Using Role-Playing Games to Enhance the Learning Process, from the Cognitive Neuropsychology Perspective

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The approaches discussed in this document can be applied to all RPG Formats in various ways, with different strengths and weaknesses presenting in each format: Tabletop, Live-Action (LARP), computer-based (including solo, multiplayer, augmented reality (AR), virtual reality (VR), etc.), or solo adventure books/modules. Ideally a mix of all 4 formats would likely have the most powerful effects. This document focuses primarily on the tabletop format of role-playing games, though not exclusively.

A number of well research techniques that can be used to increase the likelihood of participants better encoding information into their memory, include the following considerations:

- Avoid ***divided attention*** situations, keeping distractions from the topic being studied to a minimum, to reduce the risk of various ***interference*** factors.
- ***Deep level processing*** (172), including using "why questions" to improve ***elaboration*** & ***distinctiveness*** (173). To further the elaboration, focus on the specific meaning of the concept, and try to relate it to ***prior knowledge*** reinforcing the **interconnections** to concepts that you have already learned (172).
- ***Distributed-practice*** / ***differential learning***. Spread learning & retrieval/rehearsal trials out over time, rather than "***mass learning***" aka cramming. Address limitations of the processing of new information from Short Term Memory (STM) into Long Term Memory (LTM) process, considering ***chunking*** and other relevant issues, by having the study time broken up into shorter segments, with breaks in between, or topic shifts alternating, for a more ***distributed learning*** approach over time, rather than trying to cram (**mass learning**) in a very short time.
- Over-confidence, or inaccurate self-assessment of competency areas. Use techniques and/or technologies that provide more objective feedback on areas you are struggling with, and help direct more time in the areas needing more work, and less time in the areas actually already mastered.
- It is also critical to once again emphasize getting enough sleep, as well as sufficient exercise. All of the above is significantly inhibited by lack of sufficient sleep and exercise strongly promotes cognitive processes.

- Also take into account various medications that can completely drastically cognitive functioning for many hours, days, or more.

Many students will relate to the following paragraph, especially older learners with families and careers will very much relate to the challenges listed, when using learning techniques that are known to be less or ineffective such as: plain rehearsal (memorize by rote), plain mnemonics (without deeper level processing techniques applied), cramming, etc., and what we know works much better, with a strong body of research supporting better techniques, but just “too little time” or energy to “do it right”.

When (usually) little-to-no-time is available between raising 3 kids full-time as a single father, plus running 3-4 companies with staff, running half a dozen community groups, struggling with health & medication issues, very little time for sleep, exercise, day-to-day issues (bills, groceries, house maintenance, cleaning, car maintenance, etc.), and juggling school, trying to maintain social connections, end up often unfortunately exhausted and not feeling up to more creative/effective solutions. So, out of pure exhaustion I unfortunately just fall back on straight brute-force rehearsal and cramming, even though I know full-well how inefficient those approaches are.

I do sometimes manage to mitigate this somewhat through electronic flash cards assessment tools like jMemorize, (if even enough time for that data entry process). While I try to make it more distributed practice, it all too often ends up toward the end with a large chunk of mass learning (cramming).

With a little more time (rarely), and if enough sleep (even more rarely), I try to incorporate a story scenario connecting and visualizing key concepts for more complex topics, that I can easily replay in my mind. An ideal example is elaborated upon later in this document with the scenarios detailed, which addresses the whole combination of techniques recommended from the bullet-list at the beginning of this document.

I almost never have any study partners. A combination of my own "isms", location, and age difference (twice the age of most of my fellow students), makes this generally rare, so I need to usually rely on solo methods.

When I do have time to properly prepare, I still use jMemorize or similar tools, but in a more distributed fashion as an assessment tool. The process of just creating the cards helps initially. Then as I run through the flashcard tests, and find some content is not “sticking” as well as other content, for the content that I am struggling with (jMemorize provides tracking on where I’m struggling more), I try to then turn the information into a more deep-processing, layered, distinctively connected, narrative, embedded, learning-knowledge, well-cued retrieval setting,

such as creating a role-playing gaming scenario to play out in my head (or better yet in an actual RPG setting).

From a cognitive-neuroscience perspective, if considering using role-playing games as a potential intervention modality to improve the learning process, the following might be the ideal approach for maximal effect.

Below is a very quick illustration of what his might look like.

"*My character walks into a tavern* (even the details of this character can have useful information, and even more so if there is an initial campaign setup explaining the character's motivation, background, distinctive traits, etc.).

