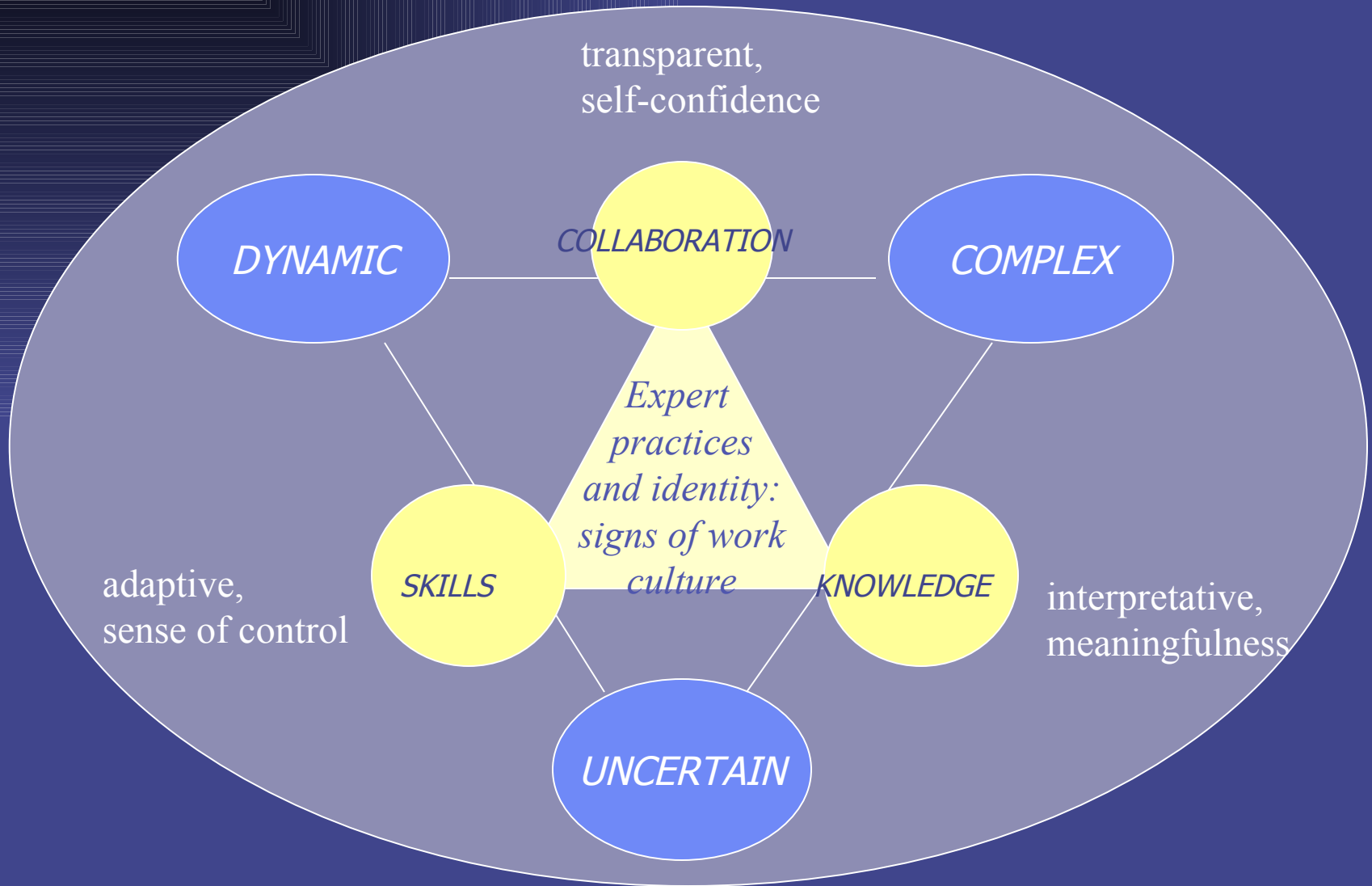


GBL for seafarers. A framework for instructional game design .



