IGDA Curriculum Framework

The Study of Games and Game Development

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Welcome

The Education Committee of the International Game Development Association came into being three years ago, an unprecedented cooperative effort between the game industry and academia. At that time, only a few pioneering educators viewed games as a sophisticated medium of expression – a cultural and economic force that deserved study and attracted increasing numbers of students. Similarly, only a handful of game developers saw the value in forging relationships with academia, jumpstarting valuable research programs, creating a common language, and building a shared knowledge base for discussing games.

These two communities were highly motivated to work together, but how could they establish contact? Some developers and publishers succeeded in reaching out to universities, and select academic programs and schools found ways to work with industry partners. At the same time, individual developers and academics found themselves participating in conferences, teaching, consulting, and working on degree programs. But there were no roadmaps and progress was slow.

In 2000, the Education Committee was created to improve collaboration and communication between industry and academia. Reinforcing the goals of the IGDA charter, the Committee began building bridges between game developers and academics from a variety of fields.

Our initial goal was to create a template for creating lectures, courses and degree programs in game-related fields. Based on feedback from a roundtable at the 2001 Game Developers Conference, our emphasis shifted. The result of this new approach is a "curriculum framework," designed to delineate all of the topics related to games in an educational context – with the details of implementation left to individual readers.

The document you're about to read is the result of the Committee's efforts, anchored by Committee co-chairs and game developers Doug Church and Warren Spector, Northwestern University PhD candidate Robin Hunicke, game designer and academic Eric Zimmerman and the IGDA's tireless Program Director Jason Della Rocca. In addition, this draft was revised (and improved) many times thanks to insightful comments from the Education Committee at large, dozens of friends and colleagues, the 200+ attendees at least year's Academic Summit and a similar standing room only crowd at SIGGRAPH 2002.

This document is also very much a work in progress. There is still plenty of work to do. We've received enough feedback on this draft of the Framework to see that further revisions will emerge. We look forward to your continued guidance and feedback. With your help, we can attract and serve an ever wider audience.

We thank you for your participation to date and look forward to crossing bridges with you in the future.

Doug Church
Jason Della Rocca
Robin Hunicke
Warren Spector
Eric Zimmerman
…and the members of the IGDA Education Committee

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Introduction

Electronic gaming, a curiosity twenty years ago, is now one of the most popular forms of entertainment and a pervasive component of global culture. The ubiquity and growth of games requires that we understand them not just as commercial products, but that we appreciate them from many points of view. Games are aesthetic objects, learning contexts, technical constructs and cultural phenomena—among many other things.

For gaming and the study of gaming to reach their full potential, industry and academia must cultivate a deeper understanding of the ideas that drive electronic gaming, the experiences games can offer and the implications of those ideas and experiences on the social and cultural significance of this young medium. This kind of progress will only come about when academia and industry work together.

This cooperation has already begun. Developers, spurred by increasing risk and skyrocketing development costs, turn with greater frequency to academics for conceptual and technical inspiration. Similarly, as academics begin to recognize the cultural importance of games, they are enriching their research and studies through dialogue with developers. As universities begin to create programs for game study and research, many institutions are including voices from the industry to help shape their curricula.

The primary goal of the IGDA's Education Committee is to help foster interaction between developers and educators, to speed and help direct the evolution of games. Interaction between industry and the academy has countless benefits – facilitating the transition of new technologies from the lab into real products, enriching education by bringing industry experience into the classroom, engendering more critical approaches among game creators, enhancing understanding of contemporary media culture and overall, fostering a deeper exchange between academics and game developers.

About the Framework

The curriculum framework we present in this document is a conceptual guide for game-related educational programs.

Though the field of game studies is young, the number and variety of game-related educational institutions is already vast. No single curriculum can apply to them all. This document therefore presents a modular curriculum *framework,* not a single detailed curriculum. We have described knowledge areas and practical skills required to make and study games, in a format that can be adapted to the resources and curriculum offerings of a range of institutions.

We have not suggested specific courses, appropriate credit hours or specific degree program requirements. Nor is this framework an attempt to tell developers what areas of knowledge should be important to them. Instead, this framework proposes a set of *Core Topics*—a list of general areas relevant to the construction of a game-related curriculum. We intend for you to mix and match the Core Topics according to your needs, to include and exclude as you see fit. Rather than a menu of *necessary* ingredients, this document lists *possible* ways to grow or focus your program.

