growth. Czech game companies are doing very well and these examples (Kingdom Come, DayZ, Factorio, Beat Saber) then draw additional potential developers into the field.
- » The Czech Republic and Poland are the leaders in Central and Eastern Europe. Historically the most important creative segment was the film industry, but today video games in the Czech Republic bring in twice as much in revenues as film. Czech game companies make up roughly 10% of all game companies in Central and Eastern Europe, and the share of Czech developers in the total of 25,000 CEE developers is just slightly less.
- » The lack of skilled developers is a major obstacle to further development of the industry.
- » High quality products under unfavourable conditions. Video game development is a very strong sector that lacks solid state support. Other obstacles include the immature business environment, the low number of investors and a dependence on internal resources.
- » A mature community. Despite the state's low level of interest in the economic, cultural and social benefits of games, there is a strong community of game developers in the Czech Republic.

Current situation

There are around 110 Czech game development studios and they employ around 1600 developers. If we consider the size of Czech Republic this is quite a high number, which makes the country one of the leaders in the Central and Eastern European region. It is worth mentioning, that nearly all of these Czech companies are privately owned by their Czech founders.

Game development in Czech Republic is heavily oriented on export. Over 99% of Czech games are sold abroad. Thanks to their quality, these games are quite successful on global markets and create awareness for the local game development scene as well as the country itself. Video games are currently the biggest cultural export article in Czech Republic

The video game sector has grown continually for the past several years, although this growth is not apparent from official statistics because game development is included in the film or programming categories. Revenues in the video game sector in 2017 were almost CZK 2.3 billion (EUR 88 million), in 2018 it was over CZK 3 billion (EUR 116 million) and it is expected to be more than CZK 3.5 billion in 2019 (over EUR 135 million).

Education

This part is comprehensively covered by Charles University report

Communities

First game development communities in Czech Republic started forming in the late 90s and early 2000s. In 2003 community portal Czech Games (České hry) was established which centered first independent game developers in CZ. Czech Games served as an online knowledge hub and later on started organizing offline events such as meetups, gatherings and first czech game development conference Game Developers Session. In 2008 Czech Games were officially registered as non-profit organization and started representing the industry as a community organization and association. Czech games was a predecessor of the current Czech Game Developers Association and most of its activities were later taken over by it.

In Brno and south-moravian region organization Game Dev Area was established in 2013 focusing on support of game development in that region. Among its activities is organizing monthly meetups, master classes with invited international guests and local game development conference Game Access since 2016. Currently Game Access also includes a gaming festival and a trade show.

Building the community is also part of activities among specific Universities. Namely Charles University and its Faculty of Mathematics and Physics, which organizes various events like public seminars,

panel discussions or game development hackathons—game jams. The second such university is Masaryk University and its organisation MU Game Studies. Its main project is yearly organized gaming festival Gamer Pie and co-organization of game related academic conference CEEGS as well as many other smaller projects to support the growth of game development.

There were also other smaller community events apart from Prague and Brno like Game Day festival in Třeboň, which was part of international animation and film festival Anifilm or festival of old/retro games Retrip in Lipnice nad Sázavou.



Photo by Kamila Hurníková



//Timeline & Milestones

- » 2000–2003: forming of the independent Czech game development scene, mainly centralized around yearly event Invox—consumer show in Brno focused on IT and electronics.
- » 2003: Announcement and launch of community hub/portal Czech Games (České hry)
- » 2003+: First game development conference Game Developers Session, which is organized yearly until today (www.gd-session.com)
- » 2008: official registration of Czech Games as non-profit organization serving as industry association with initial 7 individual members.
- » 2013: registration of company Game Dev Area serving as community organization to support game development in Brno region
- » 2018: foundation of Czech Game Developers Association which has overtaken most of the activities of Czech Games. Game Dev Area was also part of the preparation process of forming GDACZ.

//Relations & Collaborations

GDACZ and its members are actively collaborating with Czech major universities such as Charles University, Czech Technical University, Film and TV School of the Academy of Performing Arts in Prague, Masaryk University and others. Industry professionals from our member's companies are visiting these universities to give a talk or lecture on various topics from game development.

Extended collaboration is between GDACZ and Charles University, where GDACZ is helping them find and connect with experts from the industry to become mentors for student teams. The Association is also helping to promote and spread the information about activities and events organized by the University among their members as well as general public through their channels.

During 2019 GDACZ established a special program within its own rules called "Developers Club ". This club is a free of charge member based program for developers, which includes a regular news system for the members informing them about various events, courses or activities that are related to game development. Members are also receiving discounts to some of these events. Same year GDACZ become partner and supporter of Czech Game of the Year Award (Česká hra roku), with intention to promote the industry and make it more visible publicly.

Apart from national collaborations, GDACZ is very active internationally, our main partners are Slovak Game Developers Association and Indie Games Poland Foundation. With our partners from Poland, we are able to send students and young graduates to San Francisco for Game Developers Conference—the biggest event of its kind in the world, or cooperate on Central and Eastern European Game Awards.

//Constraints & Needs

Currently the major constraint in the Czech game development industry is a big lack of talent or in general lack of qualified people. Czech gaming companies have open positions for more than 200 people, but game related universities generate only a couple dozen graduates per year. The potential employees are also missing from the labor market, which is caused by a very low unemployment rate in Czech Republic—only 3%. There is a significant need for new game related university programs and growth of the current ones.

Another major constraint is lack of financing for startup studios and young entrepreneurs, people right after their graduation, that would like to start their business in game development and maybe bring more people into the industry. For banks or private investors they are too unreliable and the public system does not have any instruments on how to support this sector.

Other constraints are closely related with the first issue, the lack of people. There are legislative problems and delays in employing foreigner employees outside of the EU, which usually takes more than 6 months, which is very problematic in this highly dynamic industry. Related to education, there is another legislative issue with czech students attending internship, which allows internship only for a couple days a week for one semester. This in total means only 1 month of full time internship, which is not enough for the companies to be interested in interns.



Gaming companies - EU



Photo by Pavel Barák

//SWOT Analysis

Strengths

- » The only organisation of its kind, representing majority of the industry in Czech Republic
- » Huge network of contacts within the industry locally as well as internationally
- » Well known among other industry associations with close contact with them—film, music, animation, design, TV&Radio, etc.
- » Good reputation, respected organisation by state and government

Weaknesses

- » Limited budget based mainly on private funding from its members
- » Only few employees—just one full-time, couple part times and external workers
- » Still very young organisation, not very well known by general public
- » Representing young industry, that is sometimes not respected accordingly to its size and growth

Opportunities

- » Game industry is being more recognized by government and included for support in the strategy of innovation
- » Transformation of Czech Film Fund into new Audio-visual Fund, that would include support for gaming industry
- » Growing interest in gaming industry by general public
- » More studios care about the state of the industry and wants to support it

Threats

- » Long term projects and complex issues solved by GDACZ can lead to loss of interest by its members
- » Legislative changes—regulation of the industry—problems with loot boxes, copyright issues
- » Game development industry often confused with gambling by authorities
- » Creating bad public image by connecting gaming with negative impact on players (abroad connecting it with mass shootings or terrorist attacks)

//Outro

The primary interest of GDACZ relating to GAMEHIGHED is to strengthen the connection between the academia and the industry regarding the education of potential new employees in order to improve the match between game industry needs and the skill set of HE graduates.

In GAMEHIGHED GDACZ can serve as an industry organisation providing valuable feedback on what the game development industry wants and what are the current needs of game development companies.

JYU INPUT /Finland

University of Jyväskylä (JYU)

Jyväskylä

Authors: Jonne Arjoranta, Matti Karhulahti, Raine Koskimaa, Antti-Jussi Lakanen,
Jukka Varsaluoma, Tanja Välisalo

//JYU Executive Summary

University of Jyväskylä is a multidisciplinary university of 14 500 students and 2 500 staff in the center of Finland. Game studies and game development education is located in two Faculties, which also collaborate: (1) Faculty of Humanities and Social Sciences (The Department of Music, Art and Culture Studies) has offered a Study Module in Game Studies and Game Design (25 ECTS) since 2015. (2) The Faculty of Information Technology has offered a game-development oriented track in the MSc Programme in Software and Telecommunication since 2014. Individual game-related courses have been offered, often in collaboration, already since the early 2000's.

The game industry in Finland is a fast growing field, with strong emphasis on mobile gaming. The field is dominated by two giants, Supercell and Rovio, but there is also a thriving start-up scene. The biggest companies are located in the Helsinki metropolitan area, but there are local game development hubs all around the country. The latest phase has seen the opening of new kinds of hubs, which include a large ecosystem of content and service providers, alongside the game developers. The field, at large, is characterised by close and relaxed connections between the companies, and highly open and supportive attitude. This is, by large extent, enabled by the fact that the national market is small and the globally functioning companies do not consider each other foremost as competitors.

Game programming and game development education is dispersed between various types of schools (universities, universities of applied sciences, vocational institutes), and geographically, one of the educational hubs being far in the Northern region of Kainuu, without

any single leading school or educational programme. A special characteristic of the Finnish game education field is a very strong take on game studies approach, with emphasis on research and theory.

The major strength of JYU is a strong foundation of multidisciplinary research related to games. Research in the field of game studies is mainly conducted in the Department of Music, Art and Culture Studies (MACS), Faculty of Humanities and Social Sciences. The department is also a home to the Academy of Finland funded project Centre of Excellence in Game Culture Studies (2018-2025), which is a joint project with two other universities. There are also researchers in other faculties and fields, such as Education, Information Technology, and Management and Leadership, working on various game-related research topics and projects. JYU particularly has a strong foundation in educational games research. This offers a wide local network of expertise.

The greatest challenges of game education are the lack of resources in the form of teaching staff: there are no permanent teaching positions in game education. Networks and collaboration between departments, with game companies, as well as with other local educational institutions is consistently used to help with this lack in resources.

An important future goal is a more permanent investment from the university to game education. That goal is further aided by the current high profile of the game industry nationally and its growing importance and visibility locally.

List of contacts during the JYU visit

JYU Staff

Department of Music, Art and Culture Studies, Faculty of Humanities and Social Sciences

Professor Raine Koskimaa
Senior Researcher Veli-Matti Karhulahti
Senior Researcher Kai Tuuri
Postdoc Researcher Jonne Arjoranta
University Teacher Tanja Välisalo
Doctoral Student Maria Ruotsalainen
Doctoral Student Tero Kerttula

Department of Language and Communication Studies

Associate Professor Marko Siitonen

Faculty of Information Technology

University Teacher Jukka Varsaluoma
University Teacher Antti-Jussi Lakanen

Musicology, Department of Music, Arts, and Culture Studies

Senior Researcher Marc Thompson
Doctoral Student Oskari Koskela

Mathematical Information Technology, Faculty of Information Technology

University Teacher Paavo Nieminen
University Teacher Antti-Jussi Lakanen
Dean Pasi Tyrväinen

163

JAMK University of Applied Sciences, School of Business

Project Manager Hanna Hauvala,, Sustainable Digi & Game Ecosystem Project
Project Manager Tuomas Rauhansalo, eSports project
Senior Lecturer Mika Karhulahti

Other Contacts

Tuomas Roininen, *Chair of the Board, Peliosuuskunta Expa (also local IGDA hub); Founder, Add Inspiration*
Executive Director Juha-Matti Latvala, Niilo Mäki Institute
CEO Olli Rundgren, Psyon Games
Game Art Regional Artist Jaakko Kemppainen

////II

INDEX

167 INTRODUCTION

169 SHORT HISTORY

173 TIMELINE & MILESTONES

178 PROGRAM STRUCTURE & ACADEMIC RESEARCH

184 RELATIONS & COLLABORATIONS

187 CONSTRAINTS & NEEDS

188 SWOT ANALYSIS

189 COMMENTS FOR THE PARTNERS

194 OUTRO



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

JYU.
**SERVING THE
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SINCE 1863.**

UNIVERSITY OF JYVÄSKYLÄ 2019

JYU. Bina 1863 | 5.12.2019 | 1

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// Introduction

University of Jyväskylä (JYU) is a multidisciplinary university with 14 500 students and staff of 2 500. The university is rooted in the founding of Jyväskylä Teacher Seminary in 1863, the first Finnish-speaking teacher training college. The seminary became an institution of higher education in 1934 changing its name to the Jyväskylä College of Education, and with the expansion of disciplines, the University of Jyväskylä in 1966. JYU was the first university in Finland to offer studies in Computer Science in 1967. Education and research are currently organized under six different faculties, with the addition of a separate research center, The Finnish Institute of Educational Research, which is the home of PISA studies in Finland.

