

Towards Puzzle Templates for Multiplayer Adventures

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Abstract. Serious Games combine motivating game elements with serious applications like learning, with the genre of Adventure Games being particularly suited for this kind of application. Multiplayer Games are also promising for this domain since they allow collaborative learning. This leads to the idea of combining these two elements into Multiplayer Adventures. However, there are hardly any examples of this kind of game, mainly because of the difficulty in designing appropriate puzzles. We therefore developed some ideas on how established puzzle types can be adapted for multiple players, serving as a template for designers who are only familiar with traditional Adventure Games.

Keywords:

1 Introduction

The idea of Serious Games has been researched for quite some time now. Since puzzles offer a natural way to include learning content, Point-and-Click Adventure Games are especially suited for this purpose [1]. Their slower pace also allows consolidation and rethinking.

Multiplayer Games on the other hand can help to enhance social skills and promote collaborative learning [2]. This leads to the question if it is possible to enrich Adventures with multiplayer-mechanics to further enhance their learning potential.

2 Related Work

There is literature available regarding the design of Adventures [3], Multiplayer Games in the context of collaborative learning [4] or multiplayer puzzles general [5]. However there are hardly any approaches that combine these elements into a Multiplayer Adventure Game. We could only find one example where traditional Adventure gameplay was combined with collaborative puzzles [6]. A major reason for this might be that designing collaborative puzzles is more difficult, as noted during the creation of this game.

3 Concepts

As a first approach towards puzzle design for Multiplayer Adventure Games, we took the standard puzzle types described by Grünwald [7] and discussed how each type has to be modified in order to work in a multiplayer setting. We included two more types, physics-based puzzles and quizzes. Since this approach builds on established conventions, it offers developers of traditional Adventures a familiar starting point. These ideas use the previously described concept of player separation and are meant to fulfill the requirements we already extracted from related work [8].

Combination puzzles require the usage of an item from the player's inventory on a specific spot in the game world. In a multiplayer setting items can be bound to one player, creating some kind of skill-based player separation. Another possibility would let the players collect / exchange the items themselves, but constrain the number of items they can carry so they have to distribute them amongst each other. It is important whether the players can see the objects of their partner. If this is not the case, they will have to talk more often. A shared inventory in contrast reduces the need for collaboration.

Inventory puzzles require the combination of two items inside the players' inventories. Therefore they require similar considerations, with the additional constraint that the involved items cannot be bound to different players if exchange is impossible.

For exploration puzzles the player has to find objects or clues in the game world. This search offers a natural reason for collaboration, since splitting up is faster. The game may also use different movement skills for the player characters to encourage this.

In this dialog puzzles the players have to talk to a non-playable character, often to get an object or information. This is also a good opportunity to introduce skill-based separation, e.g. based on charisma. A puzzle where the players have to take different roles, like the good-cop-bad-cop-principle, is also possible.

Puzzles in which the players have to understand a complicated machine are called machine puzzles. They are a good way to insert learning content for physics, for example about electricity. When multiple players are involved, the machines can become more complex and it is possible to operate different parts simultaneously.

Action sequences, often based on reaction time, are no puzzles in a narrow sense. However, some games use them to add variety. When they are based on other genres, the designer is able to use the multiplayer mechanics already implemented there.

The term classic puzzle describes puzzles from other domains like jigsaw puzzles. Their applicability for multiplayer therefore depends on the original. Jigsaw puzzles for example can already be solved by multiple people solving different sections.

Physics-based puzzle exploits natural phenomena like weight or magnetism and is therefore a good fit for learning content. It can be combined with skill bases player separation, when the characters differ regarding their weight. This kind of puzzle does not only require knowledge, it also offers its application in practical situations.

Quizzes are commonly used to assess the learner's progress. They however threaten to break the immersion and should therefore be used sparsely. In a multiplayer setting this can be done individually or as a group. Voting requires less coordination effort but consensus requires the players to accept a common answer through discussion, which benefits learning.

4 Conclusion

In this paper we presented first concepts on how traditional (singleplayer) puzzle types of Adventure Games can be adapted for multiple players. We believe that these ideas can serve as a foundation for further research on Multiplayer Adventure Games, which seem promising in regards to collaborative learning in Serious Games.

Further work in this direction may include the implementation of concrete puzzles, which then can be evaluated by user studies in comparison to their singleplayer forms. It is also possible to implement them as abstract templates for authoring platforms or game engines, which then can be filled with content by designers.

References

1. A. Frazer, D. Argles, G. Wills. The Same but Different: The Educational Affordances of Different Gaming Genres. In Proceedings of the 2008 Eighth IEEE International Conference on Advanced Learning Technologies, pages 891–893, Washington, DC, USA, 2008. IEEE Computer Society. ISBN 978-0-7695-3167-0.
2. I. Voulgari, V. Komis. Massively Multi-User Online Games: The Emergence of Effective Collaborative Activities for Learning. In Digital Games and Intelligent Toys Based Education, 2008 2nd IEEE International Conference on, pages 132–134, November 2008.
3. G. Nelson. The Craft of Adventure, 1995.
4. N. P. Zea, J. L. G. Sánchez, F. L. Gutiérrez, M. J. Cabrera, P. Paderewski. Design of Educational Multiplayer Videogames: A Vision from Collaborative Learning. *Adv. Eng. Softw.*, 40:1251–1260, December 2009. ISSN 0965-9978.
5. S. Kim. Multiplayer Puzzles, 2005. URL <http://www.scottkim.com/thinkinggames/multiplayerpuzzles/index.html>.
6. T. Manninen, T. Korva. Designing Puzzles for Collaborative Gaming Experience - CASE: eScape. In Proceedings of the 2005 Digital Games Research Association Conference, page 15, Vancouver, June 2005. University of Vancouver.
7. S. Grünwald. Methoden Interaktivem Storytellings. Grünwald, S., 1st edition, 2007.
8. C. Reuter, V. Wendel, S. Göbel, R. Steinmetz. Multiplayer Adventures for Collaborative Learning With Serious Games. Accepted at: 6th European Conference on Games Based Learning (ECGBL 2012).