As a practical document, the framework is designed to assist educators and students on a variety of levels—from the creation of individual courses to the development of full degree programs, within a single department or across several. It is also a guide for students creating individualized courses of study at institutions without game-related majors.

In such a complex set of fields, there is no "silver bullet" approach. It is our hope that individual teachers, administrators and students can adapt appropriate aspects of this framework to their particular educational needs and institutional contexts. Please refer to Appendix A for some example "usage" cases of the Framework.

Overview of Core Topics

Games are interdisciplinary on many levels. To create games requires collaboration among diverse existing fields, from audio and visual design to programming and project management. At the same time, digital gaming has given rise to new kinds of hybrid disciplines, such as game design and interactive storytelling. And considered as cultural media, a full critical understanding of games requires that we appreciate them in all of their social, psychological, historical and aesthetic complexity.

For this reason, we strongly advocate a *cross-disciplinary* approach to game-related education. For us this means an educational approach that respects what established fields bring to games but that also pays attention to new realms of study that games make possible.

The set of Core Topics we propose below reflects this approach. Some of the Core Topics are derived directly from existing disciplines like Computer Science. Others combine disciplines or synthesize new ones. We acknowledge that there are other ways to organize these overlapping fields of knowledge. However, we feel that the set of Core Topics listed below intuitively addresses the unique practical and theoretical concerns of gaming. As a whole, the Core Topics provide a birds-eye view of the immense landscape of games-related education. These Core Topics are:

- Critical Game Studies
- Games and Society

- Game Design
- Game Programming
- Visual Design
- Audio Design
- Interactive Storytelling

- Game Production
- Business of Gaming

Below is a general description of each of these topics.

Critical Game Studies

Criticism, Analysis & History of electronic and non-electronic games.

This interdisciplinary Core Topic combines approaches from history, literature, media studies and design. A key goal of Critical Game Studies is to develop and refine a critical vocabulary for articulating the aesthetics of games. This includes both the distinctive features unique to games as well as those they share with other forms of media and culture. Game Studies, for example, offers insight into the textual analysis of game play, while established work on other media, such as literature, film, television, theater and interactive arts can provide rich critical frameworks. Also included here are the history of computers and

electronic games and toys; the construction and critique of a canon of significant and influential games; and game criticism and journalism.

Games and Society

Understanding how games reflect and construct individuals and groups.

In this Core Topic, Sociology, Anthropology Cultural Studies and Psychology offer important insights into worldwide gaming culture. Games and Society includes scholarly work on online economies and community building, fan cultures and their creative reworkings of game content, the role of play in human culture and the relationship between online and offline identity. Also found here are issues of representation, ideology and rhetoric as they relate to gaming. Finally, this Core Topic covers the psychological facets of games including studies of media effects and the ongoing debate about the psychological impact of games on individuals and groups.

Game Design

Principles and methodologies behind the rules and play of games.

This Core Topic addresses the fundamental ideas behind the design of electronic and non-electronic games. It touches on relevant formal fields like systems theory, cybernetics and game theory. Game Design also includes basic interactive design, including interface design, information design and human-computer interaction. Perhaps most important for Game Design is a detailed study of how games function to create experiences, including rule design, play mechanics, game balancing, social game interaction and the integration of visual, audio, tactile and textual elements into the total game experience. More practical aspects of Game Design, such as game design documentation and playtesting are also covered. This is the Core Topic most intrinsic to games themselves and is therefore in some ways the heart of the curriculum framework we outline here. On the other hand, because it is the least understood, trained instructors and quality reference materials are sorely lacking, making it among the most challenging Core Topics to teach.

Game Programming

Aspects of traditional Computer Science – modified to address the technical aspects of gaming.

This Core Topic includes mathematics, programming techniques, algorithm design, game-specific programming and the technical aspects of game testing. Much of the material in this area could be taught under the auspices of a traditional Computer Science curriculum. However, games do present a very specific set of programming challenges, such as optimization of real-time 3D rendering, that are addressed here.

Visual Design

Designing, creating and analyzing the visual components of games.