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SHIP WORKING CONDITIONS



High safety requirements

Quality shipping needs Life Long Learning

- Initial Education and Training
- Continuing vocational education and training/
- Continuing Professional Development

Developing Mental Models and Critical Thinking

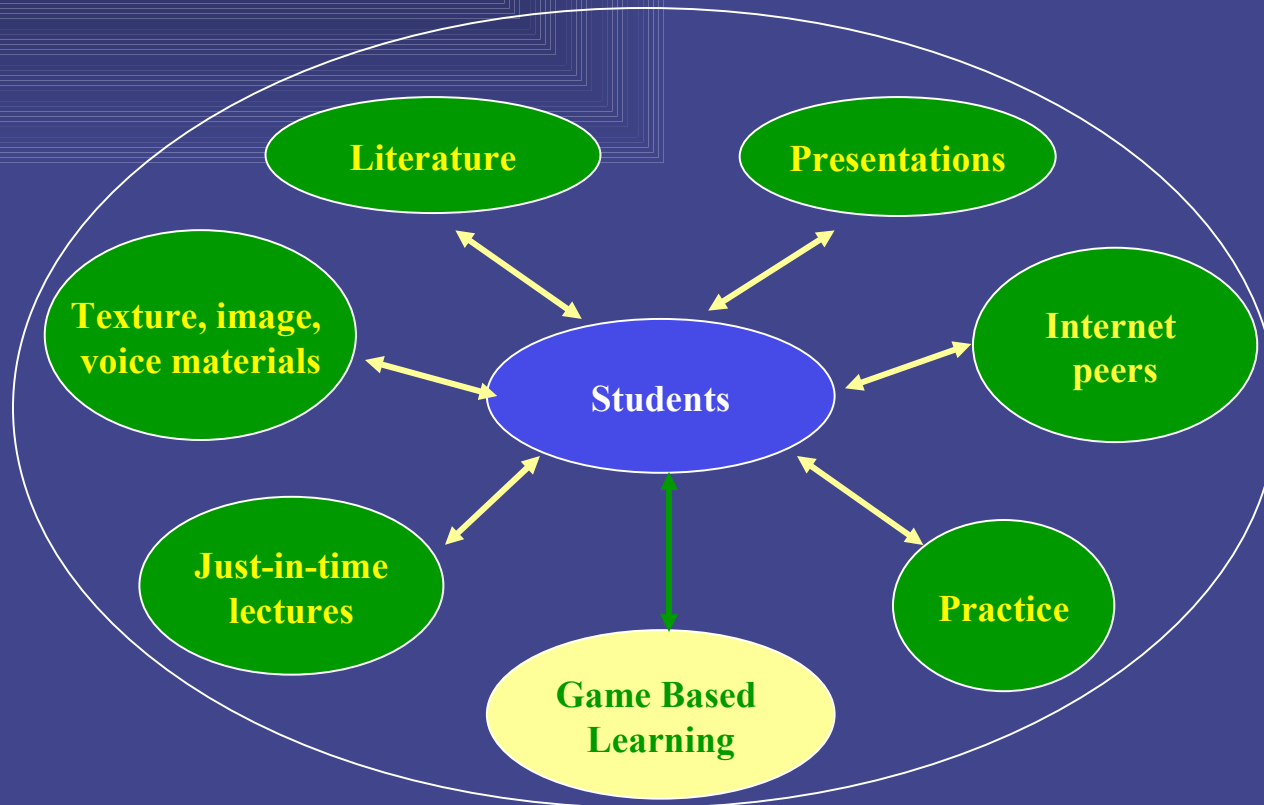
Mental models need to be as “**rich**” as possible. Formal training through simulated scenarios may assist in mental model development and accelerate the process.

Critical thinking skills – the ***testing of assumptions and the “what-ifs”*** - may be developed through **Educational Games**