Research in the field of game studies is mainly conducted in the Department of Music, Art and Culture Studies (MACS), Faculty of Humanities and Social Sciences. The department is also a home to the Academy of Finland funded project Centre of Excellence in Game Culture Studies, which is a joint project with two other universities. Game-related study programmes are offered in two units: (1) a Study Module in Game Studies and Game Design (25 ECTS) in MACS, and (2) a study profile under MSc Programme in Software and Telecommunication in the Faculty of Information Technology (IT).

The head of research in the area of game studies, as well as the leader of the JYU team for GAMEHIGHED project is Raine Koskimaa. All affiliated personnel:

Faculty of Humanities and Social Sciences
Department of Music, Art and Culture Studies

Professor Raine Koskimaa

Senior Researcher Veli-Matti Karhulahti

Senior Researcher Kai Tuuri

Postdoc Researcher Jonne Arjoranta

University Teacher Tanja Välisalo

Doctoral Student Maria Ruotsalainen

Doctoral Student Tero Kerttula

Department of Language and Communication Studies

Associate Professor Marko Siitonen

Faculty of Information Technology

University Teacher Jukka Varsaluoma

University Teacher Antti-Jussi Lakanen

//Short History

Game Industry in Finland

While individual developers and enthusiasts created games long before, the Finnish game industry got its first significant boost in late 1990's through the success of Nokia and the rapid increase in mobile phone use: since Nokia phone model 6110 launched in 1997, all Nokia phones shipped with the first mobile game hit, Mato-peli (Snake), developed for Nokia by Taneli Armanto. This gave way to the first wave of mobile game companies, and despite the eventual collapse of most of these companies, the legacy is seen in the strong dominance of mobile games development in Finland. Most notable exceptions in this scene is Remedy, which has followed its own path, starting with the hit game Max Payne (2001) and its sequels, developing story-driven single player games, with innovative solutions, like a branching story-line tv-series-within-the game in Quantum Break (2016), and Housemarque with its Supreme Snowboarding (1999) and arcade-shooters like Resogun (2013). Also highly important was Habbo Hotel (Sulake, 2000), an early online, multiplayer environment in the style of The Sims, which preceded Minecraft with extensive building capacities, social media platforms with integral online communities, and notably, with micro-transactions to modify your own room in Habbo Hotel.

Another important influence in Finnish game industry has been the Demo Scene, LAN parties with a main focus on creating and competing with short "Demos", rendered audio-visual sequences. Assembly is the biggest of the LAN parties, and still continues with two annual events (www.assembly.org). It has formed an important

community as well as an informal education for many game industry professionals.

The biggest successes of the Finnish game industry have come in the last ten years with the new success of mobile games and the new marketplaces and distribution channels, such as AppStore. The publication of Angry Birds (2009) by Rovio marked the beginning of a global franchise, while Supercell made its name with free-to-play games Hay Day (2012) and Clash of Clans (2012), all games at the top of the most played games lists. When Supercell was acquired by Tencent at a valuation of \$10.2 billion, it was considered a milestone for the Finnish game industry. Meanwhile, in the mobile dominated market, the city-building game Cities: Skylines (Colossal Order, 2017) is an example of a successful PC game from recent years and a specifically good example of success achieved by catering to a niche gamer community.

"Goals for Central Finland Game Industry include having 1–2 internationally successful companies, being an attractive location for foreign companies."

—Tuomas Roininen, Director, Expa Game Business

Cooperative

Currently, the Finnish game industry employs 3200 people (in 2018) in 220 active studios (peak in 2014: 260), out of which, 46% are located in the capital area, that is in or around Helsinki. The most popular platforms are Android (75% of companies), iOS (71%), and PC/PC online (50%). A unique aspect of the Finnish game industry is a spirit of collaboration, which is due to having practically no domestic market which means the competition is global. The only local competition between companies is over talented people. As a result the community of game developers is very open, and knowledge is shared easily. Finland has all in all a good reputation in the game industry (success stories, exits, education, growing industry).

Game Industry in Jyvaskyla Area

Jyväskylä area currently has 35 game companies (approx. 10% of all Finnish companies). The companies are mainly small, with 2–20 employees, and many of them are start-ups. The industry has grown rapidly in Jyväskylä area, like in the whole of Finland. Jyväskylä also has an active game jam scene (e.g. the annual FGJ—Finnish Game Jam) and eSports scene. Educational games make up one important area of game development in the area and JYU plays a central role in that. Game titles include Ekapeli (GraphoGame), by Niilo Mäki

Institute, a research-based game for learning basic reading and numeracy skills, and Antidote by Psyon Games, simulating the human immune system with a message of the importance of vaccinations.

The main network for the game companies and professionals in the area is Expa Game Business Cooperative, which is also a local IGDA Finland Jyväskylä Hub, and official FIVR (Finnish Virtual Reality Association) hub. Expa was formed in 2012 and has 120 members. It is an open community for game makers, researchers, students, and teachers, and arranges monthly events, as well as an annual national industry event XmasJKL.

Game Education

Games education in Finland takes place on three levels: (1) Vocational institutes run programmes in visual design, 3D game graphics, game programming, etc. (2) Universities of applied science run programmes on the Bachelor's Degree level (e.g. in Jyväskylä, Kajaani, Turku, South-Eastern Finland, Haaga-Helia, Lahti) with topics such as game programming, game development, mobile game development, eSports management etc. (3) Universities run Bachelor's and Master's Degree Programmes in both game development and game studies (Tampere University, University of Jyväskylä, University of Turku, and Aalto University). Programmes specialised in games in the universities of applied sciences are internationally popular (such as eSports Management in Kajaani, and Game Production in Jyväskylä). Additionally, there are several adult education colleges providing short term (maximum of 1 year) non-degree game-related education.

There are close connections between education and the game industry: graduates are employed by the game companies and many of them form their own start-ups. There are new initiatives in several cities, bringing companies and educational institutions to the same premises, such as the Digi & Game Center in Jyväskylä. Industry claims a lack of experienced game developers in senior level experts.

“After our three courses in 3D graphics and some additional math studies and hobby projects, some students and they are able to do some spectacular work in Master’s theses.”

*—Paavo Nieminen,
University Teacher, JYU*

Communities

The co-operation of the Finnish game industry is visible in the form of different organizations: Neogames Finland ry. (<https://www.neogames.fi/>) is a non-profit game industry organization, which has a mission to accelerate, coordinate, and support the development of the Finnish game cluster. Neogames receives support from the Ministry of Education and Culture for its activities. It is also in close collaboration with Suomen pelinkehittäjät ry. (Finnish Game Developers Association, <https://www.pelinkehittajat.fi/>), an organization for Finnish game companies. Game industry professionals and companies alike are often members of IGDA Finland (<https://www.igda.fi/>), the Finnish chapter of the International Game Developers Association, which has active local hubs currently in 13 Finnish cities. Together with Neogames they maintain Games Jobs Finland, a game industry recruitment service maintained together by the previous three organizations ([gamesjobs.fi](https://www.gamesjobs.fi/)). Trade unions have historically been strong in Finland and in 2017 Peliala ry. (Game Makers of Finland), a trade

“We find it important to use games related vocabulary actually used in the industry, and avoid terms such as practice or assignment.”

–Tanja Välisalo, University Teacher, JYU

union specifically for people in games, was founded. Women in Games Finland (<https://womeningames.fi/>) is an organization focused on improving diversity and inclusivity in the industry through e.g. networking events and mentoring programs.

Historically, Assembly events and the demo developer community around Assembly (“Demo Scene”) has been instrumental for the rise of Finnish game industry. Assembly is still active, arranging two events per year, bringing together LAN parties and eSports tournaments. Several other similar LAN events with close connections to the game industry are arranged annually around the country.

Other important game industry related communities include e.g. the Finnish Games Educators Network, national professional network for experts who work with games, gamers, gaming and education, which makes significant work in raising awareness of the pros and cons of gaming and is closely connected to game researchers. Many cities and municipalities also arrange game education and gaming events through their youth work departments.

//Timeline & Milestones

There have been individual humanities oriented courses discussing digital games at JYU since the late 1990's, discussing games as new media forms, around the same time as the first courses focused on game programming. International Master's Degree Programme in Digital Culture (2005–2013) included a Game Studies course arranged annually, with several international guest speakers, and leading to Master's Theses on games and play.

In 2010, the course Magic of Game, a collaborative effort between two faculties (Faculty of Humanities, and Faculty of Information Technology) was launched. The course is open to all JYU students and was an overview of games-related research at JYU and included basics of game design as well. The popularity of the course among students and the enthusiasm of the lecturers and researchers participating in the course design led to other, similarly collaborative courses (Game Project in 2013, and Game Design the same year). These beginnings led to the creation of two educational units:

1. a Study Module in Game Studies and Game Design (25 ECTS) in MACS (2015–), and
2. (a study profile under MSc Programme in Software and Telecommunication in the Faculty of Information Technology (2014–).

Both of these include courses taught in collaboration between the two faculties.

There has been collaboration between Humanities and IT from very early on (mainly meaning that many IT students were attending the game studies courses, and to lesser extent, humanities students took game development courses).

- » the first courses at the JYU discussing digital games in the late 1990's as part of Visual Culture and Multimedia Studies programmes, around the same time first game programming courses
- » 2005 International Master's Degree Programme in Digital Culture, with specialised course on Digital Games (several MA Theses on game studies topics between 2007–2015)
- » 2005 first PhD thesis focusing purely on digital games in 2005 (Tarja Salokoski: Electronic games : content and playing activity (in Finnish), player psychology), followed by several others, such as theses on communication in online player communities (Marko Siitonen: Social interaction in online multiplayer communities, 2007), educational games (Kimmo Oksanen: Serious game design : supporting collaborative learning and investigating learners' experiences, 2014), and understanding and interpreting games (Jonne Arjoranta: Real-Time Hermeneutics: Meaning-Making in Ludonarrative Digital Games, 2015)
- » 2008 first major research project Creation of Game Cultures: The Case of Finland (Academy of Finland, 2008–2012, jointly with JYU, TUNI, UTU)
- » 2009 participation in collecting the bi-annual Finnish Player Barometer (representative survey in gaming habits) began
- » 2010 course Magic of Game: Introduction to Game Studies (5 cr), open to all JYU students since 2010, has annually gathered 60–120 students
- » 2012 multidisciplinary JYU Game Research Network started its meetings
- » 2014 game development became a specialisation in the Computer Science Master's Degree Programme
- » 2015 launching a Study Module on Game Studies and Game Development (jointly with Faculty of Humanities and Social Sciences, and Faculty of Information Technology)
- » 2015 Jyväskylä Game Lab, jointly with JYU, JAMK and City of Jyväskylä, 2015–2016, game development projects incorporating students and unemployed IT professionals wanting to re-educate themselves → significantly contributed to local game industry
- » 2015 Editor-in-Chief position of The Finnish Yearbook in Game Studies to JYU (Koskimaa, 2015–2018, Arjoranta 2019–)
- » 2015 first seminar of the Jyväskylä Fall Seminar Series with game related, changing themes since 2015 (latest Celebrities in Gaming, Nov 2019)

- » 2018 Finnish Centre of Excellence in Game Culture Studies (Academy of Finland, jointly with JYU, TUNI, UTU, 2018–2025) launched
- » 2020 participation in the Jyväskylä Digi & Game Center



Photo by JYU



//Program Structure & Academic Research

Program

Vision, Goals, and Program Structure

The vision of the Study Module in Game Studies and Game Development has been to combine game development courses with research oriented game studies courses. The goals have been twofold, to educate

1. game production professionals, who understand larger game cultural phenomena, as well as
2. teachers, journalists, communication professionals, civil servants etc. who understand games as media, and the conditions of the game industry.