This topic includes visual design fundamentals, both on and off the computer, across a broad range of media. Content areas include history, analysis and production in traditional art media such as painting, drawing and sculpture; communication fields like illustration, typography and graphic design; other design disciplines such as architecture and industrial design; and time-based media like animation and filmmaking. Special emphasis is placed on how visual aesthetics play a role in game experience. Use of 2D and 3D graphics programs can be an important part of a Visual Design curriculum. However, our emphasis is on fundamental visual design principles rather than on specific software packages.

Audio Design

Designing and creating sound and sound environments.

This core topic includes a range of theoretical and practical audio-related areas, such as music theory and history; music composition; aesthetic analysis of music; recording studio skills; and electronic sound generation. Audio relating specifically to digital game technologies, such as 3D sound processing and generative audio structures are also included. Throughout, special emphasis is placed on the role of audio experience within the larger context of a game. As with Visual Design, the emphasis is on design fundamentals rather than on specific technical knowledge.

Interactive Storytelling

Traditional storytelling and the challenges of interactive narrative.

Writers and designers of interactive works need a solid understanding of traditional narrative theory, character development, plot, dialogue, backstory and world creation, as well as experimental approaches to storytelling in literature, theatre and film with relevance to games. In addition, interactive storytelling requires familiarity with new tools and techniques, including the technical aspects of writing for this new medium, algorithmic storytelling and collaborative story construction. In this Core Topic, these approaches are applied to the unique context of interactive storytelling in games.

Game Production

Practical challenges of managing the development of games.

Games are among of the most complex forms of software to create and game development and publishing are complex collaborative efforts. Along with all the technical challenges of software development, issues of design documentation, content creation, team roles, group dynamics, risk assessment, people management and process management are addressed in this Core Topic. While there is growing literature

on Game Production, there are also rich traditions in software engineering and project management from which to draw for this Core Topic.

Business of Gaming

Economic, legal and policy aspects of games.

The economics of the game industry – the ways that games are funded, marketed and sold and the relationships between publishers, developers, distributors, marketers, retailers and other kinds of companies are addressed here. Market and industry trends, licensing management, dynamics of company and product value and business differences between major game platforms are all important aspects of the Business of Gaming. In addition, legal issues that affect games, developers and players, such as intellectual property and contract law, are part of this Core Topic. Lastly, social and governmental forces that impact the legislation and regulation of game content are included here.

Core Topics Breakdown

Note: *The following breakdown section is a continual work-in-progress. Due to the many ongoing revisions, there may be inconsistencies in language or level of specificity. Further, the Committee continues to receive significant feedback, which will be incorporated into future revisions of the Framework.*

In this section, we present the complete, expanded list of Core Topics. As we said earlier, we do *not* expect any institution to adopt the entire Curriculum Framework. By selecting appropriate elements from this list, educators can craft lectures, courses and/or programs that meet their needs and the needs of a wide variety of students and game developers. Students can acquire the knowledge and skills necessary to accomplish their goals, whether academic or vocational.

The order in which the material is presented in each Core Topic below reflects a rough sequencing of study, beginning with basic knowledge and proceeding to more advanced topics in a particular study area. These more advanced topics form the heart of the Framework within a Core Topic. Last in the list are topics that delve deeper into the material of a study area but which may not be necessary for all students or for all career paths.

Critical Game Studies
Criticism, Analysis & History of electronic and non-electronic games.

> Game Criticism

Game studies/"Ludology"
- Critical theory and research
- Critical vocabulary for discussing games and play, including the evaluation of game mechanics and game play, flow and game design
- Establishing and critiquing the canon of influential and/or important games

Experience-centered criticism
- Study of interactivity
- Function and uses of exploration
- Encouraging and supporting player "agency"
- Creating and sustaining player immersion
- Supporting the suspension of disbelief

Consumer-oriented criticism
- Analyzing and understanding the function and current state of the gaming press
- The function and current state of game reviews
- Tools, techniques and standards of print and media journalism

Genre analysis
- What genres exist?
- How are game genres defined?
- History of game genres (genres that have come and gone)
- Are genres useful? How does the application of genre analysis differ when applied to games as opposed to other media?

Auteur studies
- Given the collaborative nature of game development, who actually creates a game?
- Does the concept of authorship apply to individual games?
- Does the concept of authorship apply to an individual's body of work as a whole?