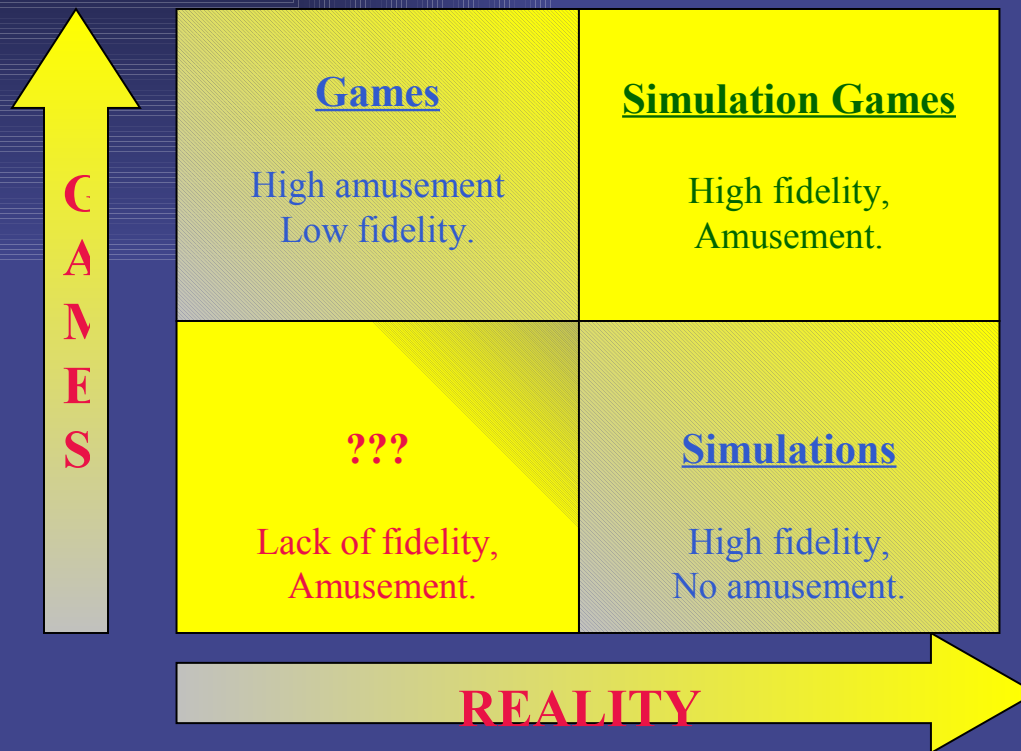
“The fundamental motivation for all game-playing is to learn”

Integrating games to educational curriculum

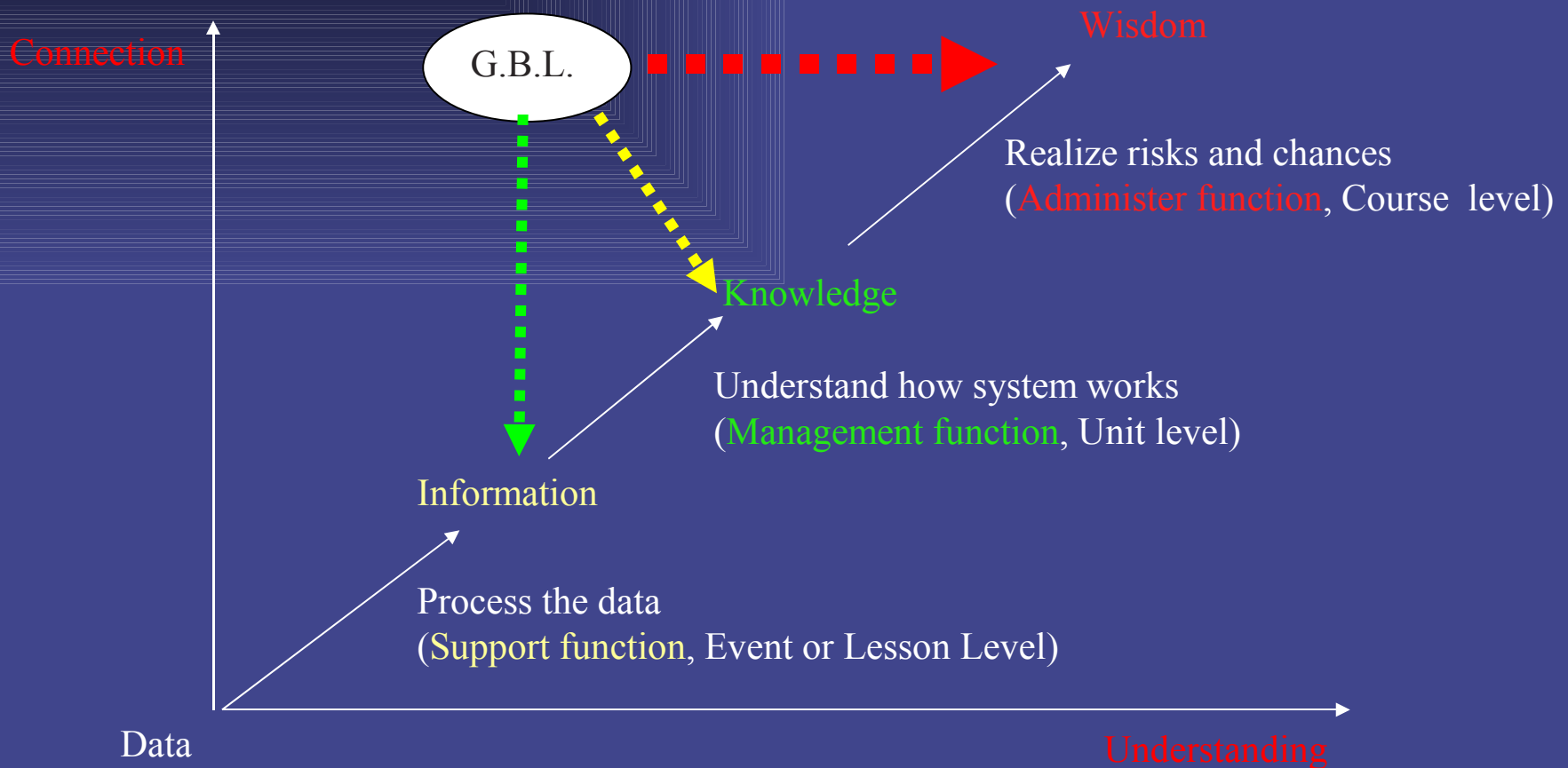
Integrate, and not just add, games to the educational tool set,
Blending games with other learning activities