Study module structure:

Compulsory courses 10 cr
Magic of the Game, 5 cr
Game Design, 5 cr
Elective courses 15 cr
Elective courses in Game Studies 5-10 cr
Game Research Methods, 5 cr
Knowledge of Games, 5 cr
Special Issues in Game Studies, 5 cr
Elective courses in Game Design 5-10 cr
Game Project, 5 cr
Game Design and Game Development Tools, 5 cr
Special Issues in Game Design, 5 cr

Innovations accomplished/planned for the program(s)

- » A pedagogically well developed Game Project course, with simulation-like elements and a strong career orientation reminiscent of a small game company: for example, students do not enroll on the course, but write applications similar to job applications, they also keep track of their working hours, work in multidisciplinary teams formed by the teachers, have explicit roles (producer, programmer, artist etc.), and introduce their game in pitching events.
- » Game Development Challenge—an advanced level course with a rapid prototyping loop of 2 to 4 weeks including (1) creating a game design, (2) presenting it, (3) creating a prototype, (4) presenting it, and (5) a post mortem report on the game. The course gives students the opportunity to challenge themselves, to work either individually or in groups, as they wish, and to create relevant content for their portfolios in a relatively short time. This is an elective course for game auteurs.
- » Game Literacy course is a course aimed at giving the students an overview and first-hand experience in games from different genres and eras. The course is modelled after similar courses in Literary Studies, but to our knowledge, it has never been done in game related curricula. Students work in groups, play a selection of games, discuss them, and write a report based on those experiences and discussions. The course increases their practical knowledge and understanding of games beyond their personal history and preferences.
- » Timeline of digital games is an online additional material for a course connected to Game Literacy. The timeline is co-created with students on the course, so it expands each year. The timeline enables students to participate in the creation of course material and gives them an additional goal, which has influence beyond their own learning and experience on the course.
- » In the future, the Introduction to Game Studies course will be offered as an online course with interactive game-like elements. These include e.g. interactive videos, and interactive tools and materials created at JYU specifically to enable deeper understanding of game studies concepts, without demanding access to particular existing games

Publications related to game education

- » Siitonen, M., Uotila, P., Uskali, T., Varsaluoma, J. & Välisalo, T. (2019). A Pilot Study on Developing Newsgames in Collaboration between Journalism and Computer Science Students. *Nordicom Review*, vol. 40, iss. 2, 143–155. doi:10.2478/nor-2019-0038.
- » Lakanen, A.J. (2016). On the impact of computer science outreach events on K-12 students. PhD Dissertation.
- » Koskenkorva, E. (2015). Uutispelien suunnittelu [Designing News Games]. Master's Thesis. <http://urn.fi/URN:NBN:fi:jyu-201511133651>.

What went right

- » Games courses and studies open-for-all—this policy brings together students from various fields, gives them much needed experience in working in multidisciplinary teams, makes game education and game research visible across the university
- » Practices for co-teaching in multidisciplinary teams across departments and faculties have been developed e.g. as part of the Advanced Game Project course, which has had annually changing themes (Newsgames, VR Games, Music Applications). The course has had not only students working together in multidisciplinary teams but also game design and game development teachers working together with teaching staff from different disciplines each year. This has increased co-operation across disciplines, and increased teachers' pedagogical skills.

What went wrong

- » Courses on game business were conducted by an industry-based lecturer for a couple of years, but materials or know-how did not successfully transfer to the university.

Research

Research Goals and Contents

Game research grew at JYU from the area of digital culture with the goals of

- » making visible the importance of games and game cultures
- » to better understand how games and play influence the culture at large
- » focusing on games as signifying structures, ways of communication, and objects of interpretation

Game ontology and game hermeneutics research at JYU are on a high international level, with a strong impact on games as trans-media, and games in media culture, and with a recent orientation in eSports. Related research is conducted in other faculties as well, including, gamified rehabilitation surgery (Sport and Health Sciences), educational games and elements of play in learning (Pedagogy), leadership in eSports (Business School), and location-based games (IT). The Finnish Yearbook of Game Research (in Finnish) has been edited at JYU since 2015.

Innovations Accomplished/planned for the Program(s)

- » Collecting large sets of research data
 - » participation in the Finnish Player Barometer from the beginning (since 2009) has meant accumulating longitudinal data on Finnish play behaviour (jointly with Universities of Tampere and Turku
 - » Overwatch survey data collected 2018–2019 (N=400+) on the players and eSports audiences of Overwatch
 - » initiated collaboration with the Sports Sciences, resulted in games and competitive play related questions included in the bi-annual LIITU survey (4000+ respondents) providing overall picture of the physical activities and school performance of Finnish teenagers; first survey to include new questions will be conducted in the Spring of 2020
 - » personal narratives of game music everyday memories, data gathering starting in the Spring 2020
- » Cross-disciplinary collaboration in the annual game research seminars with e.g. educational sciences and sports sciences



PowerPoint Tiedosto Muokkaa Näytä Lisää Muotoile Järjestä Työkalut Diaesitys Ikkuna Ohje ke 4.12. klo 11:12 100 % Tuomas Roininen

Aloituspöytä: Aloitus, Lisää, Rakenne, Siirtymät, Animaatiot, Diaesitys, Tarkista, Näytä, Acrobat

1. JYVÄSKYLÄ GAME INDUSTRY HUB
EXPA
igda

2. Keskustelu- ja yhteistyömahdollisuudet

3. Keskustelu- ja yhteistyömahdollisuudet

4. Keskustelu- ja yhteistyömahdollisuudet

5. Keskustelu- ja yhteistyömahdollisuudet

6. Keskustelu- ja yhteistyömahdollisuudet

7. Keskustelu- ja yhteistyömahdollisuudet

JYVÄSKYLÄ GAME INDUSTRY SCENE

Etusivun näppäilytallennus

JYVÄSKYLÄ GAME INDUSTRY HUB

EXPA



Tuomas Roininen @TRoininen
Chairman
Peliohjelma Expa
(Expa Game Business Co-Operative)



igda
Jyväskylä

email: tuomas.roininen@expa.fi
www.expa.fi

Lisää muistilappoja näppäilytallennus

Diata 1/14

Photo by JYU



DIGITAL
CENTER
GAME



//Relations & Collaborations

Relations and collaborations with the industry and communities

- » Good connections with local game companies
- » Collaboration with the local IGDA Chapter Expa; Expa Director is a JYU alumnus
 - » Several JYU games researchers have been in the Expa board
- » Collaboration with other educational institutes in Jyvaskyla
- » Collaboration on projects with different public organizations
 - » participation in the City of Jyvaskyla Youth Department project Game On Jyvaskylä (game education) steering board (2015–2018)
 - » prof Koskimaa chairs the eLämää—Developing Business and Community around eSports Project Steering Group (2019–20)
- » Finnish Association of Game Research founded in Jyvaskyla
- » The first Regional Artist specialising in Game Art is a JYU Digital Culture alumnus

Routine activities taking place

- » Game industry professionals as visiting lecturers on courses
- » Students entering traineeships in local game companies
- » Students participating in local IGDA hub events
- » Collaboration with Expa in arranging events, and inviting speakers to events
- » Public game testing/presentation events with game students from both JYU and JAMK University of Applied Sciences
- » Game Research related international Seminar / Conference arranged each Fall, with changing theme (since 2015)
- » JYU Game Research seminar, a few times a year, informal multi-disciplinary discussion

- » forum

Innovations, Potentials, Outcomes so far

- » Highly impactful educational games produced in/around JYU, potential for further Research
- » Collaboration with the Finnish Air Force Academy in simulation-based and gamified training (jointly with JYU Faculty of Education and Psychology)
- » Games Career Day, a joint event for game students in all educational levels in Jyväskylä

Expectations from them and vice versa

- » Industry cooperation gives access to data otherwise out of reach for researchers
- » Industry professionals are frequent guests in courses: giving lectures and giving feedback for student work
- » Local companies are interested in using research-based knowledge in developing their products and interested in research collaboration
- » Joint applications of research and development funding

What Went Right

- » Maintaining connections with our alumni
- » Continuous collaboration with game companies and Expa

What Went Wrong

- » games and play focused research on the internationally successful GraphoGame has not been done so far, even though the development of the game is strongly based in educational research



Game-based and games-inspired empowering activities in JYU

Outreach

11-17-year old students

Games-first CS1

- During the 1st year of CS studies

Interdisciplinary project

- Jyväskylä Game Lab
- Realized as a multi-institutional co-operation
- Other game-based and game-inspired courses
- Game Development studies

JYU. Since 1863. |

//Constraints & Needs

Teaching resources are very limited, and there are practically no teaching staff dedicated to game studies only, which makes it challenging to answer the growing interest in game studies, as well as makes it impossible to offer as wide a selection of game-related studies as we would wish. Collaboration across departments, faculties, and institutions has been a partial solution to the problem. There has been no willingness to long-term investments in games education at the JYU.

Collaboration between two faculties (IT & Humanities) has also posed administrative challenges.

//SWOT Analysis

Strengths

- » research resources
- » people from several faculties doing game related work
- » tradition in educational games

Weaknesses

- » no permanent teaching positions in game education
- » no visual/graphic design expertise

Opportunities

- » good networks locally, nationally, internationally
- » newly opened Digi & Game Center
- » collaboration with the JAMK Intl. Game Production programme

Threats

- » being left out of JYU profiling areas and further investments
- » decreasing support from the IT Faculty to game education
- » overburdening of researchers with teaching obligations

//Comments for the Partners

BAU

Teaching Arrangements

- » Wide selection of courses, good collaboration within university
- » Several teachers involved
- » Learning spaces were creative and fitting for the purpose; excellent working spaces, sense of community
- » The program invited esports players as students with special grants; integration of esports in university activities
- » Students were systematically used for teaching, which is different from Finland
- » Leadership was very positive toward gaming.
- » Game jams an integral part of learning
- » Communication to students via (beautiful!) posters
- » Private university → affect on e.g. resources
- » Relationship between research and teaching was left somewhat open

Teaching Content

- » Based on what we saw, content seemed up-to-date and occasionally ahead of time.
- » Plenty of content was in English, how many international students? sense of limited international scope (potential for increasing awareness)
- » Perhaps a small genre bias on mobile games, albeit some teachers acknowledged ludic diversity well. How was material synchronized?

- » Was left thinking, what about international markets? Industry experts were used for teaching, but could it be improved by inviting international professionals?
- » How to prepare students for the ever-changing games field?
- » Humanities and sociology were included, but strengthening these areas might add to the content still (cf. e.g. ITU Copenhagen and its "theory" line of development in addition to design).
- » strong presence in communal activities e.g. game jams
- » Some course works published in itch.io platform as part of the course

Collaboration with the Industry

- » Collaboration seemed to work well, and it was intense, also student companies within the University premises
- » Graduating students seem to fluidly move to work in the local industry.
- » However, since collaboration was with selected companies (mobile), this may be a diversity issue in terms of genre and industry type.
- » Hypercasual games is big trend and idea for using them as a design exercise was brought up
- » It was a richness, apparently, that the teachers could also learn from the industry and not merely use them in teaching.
- » Collaboration was genuinely a win-win situation, both parties benefitting from the deal.
- » How to keep collaborations active and changing (adapting), perhaps some kind of cycle system?
- » well established collaboration with game companies, real ecosystem around the university
- » VR First consortium lab

Local Industry

- » Turkish/Istanbul game dev scene surprisingly fertile and lively, even though locally oriented edu games, mobile games, esports games, narrative games, indie games; Turkey turned out very rich in terms of gaming
- » The geography considered, how was collaboration with Asian countries, was it pursued? Even in Finland, there's a constant push toward the markets of China, India, Japan, and Korea. Perhaps a potential point of future discussion.