> Media Studies

History
- Non-electronic games
- Computers
- Electronic games
- Preservation of Digital Technologies

History, theory and criticism of mainstream/commercial and experimental media
- Literature
- Radio
- Movies
- Television
- Art
- Theatre
- Comic Books
- Architecture

Research
- Introduction to mass media/pop culture research
- General media effects research
- Game-specific research

Games and Society
Understanding how games reflect and construct individuals and groups.

> Players and Effects

Gaming demographics
- Gender and diversity
- Childhood, education and child development

- Understanding the choices and patterns of buyers and players

The "Cultures" of Gaming
- Pop Culture: Games as icons and cultural artifacts
- Fan Culture: Game communities and the people who inhabit them
  - Why communities form
  - How to encourage the creation of fan communities and how to sustain them
  - Fan communities from related media
- Mass Culture: Cultural dialogue about games
  - Games in other media (film, television, books, etc)
  - Games in the larger perspective of computer acclimation into culture

> Experience of Play

Historical aspects of the experience of play
- History of play
- Cross-cultural anthropology of play
- Commonalities and differences of games across national boundaries

Social aspects
- How games create "safe spaces" for play
- How they are used in social settings
- How they support and break traditional social roles

Emotional aspects
- How emotional responses are triggered and manipulated by games

Cognitive aspects
- Theories of intelligence
- Applicability of developmental models

Psychological aspects
- How games rely upon and affect our understanding of ourselves and others

Human/machine interaction
Uses of games in medical, training, therapeutic and other non-entertainment applications

Game Design
Principles and methodologies behind the rules and play of games.

> Conceptual Game Design

Play Mechanics
- What are game "rules"?
  - How should they be structured?

-      o How do you create the right balance of obstacles/aids, penalties/rewards?
- When are games too hard, too easy? Why?
- What sorts of play mechanics work best for what sorts of people?

Boardgame and Roleplaying design
- Thinking about design algorithmically

Ideas
- Generating new ideas
- Turning ideas into game concepts
- Evaluating game concepts

Game theory
- The study of strategic decision-making in competitive and cooperative situations

Abstract design elements
- Positive and Negative feedback systems
  - o Game balancing tools
  - o Player rewards and punishments
- Emergent complexity
  - o Interactions among systems that lead to unique player experience
- Simulation & Emulation
  - o Using systems that allow flexible response versus specific behaviors for preconceived situations

Psychological design considerations
- Operant conditioning
- Addiction in gaming
- Rewards and penalties
- Creating diverse social systems
- Bringing players back to the game

Interface design
- Computer UI theory
- Balancing player control schemes -- simplicity versus expressiveness.
- The impact of specific hardware constraints – controllers, keyboards, headsets, etc.

> Practical Game Design

Spatial design
- Gameplay spaces
  - o Representational spaces
  - o Abstract spaces
  - o Space and pacing
  - o Space and narrative

- Creating densely interactive, highly responsive worlds

Task design
- Action and interaction
  - World/geometry interaction
  - Character interaction
  - Puzzles
- Providing adequate feedback to players

Design integration
- Melding space and task
- Integrating art and gameplay

Control schemes
- Movement
- Items and item manipulation
- Inventories

Training
- Supporting learning with consistent challenges and appropriate feedback.
- Communicating with the player regarding challenges, actions and abilities within the game world

Game tuning
- Understanding games as dynamic systems
- What makes a balanced game
- Working with Quality Assurance and understanding play-test feedback
- Applying game tuning strategies in light of feedback from actual play

Play testing & player analysis
- Understanding who your audience is
- Selecting test subjects
- Designing for diverse populations
- What criteria to use to measure success with a given audience
- Play test procedures

Design implications of platform choice

Game Programming
Aspects of traditional Computer Science – modified to address the technical aspects of gaming.