In one end of the room, there is a man sitting at a table skinning a cat. There is a glass box on a pedestal to his left containing a baby sleeping within, and on the counter behind him are pigeons playing a small piano. As he argues with the person opposite him, letters of words float out of his mouth (enter a few key words that I see there, such as "behaviorist", "100% environment", "operant conditioning", etc.).

Just opposite him, also seated at the table is a man "chomping" on a cookie shaped like a gnome held in one hand, while he grabs words out of the air from around him, (such as "innate language abilities", "poverty of stimulus", etc."), and tries to shove some of these words into the irregular parts of the box on the table.

On the table between the two arguing men, there is a large, solid gray box in the shape of a human brain. The box has some irregularities in it where some key language development should have taken place, gaps of "nothingness" in the box.

There are also sounds emanating from within the box, of a child growling and only using occasional simple words: "food", "potty", etc.

While they ignore the pleas of the child in the box the two men keep arguing with each other, words floating out of their mouths. Some of the simplest words from Skinner just "float" into the brain box, regardless of the part of the brain they land on, they enter, but the vast majority then float out the bottom, piling up on the floor under the table.

While some of the simplest individual words from Chomsky also float in, those that hit the blank parts of the "brain-box", bounce out, and most of the more complex words, especially strings of sentences, he grabs from the air and tries to shove into the blank spots on the "brain-box", and the words just bounce off, and Chomsky points angrily at the bouncing words, and then at Skinner.

They are both furiously arguing with each other."

I could keep elaborating much more, but you get the idea.

Using this modality addresses achieving a much better ***deep processing*** approach, with rich ***mental imagery,*** abundant ***cues*** for ***encoding*** and ***retrieval***, and pulls upon ***existing knowledge*** in layers. The quest/goals/story-driven approach tries to enhance the likelihood that he information will be ***motivating*** and ***interesting***, and it uses the ***narrative technique*** (182) to further enhance ***associative knowledge*** for complex series of information components. The use of a character that I can relate to, enhances the probability of the ***self-reference effect*** furthering the deep-level processing. The challenges to overcome within the game create **desirable difficulties**, and simulate aspects of the ***testing effect***. (177)

In my previous presentations I have elaborated upon how ***exploration of opportunities***, according to Professor John Dattillo of Pennsylvania State, is an extremely powerful tool for enhancing the learning experience.

But, this process takes a *lot* of time to "get it right". If more classes were initially taught using this exploratory RPG-based technique, research seems to strongly support, on multiple fronts, that it would be a much more effective instructional approach. There is a slowly increasing number of schools, all over the world, incrementally integrating this technique of using RPGs in their programs, with remarkable results. (RPG Research)

With this approach, I would be interacting as a student-player-character, assuming the role of some character (Player Character (PC)) meaningful to me in the context of the subject being studied, with someone else as the game master (GM) instructor. I would walk into this tavern and/or other locations, and the GM, fully knowledgeable of all the topics we need to know, having created a complete scenario appropriate for maximizing the time spent learning the content, would explain the setting. Then the GM would ask me, as my character stood there at the entrance to the tavern, "what do you do". And we would begin an ***interactive***, narrative, ***exploratory*** process in the tavern, revealing all the information we would need learn.

The unusual imagery combinations provide some *distinctiveness*, while the narrative, story/game-driven approach allows significant opportunities for *elaboration*, variety of cues, etc. Especially tying it in with a character that somehow resonates for me personally, can enhance the self-reference effects (173).

Also, setting this up in an imagined location that I can retrieve again at will, *may* help with the inconsistent environmental effects of the encoding-specificity-principle (174), by providing, in my imagination at least, a more consistent environment for me to encode and recall the information, regardless of the actual physical environmental differences between studying at home and taking the test in the classroom. It would be interesting to test this, using the scuba diver style research, to see if this imaginative approach made no, some, or significant difference.

This would (verbally, in the case of tabletop RPG) include rich multi-sensory descriptions and some interesting cognitive puzzles or riddles as games-within-the-game. This approach greatly increases the variety of cues (visual, auditory, olfactory, tactile, gustatory, etc.) available for each person to personally connect with, and also addresses anyone with "Aphantasia" that might not benefit as much from purely “mental image” approaches.

In the most ideal situation, I would have study partners, to make the above even better, likely this would be done with the participation of the “study group” or classmates of fellow “players” as we worked cooperatively to find all the information we need to complete our “quest”.

All of the above is something I have often done for others for decades, and it has been amazingly effective for those participants.

Unfortunately I do not (yet) have anyone at a level (yet) to do it for me in my learning experiences in academic settings, but for the past year I have begun training a number of people in these techniques, implementing training certification programs, and hope to soon have qualified individuals qualified to implement these approaches and available to the public in the near future.

References

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