CU

Teaching arrangements

- » historical milieu in the center of capital city
- » Mainly contact courses in small groups
- » Not many online courses or demand for independent study options
- » Project-based learning: Several projects every year, possibility to work on the same project on several different courses
- » Support for students wanting to publish their games—Charles Games! (1 student game release/yr, 1 own game every 3 yrs, 1 POC/yr; Benefits of having a “edu-game-dev”-company: Experiences, motivation for students, contacts)
- » No formal prerequisites for courses
- » Humanities research centers: Lab of Studies of Advanced Multimedia Education: Research on learning effects, game user research

Teaching content

- » curriculum focused on game dev, rich curriculum with specialist courses
- » Prevalent gamedev technologies (e.g. Unity, Unreal)
- » Students are all-round programmers: C++, C#, Java, Python, ...
- » Gamedev taught in the MSc programme Computer Graphics and Computer Game Development, Game studies taught at Faculty of Arts (New media studies) → similar to Jyväskylä; co-operation could be taken even further?
- » International students posing a challenge with their varying skill levels
- » strong educational game dev field, as well as game research in general → how well is this integrated in the study contents?
- » Projects: ~10 game prototypes/year, about 5 tech demos/year, supervised by local experts and industry partners (how the supervision works in practice? what is their role? how do you get them to commit their time and effort in the projects?)
- » No entrepreneurial studies here—is it true?

Collaboration with the industry

- » Industry professionals as mentors for students
- » collaboration with companies exists, but could be stronger (doubts on industry side on the usefulness of student interns)
- » Local industry

- » Focused on PC gaming
- » Scale of game studios was large: from small to relatively big companies
- » game scene rich and diverse, simulation technology strong

UKW

Teaching arrangements

- » teaching had started as a labour of love, with a lot of work done outside any institutional support systems before the resources had been made formal (the Humanities 2.0 program seemed to be central for formal approval)
- » Not many online courses or demand for independent study options
- » A multidisciplinary team of teachers, but most work only partly in the game dev/studies programme
- » very rich curriculum covering many areas of gaming
- » Study programme's unstable position within the faculty
- » emphasis also on humanities oriented game studies

Teaching content

- » Intertwining of theory and practical design assignments
- » Emphasis on educational use of games, at least earlier?
- » Game design, especially analog game design, as the main strength; on the other hand, there seemed to need for more teaching of programming skills

Collaboration with the industry

- » Local game dev professionals as teachers on multiple courses
- » Local companies taking on trainees
- » Many of the local game dev professionals alumni of the GAME-DEC programme
- » very well developed and integrated collaboration with companies in study programme; solid working relationship with the local companies, hiring their staff as lecturers and the companies in turn hiring students first as trainees and often as permanent staff afterwards -> the skills taught in the program are sought after and applicable to the practical needs of these companies

Local industry

- » relatively rich game dev scene in Bydgoszcz, very strong scene in Poland

- » the profile of these game companies was very broad, with some focusing on serious games, doing games with cultural heritage sites or for pubs; much more varied than the typical mobile-first approach in Finland (this could be emphasised in other places too: the games industry can be diverse and answer the needs of different institutions, even creating markets where there were previously none, instead of competing in the usual, oversaturated mobile markets)
- » maybe lacking somewhat because on location outside Polish game scene centers (comparable to Jkl)
- » relatively little international collaboration

General remark

Being located in the capital city give certain advantages like more diverse industry scene (BAU, CU), as compared to peripheral cities (JYU, UKW), which, on the other hand, may have a more direct and relaxed connection to companies and municipal agencies.

//Intro

The visits revealed many common needs and possibilities for co-operation with the other universities.

One of the major impacts of these visits already is the understanding of effort needed to encourage international student mobility. Our current exchange agreements do not include explicitly game education related opportunities, so students need to be motivated enough to do the research in finding these places. Explicating these places for students would possibly lower the barrier in going abroad.

The visits also initialized contacts and discussions of short-term exchange opportunities for students, as well as international internships at companies.

Impacts for teaching include recognizing potential topics for collaboration in creating course materials, including introduction to game development tools (CU) and ad games (BAU).

Visits showed great examples of combining game studies theory with practical game design assignments within the same course, instead of game studies and game design on separate courses.

UKW INPUT /Poland

Kazimierz Wielki University (UKW)

Bydgoszcz

Authors: Michał Mochocki, Krzysztof Chmielewski, Paweł Schreiber

//UKW Executive Summary

Kazimierz Wielki University in Bydgoszcz is a public state-owned university with nearly eight years of experience in running the Game Studies & Design (Gamedec) undergraduate programme as a specialisation track within 2nd Gen Humanities. Launched in 2013, the degree has undergone several major iterations, the largest one coming in 2019 with grant funding from the National Center for R&D. Up to this point, the Gamedec.UKW programme was officially a 'practical' degree (the choice being between 'practical' and 'general-academic'), offering minimum 3 months of work placement in the industry. Starting with the academic year 2019/20, it has been converted to the dual work-study format, with the duration of mandatory work placement extended to 12.

Gamedec.UKW was created in the Faculty of Humanities by staff employed at the Dept. of English Studies, so its curriculum prioritises soft skills, liberal arts and social competences, with a relatively low presence of technical and visual components. Its core focus is game design, which is trained in hands-on design workshops on digital and non-digital platforms. Students create board & card games, non-digital RPGs and LARPs, location-based urban games, gamification systems, and educational games. Video game design is taught by professionals working full-time in the industry (primarily at Vivid Games). Alongside the design labs students are trained in project management tools. The curriculum of the dual degree offers four module blocks selected for semesters 3-6 as specialisation paths: Game Studies, Graphics & Animation; Mechanics & Applications; and Game Production & Marketing.

Education at Gamedec.UKW has always been carried out in close collaboration with the game industries (digital and non-). The game curriculum is consulted with industry experts. Game dev professionals are invited to teach guest lectures and workshops at UKW, and are hired to teach digital game design labs. For students collaboration with the industry is not limited to the formal 3-month industrial placement. In addition to that, students visit game studios on open days, do small-scale work for game companies (which may include short-term internships), and work as volunteer staff at game events (including Game Industry Conference coinciding with Poznan Game Arena). Gamedec.UKW staff are regular speakers and board members at industry events. Also, students and staff organise game jams and other game-related events at the university. Some students take part in Erasmus job internships or student exchange abroad (Norway, Czechia, Slovenia). The pre-graduation employability rate was 56% in 2015 (before the release of the first graduates), and 72% in 2019 for pre- and post-graduates taken together.

Gamedec.UKW has two persistent challenges. One is the lack of funds: no budget assigned to the 2nd Gen Humanities unit. The other is understaffing; very few people are employed full-time for game education, so the majority of staff either come from other UKW departments or are hired part-time on short-term basis. There were no positions for game researchers either, as Gamedec.UKW was an education-only project. Game studies at UKW was conducted either by the Gamedec.UKW teaching staff and/or by researchers at the Dept. of English Studies. This may change with the founding of a new unit in October 2019: the Department of Game Studies & Media Prosumption.

Know-how, edu-materials and international contacts developed in the GAMEHIGHED project are going to enhance the existing edu-opportunities in Game Studies & Design (Bachelor-level), and open new ones in English Studies (Master-level).

Throughout the UKW study visit academics and professionals below are surveyed and contributed to the report with their experiences and insights.

UKW Staff

Prof. Marek Macko, *Vice-Rector for Development & Cooperation*

Dr. Marta Tymińska, *Gamedec.UKW teacher*

Aniela Bekier-Jasińska, *Head of International Relations Office*

Dr. Michał Mochocki, *Assistant Professor at English Studies,
Gamedec.UKW founder, GAMEHIGHED lead coordinator*

Dr. Aleksandra Mochocka, *Assistant Professor at English Studies,
Gamedec.UKW teacher*

Dr. Paweł Schreiber, *Assistant Professor at English Studies,
Gamedec.UKW teacher*

Krzysztof Chmielewski, *owner at Fair Games Consulting,
Gamedec.UKW teacher, leader of the dual work-
study programme*

Piotr Milewski, *game designer at Sirius Game Studio,
Gamedec.UKW teacher*

Partners

Jakub Stasiak, *level designer at RemiVision; Scratch instructor in primary
school; Gamedec graduate*

Patryk Batko, *game designer at Vivid Games, Gamedec graduate,
digital game design instructor at Gamedec*

Tomasz Krzyżaniak, *product designer at Vivid Games, Gamedec
graduate, formerly digital game design instructor at Gamedec*

Filip Kucharski, *co-owner & programmer at Divine Blacksmiths, formerly
digital game design instructor at Gamedec*

Maciej Miąsik, *owner at Pixel Crow; founder at Game Dev School;
curriculum designer & teacher at Warsaw Film School*

Michał Stawski, *developer at Ulric Games*

Rafał Klein, *teacher at 4th Secondary School in Bydgoszcz*

Karol Siódmiak, *marketing specialist at Concept Games*

Martyna Neumann-Baranowska, *marketing manager at Vivid Games*

////II

INDEX

- 205 INTRODUCTION**
- 207 SHORT HISTORY**
- 216 TIMELINE & MILESTONES**
- 217 PROGRAM STRUCTURE & ACADEMIC RESEARCH**
- 226 WHAT WENT RIGHT**
- 227 WHAT WENT WRONG**
- 228 RELATIONS & COLLABORATIONS**
- 231 CONSTRAINTS & NEEDS**
- 233 SWOT ANALYSIS**
- 234 COMMENTS FOR THE PARTNERS**
- 241 OUTRO**



Photo by UKW

// Introduction

Kazimierz Wielki University (UKW) in Bydgoszcz is a public state university, founded as a teacher's college in 1969 and upgraded to the status of full-profile university in 2005. It is the largest HE institution in the city of Bydgoszcz and second largest in the Kuyavian-Pomeranian region. It has 9 faculties: History, Mechatronics, Music Education, Linguistics, Biology, Literature, Administration & Political Science, Education, Psychology; and 10 institutes: Philosophy, Physics, Culture Studies, Social Communication & Media, Geography, Information Science, Physical Education, Mathematics, Law & Economy, Materials Engineering. It employs 600+ academic teachers and researchers, including 160 full professors. It runs nearly 60 degree programmes: bachelor, engineer, master, and PhD, as well as 40 post-graduate courses. It enrolls 3.000 students each year, now teaching 9.000 in total.

Its involvement in game studies and game-based learning started in 2009 at the Institute of Modern Languages and Applied Linguistics, its staff taking up game research and edu-gamification within English Studies at UKW and under the wing of Games Research Association of Poland. In 2013 UKW opened a Game Studies & Design track in the newly-opened Bachelor of Arts in 2nd Gen Humanities (aka Humanities 2.0), starting intense collaboration with the digital and non-digital game industries. It was the first and only (and now, since late 2019, one of the two) higher-ed degrees in Poland to focus primarily on game design, not programming or visual arts. In 2019 it changed its format to a dual work-study degree, with as many as 12 months of work placement in game dev companies.

The GAMEHIGHED personnel includes Dr. Michał Mochocki, Dr. Aleksandra Mochocka and Dr. Paweł Schreiber from the English Studies department, in 2019 renamed as the Department of Anglophone Literatures. They have been involved in the creation and development of the Game Studies & Design degree since its origins, with Dr. Mochocki responsible for curriculum design and overall management of this programme from 2012 to 2017. Dr. Mochocki and Dr. Mochocka have also been behind game research and game-based learning in English Studies since 2009. Krzysztof Chmielewski and Piotr Milewski joined the Gamedec.UKW staff in 2014/2015, having been accomplished non-digital game designers specialising in larp and tabletop RPG (K. Chmielewski) or larps, board and card games, and urban games (P. Milewski). They both had previously been involved in educational gaming and game-based learning. Beside their job as Gamedec teachers at the Dept. of Game Studies and Media Prosumption, they work in the private sector as game designers and consultants.