Math and Science techniques
- Basic Newtonian physics
- Computational mechanics
- Linear algebra

- Differential equations

Style & design principles

Information design
- Data structures
- Environmental models, spatial data structures

Prototyping
- Tools and skills for fast, iterative development
- Building flexible systems, configurable by others

Testing
- Code review and test harnesses
- Designing tests and incorporating feedback from Quality Assurance
- Bug fixing, bug databases, creating stable code bases

Programming teams – structure and working relationships

Design/Technology synthesis
- Supporting player goals and actions
- Building intelligent, coherent, reactive game environments
- Platform issues

System architecture for real time game environments and simulations

Data-driven systems
- Building flexible systems for non-programmers to use

Game logic

Multimedia programming
- Graphics
  - Rendering
  - Animation
  - Graphics System Design
- Sound

Artificial intelligence
- Path planning
- Agent architectures
- Decision-making systems

Networks
- Networking and Server design

- Performance metrics
- Topologies
- Protocols
- Security

Tools for designers and play analysis
- 3D GUI creation
- Play testing to monitor player frustration, progress and enjoyment

Visual Design
Designing, creating and analyzing the visual components of games.

Basic Visual Design
- Art history & theory
- Fundamentals of drawing
- Painting techniques
- Sculpting
- Anatomy and life drawing
- Physiology and kinesiology
- Visual design fundamentals
  - Composition
  - Lighting and color
  - Graphic design

Visual design in an interactive context

Motion Graphics
- Animation
- Cinematography
- Camera angles and framing
- Visual narrative
- Non-narrative graphics/Abstraction as expressive tool

Fundamental principles of architecture

Introduction to visual asset generation
- 2d graphics
- 3d modeling

Architecture
- History of architecture
- Real-world spaces vs. game spaces

Advanced Visual Asset generation
- Textures
- Interface design
- Character design
    - Conceptual design
    - Character modeling
    - Character animation

Working with 3d Hardware
- Procedural shading
- Lighting
- Effects

Game Art (digital based art with game content)

Visualizing Information

Audio Design
Designing and creating sound and sound environments.

Audio history & theory

Basic technical skills

Basic studio skills
- Familiarity with hardware and software (e.g., microphones, mixers, outboard gear)
- Recording, mixing and mastering.
- Studio organization

Audio Design Fundamentals
- Setting mood, managing tension and resolution
- Processing, mixing and controlling sound for aesthetic effect
- General workflow for game creation
- Audio engine terminology and functionality

Introduction to Interactive Audio
- Designing sound for interactivity
- Sound effects
- Music
- Voice recording

Sound Effects
- Simulation of sound environments
- Ambience versus musicality in soundtracks

Music
- Composition
- Interactive scoring

3d Audio
- Fundamentals of 3D and multi-channel sound.
- Modeling for effects, echo, room size simulation

Interactive Storytelling
Traditional storytelling and the challenges of interactive narrative.

Story in Non-Interactive Media
- Literary Theory & Narratology
    - Aristotle
    - Traditional narrative "act" structure
    - Thinking abstractly and concretely about "story"
- Characterization in fiction, film and theatre
- Introduction to film and literary theory
- Theories of game and narrative
- Context-setting versus traditional storytelling
- Back-story and fictional setting design
- Creating compelling characters

Approaches to interactive narrative
- Alternating fixed story with interactive game
- Branching trees
    - Branching narrative
    - Branching conversation
- Emergent narrative approaches
- Object-oriented approaches
- Hypertext
- Interactive fiction

Writing for other media
- Fiction-writing
- Screenwriting
- Playwriting

Game Production
Practical challenges of managing the development of games.

People management and collaborative development

Team make-up
- Job descriptions
- Recruiting
- Balancing talent, experience, budget

The phases of game development
- Pre-production
- Production
- Testing

Work flow
- Knowing which tools to use and when
- Problem evaluation and investing appropriate resources

Group dynamics
- Team building
- Establishing clear roles and clear goals
- Realities of development teams
- Building effective teams
  - Working as a team to realize a unified gameplay vision
  - Delegation and responsibility

Design documentation
- Why document?
- What should you document?
- How much documentation is enough/too much?
- To storyboard or not to storyboard?

Scheduling
- Creating a schedule
- Goals of a schedule
- Balancing quality and reality
- Working with a schedule, using it to help you ship

Communication skills
- Rhetoric
- Communicating with peers, supervisors and subordinates
  - Communicating clearly in print and in speech
  - Collaboration skills - speaking the same language

Coordinating the efforts of development, quality assurance, sales, marketing, public relations and finance

Localization issues, processes and skills

Product post-mortems
- Evaluating decisions, after the fact
  - Design decisions
  - Process decisions
  - Business decisions

Business of Gaming
Economic, legal and policy aspects of games.