Games are not simulators



Games support all educational application levels (STCW)



GBL adapts to learning conditions

Adjusting:

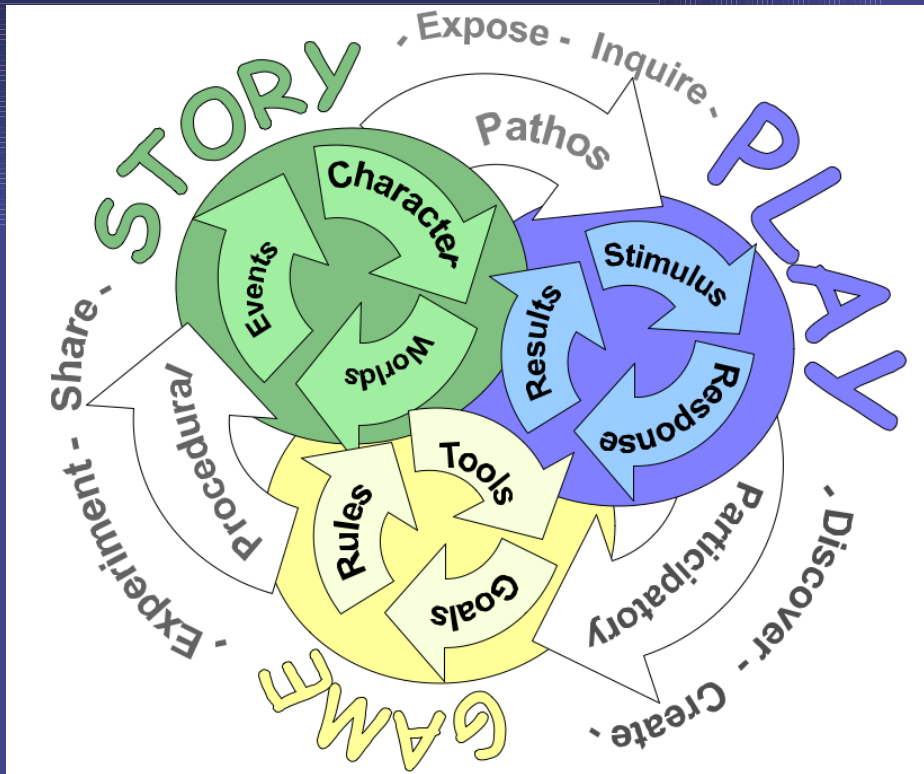
- Game genre
- Game play
- Game rules
- Game world