//Short History

Video Games

The Polish videogame scene started in the mid-1980s with homebrew productions distributed for free among computer users; at that time no such thing as a legal software market existed in Poland. The gamers' community developed in smaller circles (particularly the one revolving around the popular computer and software exchange at Grzybowska street in Warsaw) and in connection with the emerging computer magazines, Bajtek and Komputer (whose special issue 44 gry na Atari—44 games for the Atari from 1987 was the first Polish magazine issue devoted solely to video games). By far the most popular computer was the 8-bit Atari, owing to P.Z. Karen, a company which legally imported and sold the hardware in Poland. While a lot of Polish homebrew games gained quite a lot of popularity, many would say that professional game development in Poland begins in 1989. It came with two important premieres: the first one was Robbo, a game inspired by Boulder Dash, which first gained popularity in Poland, and then, in a more developed version, was distributed abroad by Epic MegaGames. The other one was BlockOut, a 3D variation on Tetris developed by California Dreams, an offshoot of Karen, which became an international success.

For some time in the early 1990s, Polish video game production was focused on the local market, manifesting most of its creativity on the 8-bit Atari and the Amiga (games such as Miecze Valdgira or Franko: The Crazy Revenge), computers more common at Polish homes than PCs. Still, there were pioneering efforts to reach foreign markets, such as ElectroBody, an early Polish PC game also distributed

by Epic MegaGames and designed by the creator of Robbo. This was also a crucial time for the development of the Polish gaming community due to the appearance of several magazines devoted only to video games. They are still the subject of nostalgia among older gamers, and many of the authors writing for them moved on to become recognizable figures in game development. Polish games entered the foreign markets in earnest in 2000 with the premiere of Earth 2150, one of the first successful 3D RTS games. Since then, several Polish video became international hits, most notably Painkiller (People Can Fly 2004). Another example of the growing abilities

“Gamified grading methodology, modular structure, wide approach to the industry with underline shared principles and values have clearly inspired not only students to participate in GameDec.UKW from the whole country but also industry willing to share their experience.”

—Thom Kaczmarek, founder of Game Industry Conference, Lecturer in Games Design at University of the Arts London

of the Polish developers was Call of Juarez (2005), the beginning of a franchise that set its developer, Techland, on the way to their triple-A successes such as Dead Island or Dying Light. A Polish game also became one of the early indie hits – Michał Marcinkowski’s Soldat was originally released in 2002, and then further developed over the years.

It was a time when many Central and Eastern European game developers rose to prominence; many of them were then approached by large Western companies as subcontractors for their bigger franchises. In many cases it meant the subordination of local developers. Surprisingly, major Polish studios resisted such temptations; the most notable exception was People Can Fly, which was acquired by Epic Games and rebranded as Epic Games Poland, but has since regained its independent status. One of the results is that the culture of game development in Poland was consistently based on relatively small studios, which later on flourished during the indie game revolution.

The premiere of the first part of The Witcher (2007) is a turning point in the history of the Polish gamedev scene. CD Projekt Red became not only the poster child for Central and Eastern European developers, but also a company providing much of the talent reshaping the Polish game industry, in which CDP Red alumni play a prominent role. At the same time, the Polish indie scene also became an important presence in the local industry. Sos Sosowski’s McPixel (2012) was the first game to be accepted in the Steam Greenlight program.

The Superhot prototype (2013) broke new records both in terms of Greenlight and on Kickstarter, finally becoming an immensely successful PC and console game in 2016. Largely thanks to the success of The Witcher series, the perception of video games as part of both culture and the economy started to change, with both investors and policy makers becoming more interested in the medium.

The emphasis on smaller companies (a 2017 report shows over 60% Polish game studios employ 5 or less people¹; in a 2020 report on game development in Warsaw, which is home to most game dev companies in Poland, companies employing 9 or less people constitute 51,72%²) can be viewed as a strong point of the Polish industry, but the flipside is that it has relatively little know-how regarding bigger production—a lack that also manifests itself in reports of mismanagement or the delays happening in the biggest Polish game companies, CD Projekt Red and Techland. Another characteristic feature of the Polish game market is the relative lack of prominent Polish mobile games—the better known companies focus on PC and console games, with the mobile market remaining a bit neglected.

Video game development entered the Polish higher education system in 2009, when a project called Europejska Akademia Gier (European Game Academy) was formed in Cracow. It was a postgraduate curriculum formed in cooperation between the Jagiellonian University and the AGH University of Science and Technology, as well as game developers from the area (initially Nibris, later also others, like Reality Pump). While the EGA did not last in its original form, it inspired many similar initiatives. The Jagiellonian University started its own MA curricula in game design in 2010. In 2011, the University of Silesia in Katowice opened its SPRINT program, a set of curricula at different faculties meant to cooperate in creating student video games; here, the industry partner was the now-defunct Nicolas Games. In 2013, Gamedec, a specialization within the 2nd Generation Humanities curriculum, started at Kazimierz Wielki University in Bydgoszcz. Other notable video game design programs exist at the Warsaw Film School, the Polish-Japanese Academy of Information Technology and Łódź Polytechnic University, among others. In the 2017 report on the condition of the Polish game industry, the opinion of the industry professionals on graduates of university game dev programs was not very high—37,3% believed they were unprepared for their job, and only 9,8% thought they were well (or very well)

suiting to working on game development³. A more recent report concentrating on video game development in Warsaw shows a disappointing result regarding the question on cooperation with higher education institutions – 79,31% of game developers do not work with universities⁴, a problem that is repeated in the conclusion of the report as one of the most important problems to overcome⁵

Board games

Until the 1980s, the board games market in Poland mostly focused on traditional games, such as chess or nine men's morris, and games for children (some just entertaining, others also aiming at education). In the 1980s Monopoly clones became a noticeable phenomenon – the most successful one among them was Eurobusiness (1983), but there were also others, like Fortuna (1984) or Tranzyt (around 1980). An important change came in 1982 with the establishing of Encore – a company producing board games, in most cases adaptations or clones of Western originals, such as Star Traders/Gwiezdny kupiec (1982), Citadel of Blood/Labirynt śmierci (1982) or Voyage of the B.S.M. Pandora/Odkrywcy nowych światów (1987) or Simulation Publications Inc.'s games based on Lord of the Rings. The circulation of such games was impressive – Encore's founder, Jacek Adamski, claims that the average printing was 20 thousand copies⁶; another example is the naval battle strategy game Bitwa na morzu wiatrów, (Alfa publishing house, 1983), published in 50 thousand copies.

In the 1990s, the interest with board games continued and the perhaps the first truly cult title emerged. Magia i Miecz, published by Sfera, was the Polish edition of Talisman, different from the original in terms of the visuals. It was so successful that Sfera ignored other Games Workshop titles and focused on developing Magia i Miecz, even publishing its own add-on to the game. After losing the licence from Games Workshop, Sfera went on to publish a very successful clone of Talisman, called Magiczny Miecz. The other branch of the Polish board game industry in the 1990s were hex-based historical wargames – the most prolific publisher of those was Dragon.

After some time, this wave of popular Polish board games subsided. The Polish board game industry had to wait for another decade to start moving to a new level, which included not only producing games for local audiences, but also selling them abroad. In 2005, Michał Oracz, a notable figure in the Polish RPG community, re-

leased Neuroshima Hex!, a game that became one of the first important Polish board game exports. In 2009, Ignacy Trzewiczek, another game designer originating in the RPG community, published Stronghold, his first major success. Trzewiczek went on to become the most recognizable Polish board game designer, with games such as Robinson Crusoe or 51st State and Imperial Settlers. The Polish board game market, very limited at the beginning of the 21st century, started to flourish with the success of games such as Kolejka (2011), a popular hit referring to the queues in shop in Communist times. The games were first sold predominantly in specialist shops, but for the last decade they have been gradually expanding into mainstream bookshops.

Board games have a limited presence in Polish university courses, with the notable exception of the Gamedec curriculum at Kazimierz Wielki University in Bydgoszcz, where they are one of the aspects of game design included in the course.

Tabletop RPG

Tabletop RPG first came to Poland stealthily and unofficially in the 1980s in the form of English or German handbooks imported by individuals for private use—in the original language or in homemade translations. All information from this period comes from personal accounts, so it is difficult to point to a particular year or place as the first one. Suffice it to say that in late 1980s small RPG groups appeared in SF&fantasy clubs, and the year 1990 saw the first TRPG written in Polish: *Oko Yrrhedesa* by Andrzej Sapkowski (yes, the same who penned the witcher's saga), published (incomplete) in the *Fenix* magazine dedicated to SF&fantasy fiction. The nationwide community of Polish-speaking RPG players started to form in 1993 with the launch of *Magia i Miecz*: the first commercial Polish print magazine dedicated to TRPG. For many years it was the only magazine that survived more than a few issues, to be joined by *Portal* founded in 1999. *Magia i Miecz* (1993–2001) and *Portal* (1999–2003) were fundamental to the formation of the Polish RPG community, their editors and authors active nationwide at game conventions, in local player groups, and online. It is the online world with RPG portals, blogs and fora that is probably to 'blame' for the demise of both print magazines in early 2000s.

1 <https://www.cdprojekt.com/pl/wp-content/uploads-pl/2016/03/kondycja-polskiej-branzy-gier17.pdf>, p. 72.

2 http://www.kpt.krakow.pl/wp-content/uploads/2020/01/raport2020_21x-27_48p_en_final_web.pdf, p. 26.

3 <https://www.cdprojekt.com/pl/wp-content/uploads-pl/2016/03/kondycja-polskiej-branzy-gier17.pdf>, p. 82.

4 http://www.kpt.krakow.pl/wp-content/uploads/2020/01/raport2020_21x-27_48p_en_final_web.pdf, p. 21.

5 http://www.kpt.krakow.pl/wp-content/uploads/2020/01/raport2020_21x-27_48p_en_final_web.pdf, p. 44.

6 <https://www.gamesfanatic.pl/2004/09/28/wywiad-z-szefem-encore-janem-adamskim/>

The early years of Polish TRPG were dominated by the domestic D&D-like *Kryształy Czasu* by Artur Szyndler et al. published serially in *Magia i Miecz*, and the Polish edition of *Warhammer Fantasy Role Play*. Judging by their presence in the print magazines, the most popular TRPGs of this period also included *Cyberpunk 2020*, *Call of Cthulhu*, *World of Darkness*, *Legends of the Five Rings*, and *Deadlands*, with some appearances of *Shadowrun*, *Fading Suns*, *Middle Earth*, *AD&D* and others. Translations of foreign TRPGs and publications of local ones (e.g. *Dzikie Pola*, *Arkona*, *Oko Yrrheda*) were released by several publishers, but it has never become a sustainable business on its own. Typically, TRPGs are released either by publishers of genre fiction or manufacturers/distributors of board and card games.

Further reading:

M. Golonka. 2019. *OneBookShelf Community Content Programs and the Polish RPG Fandom*.

A. Mochocka, M. Mochocki. 2016. *Magia i Miecz Magazine. The Evolution of Tabletop RPG in Poland and Its Anglo-Saxon Contexts*.

Another opportunity was brought by community content platforms offering commercial self-publication online, with profits shared between the authors, the copyright owners, and the publication platform: *Storyteller's Vault* for *World of Darkness*, *Miskatonic Repository* for *Call of Cthulhu*, *Dungeon Masters Guild* for *Dungeons&Dragons* etc. As discussed by Marek Golonka (2019), Polish authors for a long time were absent in community content platforms. This suddenly changed in late 2019 with a well-coordinated effort of M. Golonka and others to publish a series of *Call of Cthulhu* materials in Polish and English, which turned out to be a notable success in sales figures and critical reviews. In all likelihood, the Polish presence in TRPG community content will now be growing.