Basics of game industry economics
- Marketing and sales: How games currently reach an audience
- Retailers, shelf-space: How audiences currently reach the games
- Platform choices – the tradeoffs of developing for consoles, PCs and handheld devices
- Internationalization/globalization of development.

Audience
- Understanding audiences for different game genres
- How to reach and keep given audiences
- Consumer behavior and psychology (what do consumers of various sorts and various populations want?)

Publisher/Developer Relationships
- The deal
  - What it covers
  - How it gets done
  - What it is likely to say
- Day-to-day: Once signed up, what interactions and processes occur

Intellectual property
- Technology
- Content
- Licenses
  - Acquisition of licenses
  - Use of licenses
  - Working with licensors

Patents and the game industry

Contracts
- Publisher/developer
- Employer/employee
- Contractors

Content Regulation
- Industry Ratings
  - US
  - Overseas
- Government regulation
  - US
  - Overseas

Tying Core Topics to Career Options

Previous readers of the Framework will recall the career path section, tying the Core Topics to various career options. The career options are currently under revision and were not ready in time for release in this version of the Framework. In part, this is due to some structural changes that occurred to the Core Topics over the past several iterations.

Readers who would like to view the career path options can download the previous released version of the Curriculum Framework from the IGDA web site:

www.igda.org/academia/curriculum_framework.php

Appendix A: Usage Case Studies

Deborah Solomon - Professor, Computer Applications Department
Montgomery College, Maryland

The Curriculum Framework has been extremely helpful to us in creating a new gaming certificate and degree program at Montgomery College. In particular, the broad scope of the framework educated us on the wide variety of disciplines involved in the production of digital games and simulations. After reading the Framework and attending the IGDA's Academic Day at the European Game Developers Conference, we were convinced that our curriculum needed to be interdisciplinary. However, we also realized that we needed to narrow our focus so that our program could be realistically achieved in two years or less – in order to best serve our population of community college students.

The resulting certificate program we are developing focuses on web gaming technologies. Students will learn about the web, animation, scripting and database techniques involved in creating Internet-based games and simulations as well as some of the interesting analytical and business-related topics discussed in the Framework (history, social analysis, business realities, career paths, etc).

We are also in the process of creating a larger 2-year degree program with a broader scope than the web gaming certificate.

Overall, the Framework has been an invaluable resource – we frequently refer to it when making presentations to other professors and college administrators and it helps to demonstrate both the magnitude of the gaming industry and the high degree of specialization within the field.

Derek Elliott - Gaming Program Coordinator
Seneca College - Digital Media Centre

The Curriculum Framework was quite useful for us when we started creating the curriculum for our gaming program. We initially built our curriculum around the visual art and design of making games, which we knew quite well and then used the Framework to broaden the scope of the program. We used it to develop lessons in other topics of game development including gameplay mechanics, the sociological impact of games, the importance of audio in games and the psychology and business of gaming.

Overall our program is stronger because of the work the IGDA's Educational Committee put into the Framework.

Dr. Jon Purdy - Lecturer, Head of Game Courses
University of Hull - Department of Computer Science

The IGDA curriculum framework was instrumental in helping design a course that fulfilled the educational aims of our program, including:

- providing students with a broad education in computer game design, development and technology
- equipping students with the skills and knowledge necessary to pursue a successful career
- using computer games development methods and techniques as a vehicle for introducing the theoretical, intellectual, creative and dynamic aspects of computing

Current practice in the UK is to define courses and syllabi in terms of the learning outcome of the student. In effect this means defining a course in terms of the knowledge and skills a graduate from the course will have. In order to do this it is essential that reference is made to evidence that the skills the program is delivering are relevant to the field of study. The skills outlined in the Curriculum Framework were used as evidence that the course was relevant and were used as a reference within relevant areas of our syllabus in Games Programming. Areas covered by the Framework and contained in the syllabus where highlighted in the course description document; this was extremely helpful during the formal validation of the course.

Anibal Menezes - General Manager
Image Campus, Buenos Aires

The Curriculum Framework was fundamental for setting up our own curricular objectives and determining the key aspects needed to achieve a professional role in the game development industry. We have interchanged our ideas with the Education Committee – that has been very responsive to our doubts – and we have deployed the changes they suggested, widening programming classes in our 2-year games development career and taking advantage of an international games development community experience.