Under proper educational
design framework →

Can satisfy

- Educational scope
- Learner needs
- Learner characteristics
- Content analysis
- Context analysis
- Instructional approach and strategies
- learner assessment methods

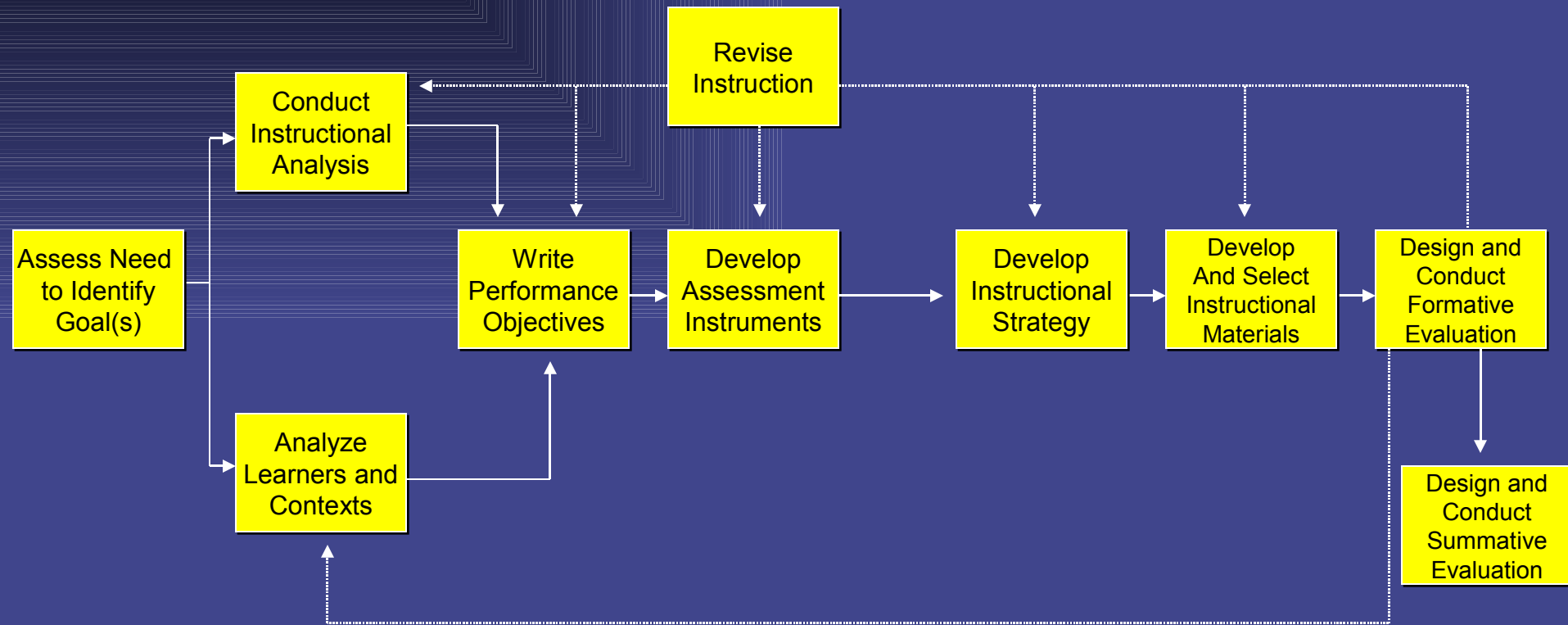
GBL and educational groundings



Interplay instructional events

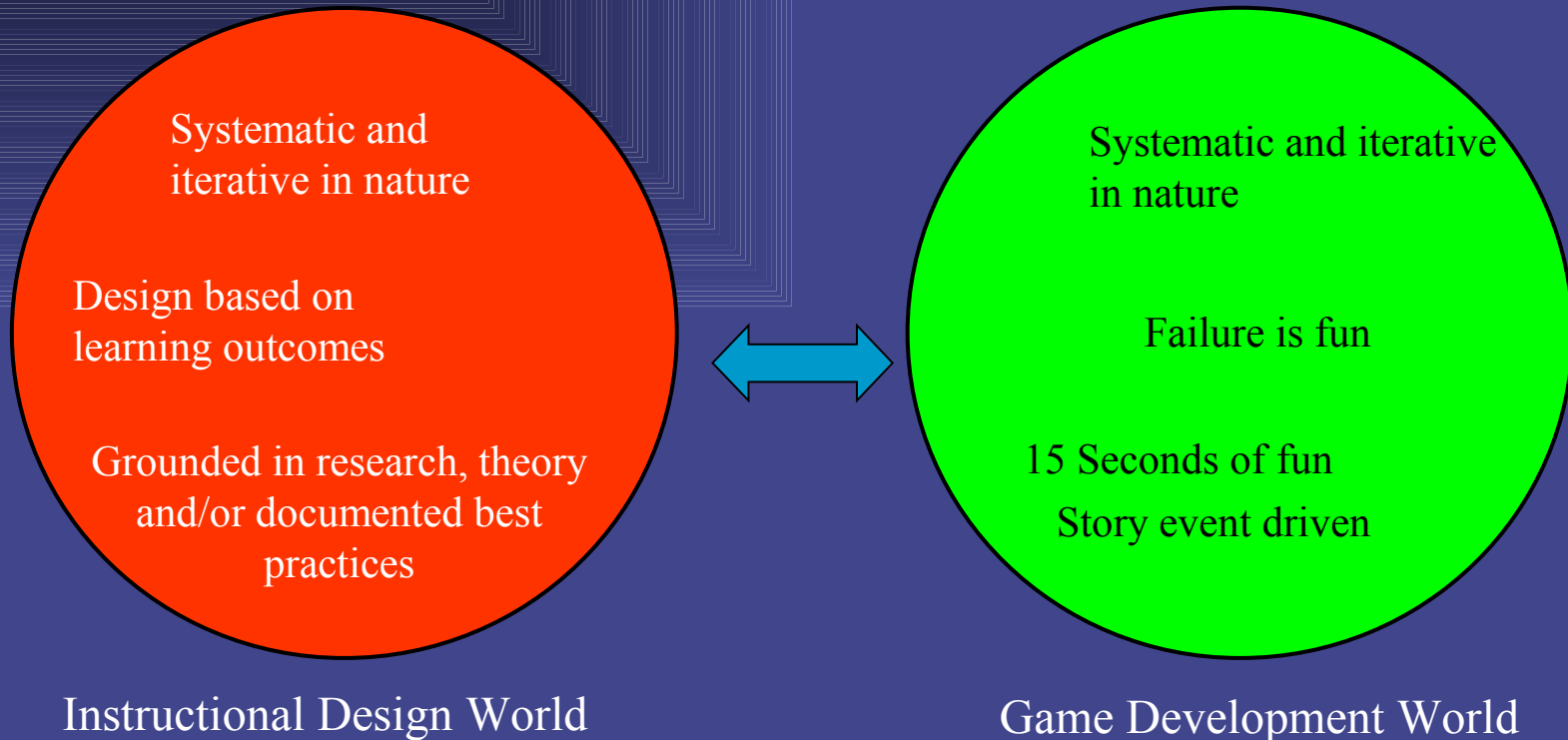
1. Expose
2. Inquire
3. Discover
4. Create
5. Experiment
6. Share

GBL Instructional design base theory



Dick and Carey (2001) “Systems Approach Model for Designing Instruction”.

Combining different Worlds



Analysis



Tasks	Educators / Instructional designers	Game Designers / Developers
Define learning goals, skills and knowledge.	Assess needs, education scope. Reconcile formal education lesson plans. Decide prerequisites and learning outcome level. Identify suitable learning theory.	Combine learning goals with entertainment goals. Identify game complexity and genre.
Create learners' profile	Make Learner analysis (Entry behaviors, needs, learning method, attitudes demographics, game experience).	Identify game difficulty, levels, challenges, availability and interface.
Learning context and scope	Instructional design, assessments, educational and instructional resources.	Decide hardware requirements, resources, networking
Performance context	Game world settings and learning activities. Check the analogies between reality and imaginary game world. Draft IMS-LD document.	User interface, game genre. Make a draft game story. System dynamic tools may be used.
Basic instructional approach	Design structure	Game genre, game play. Decide game design approach method.