Live Action Role Playing

The first larps were organised in Poland in the 1980s, emerging in two environments: science-fiction & fantasy conventions and youth scout camps. Initially organised as one-time events, they soon grew into local larping communities. The popularisation of tabletop RPG through *Magia i Miecz*, as well as the fledging Polish Internet in the 1990s, brought a wave of larps set in TRPG worlds. The two dominant themes were fantasy and vampire, the latter developed into a series of campaigns coordinated across several cities under a shared name *Poland by Night*. Since 1990s larps have been a regular component of SF&fantasy conventions and local club activities.

Around 2010 the local/regional communities formed sustained collaboration on the national level. This development is marked by two

ongoing projects: a nationwide competition “Golden Masks” organised since 2010 at the largest game convention in Poland (Pyrkon); and a larp conference KoLa held annually in various Polish cities since 2012, accompanied with a book-format publication in print and online. The years 2010–2014 were also characterised by a growing drive to forge international ties and follow in the footsteps of the Nordic larp community, with Polish larpers appearing at larp conventions in Czechia and in the Nordic countries.

Arguably, the greatest milestone in Polish larping was the Danish-Polish College of Wizardry: a Harry Potter-themed game held in November 2014 in the Czocha castle in the south of Poland. Due to its high production value and spectacular photo and video footage that went viral on the internet, this game has inspired a whole branch of larp tourism. Larps in Polish castles have attracted thousands of players (a hundred or so at a time) some flying in from America. The most popular lines were the said College of Wizardry (over 20 editions between 2014 and 2019); Fairweather Manor inspired by the TV series *Downton Abbey*; and Witcher School set in the universe of *The Witcher*.

It is hard to say whether larp amounts to an industry among other game industries. On the one hand, it does have a plethora of high-budget commercial projects and a professional community of designers, writers, facilitators, and managers. Beside castle tourism, larp is a method (an educational technology!) applied in school teaching, in corporate training, in informal education (e.g. in museums), as entertainment at youth summer camps, as elements of location-based urban games commissioned by municipalities, etc. It has dozens of professional publications, with larp design taught at two Polish universities—Gamedec.UKW in Bydgoszcz, and Media Production at UMCS in Lublin. On the other hand, it cannot support full-time careers. Only a few, maybe a dozen, people in Poland could make a living as full-time larp designers or organisers, working with now-defunct Danish-Polish Dziobak Larp Studio (creators of College of Wizardry, Fairweather Manor and several other ambitious productions) or with Agencja 5 Żywiołów (creators of the Witcher School). In other cases, larp only provides temporary part-time employment (such as gamemastering at youth summer camps, practiced by some Gamedec.UKW students and staff), or is just one of many activities in someone’s job (educator or event manager).



Photo by UKW



//Timeline & Milestones

2009–2012: experiments with edu-larp (live-action role-play) and edu-gamification in English Studies / Applied Linguistics; advocacy for edu-larp and edu-gamification at game industry events, teacher's conferences, and game studies conferences (M. Mochocki, A. Mochocka, M. Sobociński)

2008+ : local chapter of Games Research Association of Poland

2013+ : Game Studies & Design specialisation within newly launched 2nd Gen Humanities B.A.

2014–15: grant "Internships for 2nd Gen Humanities" from National Center for Research & Development funding 3-month student internships in game dev and other creative industries (coordinators: M. Mochocki, M. Sobociński)

2017–2018: grant "Traineeships for 2nd Gen Humanities" from National Center for Research & Development funding 3-month student traineeships in game dev and other creative industries (coordinators: P. Milewski, M. Mochocki)

2017–18: "Curriculum Design for Skills in Game Design" project by Games Research Association of Poland (coordinator: M. Mochocki)

2019: Game Studies & Design transformed into a dual (work-study) degree with a grant from National Center for Research & Development (coordinator: K. Chmielewski)

2019: Department of Game Studies and Media Prosumption created within the Institute of Social Communication and Media

//Program Structure & Academic Research

Until last year, Gamedec.UKW always was an education-only project, with no jobs for game scholars and no game research unit to go with it. This situation is changing with the founding of the Department of Game Studies and Media Prosumption in October 2019. It is yet too early to prognosticate its research profile.

So far, game studies at UKW has been conducted by some Gamedec staff employed as Senior Lecturers, i.e. at non-research teaching positions (Krzysztof Chmielewski, Marta Tymińska, Marek Golonka, Piotr Milewski), and by Assistant Professors employed at the Department of English Studies (Michał Mochocki, Aleksandra Mochocka, Paweł Schreiber, Mikołaj Sobociński). Their research is focused on non-digital gaming, primarily tabletop RPG and larp, exceptions being P. Schreiber and M. Tymińska, who specialise in digital games.

The structure of the curriculum and the education behind Gamedec.UKW in the years 2013–2016 is described in two papers published in 2016:

M. Mochocki. 2016. Gamedec.UKW in IGDA Curriculum Framework.

M. Mochocki. 2016. Humanities-based Degrees and Gamedev Employability.

As they are both available online, suffice it to highlight only a few major points here:

- » The overview of game-related education published in the State of the Polish Video Game Industry report (2017) contains about

40 programmes, only 8 of which mention 'game design' as a component of their names. Game Studies & Design at UKW was the first and—until last year—the only degree in Poland to focus on game design as the core of the programme (the other being Game Design at the Tischner European University in Kraków, opened in 2019).

- » Another unusual aspect of Gamedec.UKW is its departmental environment, as it emerged within the Faculty of Humanities, whereas the majority of Polish game programmes stem either from IT/programming or visual arts. This is reflected in the structure of the curriculum, with a relatively low representation of visual design and computer science and a high presence of soft skill training and non-digital game design.
- » Gamedec.UKW emphasises hands-on team-based game design practice, which takes place across four or five semesters on digital and non-digital platforms (board & card; tabletop RPG; larp; location-based urban games).
- » Game education is carried out in close collaboration with the game industries (see below: Relations & Collaborations). It includes mandatory job placement for at least 3 months (12 months in the dual work-study format), supported with extra traineeship opportunities funded by grants and Erasmus+.

A major change of the curriculum came in 2019 when Humanities 2.0 was changed to a dual work-study degree: the very first dual degree in game development in Poland. It is co-financed by the National Centre for R&D (the only one out of 12 applying in the grant for a game-related degree).

If we were to compare the programme content with the earlier Gamedec editions, this one introduces courses related to game production, management, product ownership, which had never been tried at Gamedec before. There is also a new 2-semester mandatory course in game testing. The differences are but much more profound:

During 6 semesters of B.A. degree program students have a total of 12 months of fully paid internships in the industry (guaranteed by the University) and additional 2 months of traineeships – so over 50% of total teaching hours are actual on-the-job training. This results in nearly 270 ECTS points (compared to the mandatory 180 in previous enrollments) and over 3500 teaching hours.

After the 2nd semester students choose 1 of 4 given specialisations:

- » game studies
- » game marketing & production
- » mechanics and applications
- » graphics & level design

During their 2nd semester students have to pass preparatory courses in all above specialisations. On semesters 3–6 they have 2 elective courses per semester (both lectures and labs) in the specialisation of their choice.

A game prototype for a B.A. thesis was also made a formal requirement – a written thesis with no accompanying game project are acceptable only for students who chose game studies as their electives.

We still face the problem of being seriously understaffed, but the dual degree program allowed us to outsource some classes to recognized industry professionals (about 25% of them being CEO/COO's of local companies). Thanks to public funding, Gamedec got equipped with some software (including game engines libraries & Adobe Creative Cloud) and a 3D printer to support students' game prototypes.

Below comes the list of learning outcomes and curriculum of the dual degree introduced in October 2019.

Learning Outcomes

Symbol in Polish Integrated Qualification Framework	KNOWLEDGE Student:
S_WG01	Has an advanced knowledge and understanding of selected facts, objects and phenomena related to games and new media, as well as literature, popular culture and social communication
S_WG02	Has an advanced knowledge and understanding of selected methods and theories explaining the relations between game studies and other fields related to the degree programme
S_WG03	Has an advanced knowledge and understanding of a selection of specific aspects of game design, game studies and player studies

S_WG04	Has an advanced knowledge and understanding of the practical uses of game design / game studies in professional careers in the game industry
S_WK01	Has knowledge and understanding of the key dilemmas of the contemporary civilisation
S_WK02	Has knowledge and understanding of selected economic, social and technological factors influencing various professional occupations in the game industry
S_WK03	Has knowledge and understanding of selected legal and ethical factors influencing various professional occupations in the game industry, including the protection of intellectual property
S_WK04	Has knowledge and understanding of the basic rules of building and developing various form of business enterprises in the game industry

SKILLS	
S_UW01	Can frame and solve non-typical problems and perform tasks in not fully predictable situations in game design or game studies, applying critical choice, analysis, evaluation and interpretation of information
S_UW02	Can frame and solve non-typical problems and perform tasks in not fully predictable situations thanks to selection and successful application of proper tools and methods, including advanced techniques of communication and information management
S_UW03	Can frame problems and perform selected tasks typical for professional work in the game industry
S_UK01	Can communicate within the professional environment with the use of proper game dev terminology
S_UK02	Can participate in discussions as an active contributor
S_UK03	Can speak a modern European language with B2 competence level
S_U001	Can plan and organise individual work and group work
S_U003	Can collaborate in teamwork (also in interdisciplinary teams)
S_UU01	Can independently plan and execute his/her own learning process in life-long learning

SOCIAL COMPETENCES	
S_KK01	Is open to critical assessment of his/her knowledge and received content

S_KK02	Is open to appreciating the role of knowledge in solving epistemological and practical problems, and to reaching for expert opinions and specialist sources
S_K001	Is ready to fulfill social obligations and to use game-related tools to co-organise activities for the benefit of local community
S_K002	Is ready to initiate activities for the common good
S_K003	Is ready for entrepreneurial thinking and action
S_KR01	Is ready to abide by professional ethics and to promote ethical standards in his/her environment
S_KR02	Is ready to care for the legacy and tradition of the profession of game designer or game scholar
S_KR03	Is ready for responsible work in the game industry, following the standards of professional communication and commonly accepted good practices

Basic Modules

Course	Format (lecture / seminar / lab)	Semester	Hours	ECTS
Introduction to Game Design [ENG]	lecture	I	30	3
Story Design [PL]	lecture / lab	I	15 / 30	5
RPG Design [PL]	project lab	I	30	4
World Literature [PL]	lecture	I	30	3
Board Game Design [PL]	project lab	I, II	50	5
Introduction to Graphic Design [PL]	lab	I	30	3
Logic with Elements of Application [PL]	lecture	I	30	3
Selected Aspects of Game History [PL]	lecture	I	15	1
Research Project [PL]	seminar	I	30	4
Music in New Media [PL]	lecture	III	20	4
Foreign Language [PL]	seminar	I, II, III	90	6
Digital Game Design [PL]	lecture	II	20	3
Probability Theory and Algorithms [PL]	lecture	II	20	3
ARG and Urban Games [PL]	lecture / lab	II	20 / 20	6
Introduction to Game Studies [ENG]	lecture	II	20	3
Larp Design [PL]	project lab	II	40	5
Introduction to Project Management [PL]	lecture	II	20	2

Introduction to Game Production [PL]	lecture	II	20	2
Law in Game Industry [PL]	lecture / seminar	V	10 / 10	2
Introduction to Game Testing [PL]	lecture	II	20	2
Game Testing [PL]	project lab	III	30	3
Applied Games [ENG]	lecture / proj. lab	III	10 / 30	6
Intellectual Property Law [PL]	lecture	III	20	2
Game Theory for Designers [PL]	lecture / seminar	IV	10 / 10	4
Introduction to VR [PL]	lecture	II	20	3
Physical Education [PL]	practice	II	30	0

Elective Modules (paired options—students pick one)