Due to certain characteristics of our local market, we have incorporated also game design, audio design and games market development classes in order to facilitate students a wider knowledge of the industry and to encompass such knowledge, even if they decide to get involved with programming only. It is fundamental to us to allow our students to understand the cross disciplinary dynamics involved with games development, in all its aspects, both conceptual and practical.

Appendix B: Next Steps

The Curriculum Framework

As mentioned above, the Curriculum Framework is still a work in progress. The next step we plan to take is to update the detailed outlines of the Core Topics to reflect conceptual and structural changes necessitated by input received in the days and weeks preceding the IGDA Academic Summit. We expect input from the Summit itself to suggest additional changes to the Framework.

But the work of the IGDA Education Committee is not limited to the creation and revision of the Curriculum Framework. Some of the next steps in the Committee's efforts are outlined below.

Bibliography

As an appendix to the Curriculum Framework, we will make available a list of books, magazines and other resources useful to game developers and academics. This list will be linked specifically to topics included in the Framework, serving as an introduction to each of the Core Topic areas.

We will create a web-based version of the bibliography that includes numerical ratings of each entry's primary characteristics. Sample characteristics might include readability, depth of treatment, length, price, language, etc. We hope online users/reviewers will help us determine the appropriate rating in each category, allowing potential users to home in on the books, magazines and other materials that most closely meet their needs.

Physical/Technical Requirements

It is difficult to discuss a canon of games if you can't find hardware capable of playing the games. Similarly, it's hard to demonstrate interface design and/or 3D graphics or rendering techniques without appropriate hardware. And a course on networking is going to be of somewhat limited utility without an actual, functioning network.

This addendum to the Framework will address and explore the physical, technical and IT requirements associated with creating a game studies program. Issues include: gaming network setup and maintenance, graphics hardware and compatibility issues, PC hardware and console gaming needs.

Course and Program Survey

The final component of our curriculum work – a game studies course and program survey -- is likely to be made available on the IGDA website. This survey will list existing universities, colleges and other institutions that offer courses and/or degrees in gaming and, needless to say, will be updated regularly, on an ongoing basis, changing and growing as new programs are offered and as old programs get phased out.

Our initial goal isn't to provide an exhaustive survey but, rather, to make available an annotated list of some of the available programs. Our long-term plan is to provide links to institutional websites, where available, to offer specific course outlines and descriptions and to provide faculty listings. In the long run, we plan to make the program list searchable by institutional focus (research, vocational, 2-year, 4-year, design-oriented, tech, art, etc.). Eventually, active systems will be introduced to allow users to rate, review and add to the data available at the website.

Appendix C: Thanks

The Education Committee would like to extend a heartfelt thanks to all the academics, developers and students who have provided input and support throughout the development of this document. Apologies in advance if anyone has been mistakenly forgotten.

Espen Aarseth, University of Bergen
Ernest Adams, Game Designers Notebook
Clint Bajaikian, CB Studios
Karthik Bala, Vicarious Visions
Ranjit Bhatnagar, gameLab
John Buchanon, Electronic Arts
Michael Capps, Naval Postgraduate School/Scion Studios
Rob Catto, Full Sail Real World Education
Mary Clarke-Miller, Art Institute of California
Dustin Clingman, Full Sail Real World Education
Sebastien Doumic, SupInfoGame
Christopher Erhart, DigiPen Institute of Technology
John Feil, LucasArts
Nick Fortugno, gameLab
Austin Grossman, University of California, Berkeley
Ian Horswill, Northwestern University
Henry Jenkins, MIT
Jesper Juul, IT University of Copenhagen
John Laird, University of Michigan
Frank Lantz, gameLab
Marc LeBlanc, Visual Concepts
Andrew Leker, Mind Control Software
Janet Murray, Georgia Tech. University
Ray Muzyka, BioWare Corp.
Rob Nideffer, University of California, Irvine
Kirk Owen, Octagon Entertainment
Celia Pearce, University of California, Irvine
Ken Perlin, NYU
Jon Purdy, University of Hull
Simon Redmon, Liverpool John Moores University
Nicolas Rioux, Ubi Soft Montreal
Dave Rorhl, EA.com
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