Design



Tasks	Educators / Instructional designers	Game Designers / Developers
Game play	Generate objectives. Associate learning activities with learning objects and objectives.	Game play (players' actions, strategies, motives and game's reactions. User Controls)
Game rules.	Factor analysis and system dynamics on player activities and game world events.	Game structure (the rules of the game applied to players and simulated environment. Artificial Intelligence.)
Game world, competition.	Cluster and sequence the objectives. Communicate the organization of objectives to developers. Create the IMS-LD document.	Define game levels by considering game and instructional flow, duration, availability, relationships and difficulty. Define the overall story. User interface.
Delineate Learner Assessment Methods	Assess <i>What</i> : Concrete entertainment goals and objectives Assess <i>When</i> <i>Before</i> game starts, At the beginning of each level, during or at the end of each level, after the game. Assess <i>Where</i> and <i>how</i> : Integrated within the game, Conventional criterion referenced testing methods or product and performance checklists.	Determine learner assessment and ensure alignment between objectives and assessments. Decide game rewards and penalties as assessments' results.
Apply Grounded Strategies and Events	Identify instructional events associated with the instructional approach or strategy selected during concept development. Verify that grounded instructional strategies and events are embedded within the artistic story and game play.	Integrate grounded instructional strategies and events with story events to optimize GBL exploiting similarities and resolving differences in story and instruction. Integrate one or more grounded events to facilitate the achievement of terminal objective.
Begin Formative Evaluations	Expert reviews by subject matter experts as well as media, learning and human factors specialists. One-to-one evaluations identify and remove the most obvious errors in the instruction and to obtain initial reactions to the content from learners.	
Revision	Identify difficulties experienced by learners in achieving objectives and relate these difficulties to specific deficiencies in the instruction. Re-examine the validity of the instructional analysis and the assumptions about the entry behaviors and characteristics of learners. Review the instructional strategy.	Verify game difficulty suits to specific players. Check the consistency of game story and the integration of game objectives. Ensure game controls and user interface are simple and easy of use. Make sure players knows what to do at each level – part of the game. Examine if player is motivated, if assessments does not break game flow and if game is attractive and pleasant.

Production



Tasks	Educators / Instructional designers	Game Designers / Developers
Complete Formative Evaluations	<p>Small group evaluations are to determine the effectiveness of changes made following the one-to-one evaluation.</p> <p>Field trials are recommended for the Beta version of instructional games. The primary purposes at this stage of production are to complete testing, fix all bugs, fine tune performance, and ensure the game may be used in its intended setting.</p>	<p>Game developers create and test prototypes, during design phase, and various versions of games during production. Such tests tend to focus on ease of use, documenting and fixing programming bugs, and ensuring the game is (still) fun to play.</p>

Game's Concept Document

The Premise or High Concept	An educational game with embedded instructional design and assessments that will still be fun to play. An interesting and intriguing game story and game play for the target audience.
Player Motivation	Increase your earnings, and gain the reputation of best captain.
Game Play	Navigation, travel cost estimation, crew administration and commercial management of a cargo ship.
Story	You are the captain of a merchant ship. Find a cargo contract suitable for your ship, make a contract, set the course, hire crew, estimate the cost of the voyage, and manage the voyage. You will buy fuel, buy food, buy medicine, buy spare parts, and buy other supplies. You will also face many risks and challenges that may arise during your voyage, like bad weather, engineering problems, ship damages and much more. You can predict and overcome most of these problems if you take right decisions and act consequently. Competitor captains do their best too.
Target Audience / Market	Seamen and maritime students of merchant maritime industry.
Game Genre.	First person, business strategy, real time simulation game.
Target Platform, Hardware	Windows platform, standalone pc with high quality graphics card, 512 MB RAM and 17" monitor.
Game goals.	The purpose of the game is to become the best captain since your career is just beginning. Navigate, charter and administer your crew better than competitors.

Under Development

Thank you for your attention
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