Course	Format (lecture / seminar / lab)	Semester	Hours	ECTS
Project (analogue) [PL]	project lab	II,III,IV	50	9
Project (digital) [PL]	project lab	II,III,IV	50	9
Introduction to New Media [PL]	lecture	I	30	4
Law and Popular Culture [PL]	lecture	I	30	4
Communication in Creative Industries [PL]	seminar	II	20	2
Self-presentation [PL]	seminar	II	20	2
Digital Game Design (PC) [PL]	project lab	II,III	50	7
Digital Game Design (mobile) [PL]	project lab	II,III	50	7
Bachelor Seminar [PL]	seminar	V,VI	60	16
Bachelor Proseminar [PL]	seminar	IV	15	6

Specialisation Blocks (four blocks, students pick one)

Course	Format (lecture / seminar / lab)	Semester	Hours	ECTS
GAME STUDIES				
Games in Adaptations and Transmedia [PL]	lecture	III	20	12
Digital Games History [PL]	lecture	III	20	12

Psychology of Games and Gamers [PL]	lecture	IV	10	18
Cultural Context of Games [PL]	lecture	IV	10	18
Advanced Game Studies [PL]		V\VI		36
Advanced Research on Player Communities [PL]		V\VI		36
GRAPHICS AND ANIMATION				
Vector Graphics [PL]	lecture	III	20	12
Visual Design for Games [PL]	lecture	III	20	12
Introduction to Modelling [PL]	lecture	IV	10	18
Graphic Design [PL]	lecture	IV	10	18
Advanced Graphic Modelling [PL]		V\VI		36
Advanced Graphic Design [PL]		V\VI		36
GAME PRODUCTION AND MARKETING				
Introduction to Game Marketing [PL]	lecture	III	20	12
Introduction to Game Market Economy [PL]	lecture	III	20	12
Game Production Management [PL]	lecture	IV	10	18
Game Marketing and Monetisation [PL]	lecture	IV	10	18
Advanced Game Marketing [PL]		V\VI		36
Advanced Game Production [PL]		V\VI		36
MECHANICS AND APPLICATIONS				
Introduction to Unity Engine [PL]	lecture	III	20	12
Elements of Programming [PL]	lecture	III	20	12
Fuzzy Logic and Modal Logic [PL]	lecture	IV	10	18
Introduction to Unreal Engine [PL]	lecture	IV	10	18
Advanced Game Engines [PL]		V\VI		36
Advanced Programming [PL]		V\VI		36

Industrial Placement

Job Internship	work placement	II	120	8
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VISION

TO BE A
WORLD-CLASS GAMING STUDIO
WITH CRITICALLY ACCLAIMED
AND COMMERCIALY SUCCESSFUL
HIT TITLES.

Photo by UKW

MISSION

TO CREATE
INSANELY ADDICTIVE
VISUALLY OUTSTANDING
MOBILE GAMES
THAT
CONNECT PLAYERS
IN MOMENTS OF JOY.



//What Went Right

The major success is high employability rate: 56% even before graduation for 2015, and 72% for pre and post-graduation taken together in 2019.

Intense collaboration with the industry, with constant presence of Gamedec.UKW students and teachers at Game Industry Conference / Poznan Game Arena: the largest game industry event in Poland, and some attendance at events abroad (Spiel board game fair in Essen)

International Erasmus collaborations: student exchange with other game programmes (Norway), student internships in foreign companies (Slovenia, Czechia), staff teaching / training visits (UK, Norway, Finland, India)

Three successful grant applications to National Center for R&D to support industrial placements of the students

High opinion of the Gamedec.UKW programme among Polish game dev teachers, including those who came to HE games-ed with many years of full-time industry experience (Maciej Miąsik, Magdalena Cielecka). Some experienced industry practitioners are willing to teach at UKW in spite of very low wages, even when commuting from other cities.

Graduates employed in game dev companies reach out to younger gamedecs with employment and internship offers

Global Game Jams and Huuuge Game Jams organised with support from local game companies in 2014–2018.

//What Went Wrong

Permanent understaffing and work overload: across the years, the number of full-time positions at Gamedec.UKW ranged from zero to one to max. two staff, plus a few short-term part-time contracts for game industry practitioners, with the majority of teaching and organisational work done by UKW staff employed full-time at different departments.

Permanent underfunding / lack of funding, with no budget allocated to the Humanities 2.0 unit by the central UKW administration.

Failed attempt at a comprehensive gamification of the Gamedec.UKW programme, which was twice offered as a challenge to students attending the Gamification in Education & Management course but never saw successful fruition. Gamification is only implemented by individual teachers in their classes: more an exception than a rule.

Failed attempt at creating an effective student-driven website + social media. There have been several student teams taking up the task temporarily, but it did not become sustainable, with the bulk of the work remaining in the hands of the teaching staff.

The decline of game events organised at UKW in recent years, including the loss of Huuuge Game Jam in 2018 to another university, and the absence of Gamedec-hosted Global Game Jam 2020 due to the lack of people willing to organise it.

//Relations & Collaborations

Gamedec.UKW routinely collaborates with the digital and non-digital game industries.

The game curriculum is consulted with game industry experts.

Industry professionals are invited to teach guest lectures and workshops at UKW. This sometimes takes place via Skype, in most cases face-to-face.

Students showcase their projects to industry professionals.

Students are invited to visit game studios on open days or one-time focus tests.

Throughout the semester, to get credit in the Collaboration with Stakeholders module, students do small-scale work for game companies, which may include short-term internships or one-time (paid or unpaid) assignments.

Students work as volunteer staff at game events, including Game Industry Conference coinciding with Poznan Game Arena: the largest game event in Poland. Gamedec.UKW staff are regular speakers and board members at these events. Twice – we had our own UKW booth in the Indie Zone at Poznan Game Arena, manned by students under a teacher's supervision.

Students and staff attend local gamedev monthly meet-ups.

Students and staff organise game jams and other game-related events at the university, most of them with support and attendance from game companies.

For four years, students participated in 3-month paid intern/traineeships in game companies across Poland, courtesy of two grants from National Center for R&D. Only for volunteers, about 50% of 2nd and 3rd year gamedecs used this opportunity.

Some students take part in Erasmus job internships or student exchange abroad (Norway, Czechia, Slovenia)

In general, we are very satisfied with the results of academia-industry collaboration, with a high rate of pre-graduation employability and good relations we have forged with the business environment.

One thing that clearly went wrong was remote internships we introduced in the first NCBiR grant. Neither the students nor their supervisors in the companies were prepared for an efficient management of long-distance training. As a result, nearly all of the remote internships fell far below expectations, and we did not try this again in the second grant.



Photo by UKW

//Constraints & Needs

The main constraints have always been financial: no budget for the Humanities 2.0 unit and insufficient number of full-time staff, as mentioned above. The solution was the involvement of UKW staff employed at English Studies, who taught at Gamedec.UKW (as paid overtime) and took care of the organisational work (unpaid volunteering).

Another finance-related constraint is a relatively small and underequipped computer lab, which is enough to teach Unity but lacks high-performance machines that could handle more ambitious projects. Students who want to develop their skills working on assignments that require better hardware may do that during internships / traineeships with game dev companies.

One legal obstacle the Gamedec.UKW curriculum has been struggling with is the internal UKW requirement demanding that 50% of teaching hours in all curricula are delivered as lectures (the intention being to cut the costs). As a solution, lectures were concentrated in the general-education block, especially in Semester 1, in order to allocate as many practical labs and seminars as possible to the specialisation path in Semesters 2 – 6.

Another UKW-specific constraint is the lack of a game-interested person among the authorities on any level, from department to institute to central administration. Game Studies & Design is placed together with journalism, media and social communications, and it is non-game persons who are in charge.

“In game dev most of the educational work is taught by enthusiasts”

—Maciej Miąsik, Pixel Crow; Game Dev School, consultant of Gamedec.UKW programme

A major Poland-specific constraint came with the recent (2018–19) reform of science and higher education, which made any effort and expenditure on education worthless in terms of university ranking and funding. The only thing that matters in the evaluation of a university's performance is its research outputs. Previously, the budget of a state university was divided in many autonomous pools, and money assigned to education could not be transferred to research. Now the university can freely manage its budget, which means it has become more difficult to obtain funding for edu-innovations, as it is only research that pays off.

Humanities 2.0, including its Gamedec specialisation, was envisioned as an educational project, without a corresponding research component. No research-oriented job was created specifically for Gamedec. This is likely to change in 2020, with the founding of the Department of Game Studies and Media Prosumption in October 2019.

//SWOT Analysis

Strengths

- » large network of partners in the game industry
- » good reputation as a practical and employability-oriented degree
- » strong game design programme for digital and non-digital platforms
- » high employability rate

Weaknesses

- » no budget beyond grant funding
- » very few full-time staff
- » small and underequipped computer lab
- » relatively low % of modules focused on digital games
- » no representation of game-involved staff at any level in UKW governing bodies

Opportunities

- » (from 2019) dual work-study degree which is likely to enhance employability and expand the network of industry partnerships
- » strong record of grant funding which supports further grant applications
- » GAMEHIGHED project expanding international collaboration

Threats

- » systemic reform of Polish science and higher-ed that heavily undervalues edu-quality and edu-innovations
- » cost-cutting policy (termed optimisation) in education at UKW
- » no willingness on the part of UKW authorities to invest in game-related education

//Comments for the Partners

Comments to C3 in Prague

author: Paweł Schreiber

One of the most impressive ideas concerning the game development curriculum at Charles University is the formation of Charles Games and its possible involvement in promoting student projects. It's worth looking at how the relationship between the University and the company will develop in the future. It's good to see that the University wants to allow CG a degree of independence – could be a bit more difficult in the Polish academic reality. Even beyond/before Charles Games – the fact that a group of academics decided to make their own video game and went through with it gives them a degree of trustworthiness and authority much higher than in the case of game researchers who focus more on theory, and less on practice.

Another interesting aspect of the courses is the emphasis on practical projects – with 10 projects and 5 tech demos developed per year. The University also extensively collaborates with game industry experts, not only as lecturers, but also as mentors for student projects – that is an interesting option, not as time-consuming for the expert, and at the same time giving the students a lot of interesting feedback, developing the links between the industry and the academia, and making it easier for students to approach the industry later on.

The flexible arrangement of MA studies, allowing to lengthen the course of study if the student's work requires it and choose the sequence in which they have their courses, is also an idea worth imitating – students having jobs in the industry also constitute a

problem for UKW, and the University does not seem to have very efficient ways of dealing with it, allowing the students both to work and maintain focus on their studies.

While presenting the program, Jakub Gemrot mentioned that international students sometimes have problems with accommodating to the intense course of study at CU. What could be done to deal with this problem?

We heard an inspiring presentation on the National Register of Qualification, describing an official skillset for the job of a game developer as accepted by the state. This kind of work is definitely an important space for the collaboration between the academia and the gaming industry.

Comments to C2 study visit in Istanbul

Author: Michał Mochocki

One thing worth mentioning is the presence of several game studios in the BAU office space: companies that work on the campus and hire BAU students but are not necessarily owned by students. Sharing the university floor space with independent businesses seems to be a good model for academia-industry integration.

BAU itself is well-equipped with technology. Among other things, it has VR hardware obtained from the VR First programme, and a professional recording studio for e-sport broadcasts.

Unlike the Bologna 3+2 system in the EU, the Bachelor degree at BAU take 4 years. A 4-year programme makes it possible to combine 2 years of 'foundation' and 2 years of selected modules, with a junior game project in the 7th semester and senior game project in the 8th. A 2-year Master programme includes only 8 technical courses (two semesters) followed by two semesters focused on the Master thesis (a written thesis is required by national regulations). The Master degree does not require a game-related BA; students come from a variety of backgrounds, e.g. artists or educators.

BAU has integrated game jams with the curriculum: participation in game jams is a part of mandatory training, with game prototypes created at jams are further developed as a graded project. This model looks very promising.

Another example of successful integration of two usually separate fields is the intertwined educational process of Master BUG students and junior students. While juniors are carrying out gameplay assignments in BUG lab, Master students are studying the juniors' gameplay as a part of a research project, which eventually produces a publication. The synergy between undergrad training + grad research practice + publishing is remarkable.

The same may be said about gamification hackatons, which are similar to game jams but not entirely so. Stakeholders and community institutions bring their real problems to which the hackaton is devel-

“Sometimes students get too familiar with you, but if there is any possibility to get to know them and their passions, their initiatives, the things that they do, a little bit outside of the course of study, this is a great treasure”

—Marta Tymińska, game scholar and Gamedec.UKW teacher

oping gamified solutions. This connects university teaching and game jam-like collaborative design sessions with partners and institutions in the local environment.

Gamification hackatons are not limited to digital solutions: game/gamification design workshops are frequently going beyond digital games. Other non-digital components of game education in Turkey are tabletop RPG used to teach the basics of storytelling for interactive story design, and board games used to introduce game concepts and mechanics as well as to practice the game development process. This practice supports our initial assumption that board games and non-digital RPG are efficient tools at the introductory stage before going digital.

BAU does impressive work for school education, with the Dept. Of Education teaching Computer Education and Instructional Technology that trains educators to teach IT, including programming (with government support, all schools in Turkey teach programming). They also built a game design curriculum for children, teaching kids how to design games since kindergarten, starting with physical (sport-like) games. BAU staff publish articles in journals for kids, e.g. *Maker*. The design curriculum goes from physical games to board games to digital games (with *Kodu*, *Minecraft*, *Minecraft EDU*).

When it comes to teaching programming at university level, according to Berk Yalcin (BAU graduate, software engineer + Master in game design), a non-IT degree cannot train good programming

skills solely in the classroom. If the student group has mixed programming experience (good to poor to none), classroom work is not enough to turn them to decent programmers—it is only possible when they also study at home.

In addition to standard forms of academia-industry collaboration, BAU has Joint Educational Programs (OEM): good intention protocol signed with gamedev companies. Interested students are sent to work in the industry as interns, for which they are graded by the company representative. BAU also offers Branded Courses: bespoke modules created according to the requests of a partner company to educate students in a specific area which is deemed essential for the upcoming internship / employment.

Meetings with game dev studios and game industry associations gave us an insight into the local Turkish problems, which include:

- » Low scale of inter-industry education and knowledge transfer: the most experienced devs move abroad, so they do not pass their knowledge to younger colleagues
- » difficulty with convincing the government that video games belong to media entertainment / culture / creative industry, because the authorities prefer to define video games as IT, not culture
- » and eventual success in “selling” games officially as culture opens another problem: soft censorship with regard to potentially offensive (politically) content

We also learned that the mobile game industry in Turkey is moving full-speed into the hypercasual genre, with to most (thought not all) developers we talked to means easy money. Small game studios tend to go into hypercasual as a short-term solution in order to make money for larger productions planned for the future.

A major take-away from our visit to Rollic Game Hub is the discovery of hypercasual game development as a valuable addition to a game curriculum. It promises efficient training in fast digital prototyping, as the pre-production does not use game design docs, only prototypes that quickly demonstrate the feel of the game. Hypercasuals do not have complex game mechanics (frequently, it's a single game mechanics) or complicated narratives, and it is possible to create a new game prototype each week (with the full development-release cycle of a hit HC game estimated at 2 months). With simple mechanics and story, HC prototyping focuses on fine-tuning the game feel and

the integration of game mechanics with other elements (sound, visuals), with the effect of any new change (e.g. colour) easily discernible.

Finding qualified staff to teach hypercasual development may be a challenge to university administrators, as the genre developed only 2–3 years ago, so published know-how is very scarce, and experienced instructors extremely rare. According to the Rollic Game Hub, the best professional knowledge resides not even with HC developers (who only know their own experiences) but with producers (who have worked with many studios on many productions).

Comments to C1 visit to Jyväskylä

Author: Aleksandra Mochocka

There are three main things worth mentioning in the context of the game design courses at the University of Jyväskylä, namely: 1. the collaboration between the departments; 2. the simulation-like approach to teaching and strong focus on both career orientation and students' autonomy; and 3. the efforts undertaken (by the university itself, as well as other institutions collaborating with the university) to create a welcoming environment that could support local game culture.

The collaboration between different departments manifests in the fact that the game design courses are organised by the Department of Music, Art and Culture Studies (MACS), which belongs to the Faculty of Humanities and Social Sciences, as well as by the Faculty of Information Technology (IT), with the history of individual courses open to the students from the “partner” division, or to all the University of Jyväskylä students (an example being the Magic of Game course started in 2010, available to everyone, regardless of their department). The programme called Game Development and Game Research is also run by the Faculties of Humanities and Information Technology, successfully combining the knowledge and skills taken from the two seemingly disparate fields. This approach, however, is not without its faults as, for example, the problem of mixed abilities student groups can appear.

The simulation-like approach means that at the University of Jyväskylä game design courses are as much close to the actual game industry project management models as possible (though still in the framework of a controlled classroom environment). They are

targeted at the people who want to be game industry professionals, but also at those who would like to gain more theoretical, synthetic knowledge of the above said business. Numerous teaching methods are used to emulate the working conditions of a game design studio, for example, in the HTKA114 Game project course the teams of 5 to 6 students representing various disciplines work on projects that have to be completed with a concrete demo or product for their portfolio, to be presented in public by the end of the academic year. What is more, to enrol into the Game Project course, the candidates have to fill in an online questionnaire that emulates the ones to be found in the industry, and the teams have to follow the project management procedures, including keeping the records, or appointing specific positions to the team members. Whereas the situation is artificially created and controlled by the teachers, it is a close approximation of the professional, “real-life” environment. At the same time students are allowed a considerable amount of creative freedom, as well as encouraged to co-create and share the results of their work with others – the example of the latter would be the Game History course, where a timeline of the history of digital games is continuously expanded online by the students, for the other students to use as teaching materials. The courses are also gamified or ludified wherever it is possible, examples being the Magic of the Game course with its gamified student-teacher interface, or the musical ball designed and constructed by the students at the mocap laboratory, which not only facilitates the learning process, but also enhances the experience of studying game design in the community of dedicated enthusiasts.

The efforts to promote game culture outside of the university are also worth noticing. First of all, the Centre of Excellence in Game Culture Studies, a collaborative project developed with two other Finnish universities, operates at the University of Jyväskylä, influencing and coordinating game research conducted there. (A part of its activities includes the curating of a small game history museum, to be open in the future.) When it comes to the creation of a local ecosystem that would support and consolidate game culture and promote cre-

“When I meet my students at game events, from all around the world, it gives a lot of pleasure when you can see the progress after three or four years that they actually managed to get a job with a company they wanted to”

—Filip Kucharski, Divine Blacksmiths, teaching digital game design at Gamedec.UKW

ativity and business initiatives in the field, two interesting initiatives should be highlighted, namely the Jyväskylä Game Lab courses for school students (free of charge, well established summer programming skills camps funded by sponsors) on the secondary education level, and the Digi and Games Center, a low-cost office space to be open soon, operated by Expa (Jyväskylä Game Industry Hub, an official local hub for IGDA Finland) on the level of the community of game developers situated in the region. Another activity of that kind is the university involvement in the study and promotion of e-sports, manifested also in its collaboration with the Hippos2020, Jyväskylä sports and wellbeing centre project.

//Intro

UKW entered the GAMEHIGHED project at a turning point, with not one but two coinciding milestones in the development of Game Studies & Design. First of all, the transformation of a regular 'practical' degree into the dual work-study format has been so far the largest modification of the curriculum and a major change in the relations between classroom and workplace education. Secondly, the creation of the Department of Game Studies and Media Production is likely to open an official game research plan alongside the games education. Such a moment of rapid changes creates opportunities for implementing innovations.

One thing we are considering is an integration of game jams with formal classroom training, following the model already practiced at BAU. We are looking forward to GAMEHIGHED Intellectual Outputs O7 and O9 that will provide more materials for game jam education. Another idea stemming from the visit to BAU and their industry partners is the introduction of a module focused on hypercasual game design as a training in fast prototyping and teamwork.

We are impressed by the creation of Charles Games as a company founded by Charles University, which seems to be an excellent opportunity to help students release their best projects, as well as encourage joint student-staff projects. Sadly, we do not see a chance to copy this solution at UKW in any near future. We may, however, learn to follow CUNI example of intra-university collaboration across several departments.

We were excited to discover the Czech initiative to develop structured formal examination standards for a variety of occupational

roles in gamedev. Driven by the game industry and by vocational edu-administration, it provides a structure that may be very helpful in the creation of learning outcomes relevant for Intellectual Outputs O2 to O6.

JYU provides inspiration for an efficient integration of research and education, which we may follow not only in the Bachelor degree in Game Studies & Design but also on a Master level in the Dept. of Anglophone Literatures. This will be facilitated by Intellectual Outputs O4 and O5 that include a Master curriculum and dedicated edu-materials, which we hope to launch at JYU and UKW in 2021/2022.

Generally, participation in the four study visits has exposed our staff to a variety of edu-programmes, teaching strategies, forms of cooperation with the industry, and multiple perspectives on the above coming from the industry and academia. We have forged new contacts and prospects for collaboration. This will have a significant impact on the professional development of the involved staff. Indirectly - it will also have impact on the learners and institutions that will benefit from innovations (programmes, courses, methods) and international contacts brought by the GAMEHIGHED participants.

//Afterword

GAMEHIGHED Initial Report (O1) completes the second stage of the project, coming after reciprocal study visits in October – December 2019. On-site visits with face-to-face meetings with local stakeholders brought a significant added value to the ‘regular stuff’, i.e. desk research and mediated communication. All these sources inform this report, covering:

- » game design / development higher-ed in project countries
- » game industry and communities in project countries and their global dimension
- » history of games-ed at the four partner universities, including their current edu-programmes
- » strengths, weaknesses, and plans for future development

The primary function of the analyses and insights filling these 240 pages is to guide our further work. To put it simply, outputs O2 to O10 will address the needs and exploit the opportunities identified in O1. Nonetheless, we are not hiding this documentation as an internal report. Game dev education is clearly on the rise - not only in the EU – so we are expecting a wider readership. Other GAMEHIGHED publications, planned for 2020-2022, include:

- » O2 – model BA curriculum for Game Design & Development
- » O3 – OERs [Open Educational Resources] supporting O2 (syllabi, lesson plans, etc.)
- » O4 – model MA curriculum for Game Research & Development
- » O5 – OERs supporting O4
- » O6 – GAMEHIGHED Curriculum Framework: game-focused curriculum design tool

- » O8 – Game Jam Handbook: handbook on the organisation of game jams as educational tools
- » O9 – Game Jam Workshop: framework and materials for pre-game jam workshops
- » O10 – GAMEHIGHED Companion: set of final conclusions, guidelines and recommendations

Releasing O1 in February / March 2020, we are simultaneously working on O2 and O8, soon to start O3. This is an early stage of the project, with most of the materials yet to be created. We are looking forward to playtests and implementations in the next academic year (2020/21). Prepping for that, we are strengthening inter-consortium cooperation via formal Erasmus agreements and informal staff contacts. Moreover, we are reaching out to stakeholders, especially edu-institutions interested in GAMEHIGHED resources.

All GAMEHIGHED outputs will be shared online free-of-charge, but first we will send them for test runs to collect feedback. For this purpose we'd love to network with like-minded educators and industry professionals. We appreciate contributions from individuals, because experience tells us edu-innovations often come from the teacher's personal involvement. We are also open to new partnerships with institutions: they may officially join the project as Associated Partners. Check the "Get Involved!" page on www.gamehighed.edu.pl.

Thank you for taking interest in the project. We are just getting started, so stay tuned, come back for more.

Dr. Michał Mochocki

GAMEHIGHED

Lead Coordinator

