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| Reviewer | Comment | Action Taken | Location |
| AMH | Paper 101 - Game Based Cyber Security Training: are Serious Games suitable for cyber security training?The topic of the paper is in line with the topics of the journal.• Does the abstract summaries the intention and the content of the paperThe abstract is too long. Please cut and rewrite. | The abstract has been shortened | Abstract |
| APP | • Quality of contentThe quality of the content is weakCh.1. This chapter seems to be a mixture of different previous versions. It is not well structured.The first paragraph contains two statements: “The use of role play games exercises is well established in the security industry. This is often in non-digital form”. Please add the references. Since you have not introduced the term neither on SG nor on RP games, it is also not appropriate to put these statements here. In my view it would be better to start with the 3. Paragraph. I do not see the additional value of the 2. Paragraph. It would be sufficient to only deliver the definition of serious game. | The structure of the paper has been updated as follows below. The structure of chapter 1 was also updated. Section 2 has been rewritten. However although the value of serious games may be evident to the reviewers we do feel that we need to motivate this aspect. We have shortened the section.References for the use of role play games in security training are scarce as exercises such as those common among emergency services are often not seen as "role play games" by those involved. This has been more clearly explained. | Chapter 1 |
| APL | Chapter 2: Methodolgy- describes fairly well the literature research and also the product research. However, it does not explain how the criteria used for describing the games in chapter 3 has been derived, also now how the different games have been assessed. The classification groups are mentioned in chapter three but no explanation why these are selected. | We added an explanation in chapter 2, in the 2nd to last paragraph, explaining how the classification was done. |  |
| AMH | Chapter 3More details on the 11 studies that did deliver results would increase the quality of content. | The information is included in Table 1 but we felt it more appropriate to focus on games that have received a positive evaluation, rather than on studies as quite a few of the quality studies are about the same games (especially CyberCeige). |  |
|  | Since it is used for training and teaching, it would have been interesting in the learning goals and the fulfilment of these f.ex would have been mentioned. It would also have been interesting to know how many of the games are aiming at training the same, or if they are complementary. | This is an interesting point. After investigating this we decided not to include it as details about the exact learning goals are surprisingly sparse in many of the studies. |  |
|  | Table 1-  game type seems not to be the game type but the name of the game.It is not clear why the 2 column is called “evaluation”. Column 3 could have been very interesting, but contains not enough information. Please add more information from the original studies | This has been corrected. Unfortunately additional information cannot be added in the table due to space limitations, but can be find in the references. |  |
|  | Section 3.2 needs to be reworked. Please add some assessment criteria, and explain why the content is interesting at all-I do not get the purpose of this sections, since it mention some of the games already described in section 3.1, but not add really relevant information on the topic “are Serious Games suitable for cyber security training?”. Since quite a few of them are free, it would make sense and not too much work if the authors played some of them and analysed them according to the criteria used (afterreworked) in section 3.1. If at least better explained more detailed information on gameplay and learning outcome, it would increase the quality of this section. It might be helpful to use parts of the taxonomy developed within the GALA projects- a comparison of games in the same field already described using this taxonomy can be found studies-seriousgamessociety.org (at least cyberciege) | We feel that in such a new field, where quite a few of the players are game developers and organisations commissioning game development, rather than academics, a product search to supplement the search for academic research was necessary, as has also been highlighted by the other reviewer. The product search has been updated to reflect new products coming onto the market.Information on the selection criteria has been added to the end of chapter 2, as we felt it was better placed there rather than mixed with the results.We have added more information on the learning outcomes where possible and have introduced a comparison table, similar to the table used for academic studies. We have investigated the mentioned website and taxonomy and included the game cyber protect found in it. However our paper focuses on the existing state of the evidence of any actual measurable effects on learning a priory We agree that classifying the games according to the taxonomy would be interesting future work but it is beyond the scope of this study.  |  |
| A | Chapter 4 should be extended after reworking chapter 2 and 3 that would improve the overall impression and quality of the paper. | Sections 2,3 and 4 have been revised. |  |
| APL | • Originality and level of innovativenessThis is a quite straight forward literature research paper. The innovativeness could have been improved if f.ex the evaluation/assessment criteria for the games were matched towards derived learning goals based on f.ex the attacks mentioned in the introduction.  | Such a classification was not considered as almost all studies focus on the general computer user's behaviour with only very few exceptions and we felt other categories would be too sparse to be of interest. |  |
| A | • Appropriateness of research methodologyThe methodology seems appropriate regarding the literature review. However, it would have been good if the authors wrote how many studies with effect measurement, instead of just saying it was too low. | Unfortunately the information in most papers considered is not detailed enough to consider an effect measurement. |  |
| A | The product research is not appropriate. A fast google search gave me several other cyber security games, released before August 2014. This part needs to be redone, and the structured search better explained. | The search has been updated and a table overview including learning outcomes was added. |  |
| A | I lack an explanation of the assessment criteria for the different games. | Clarification has been added to chapter 2 |  |
| B | The goal of the paper is interesting and definitely relevant for the IJSG audience. However, in my opinion, the work should be quite improved before publication on IJSG. | We have made various improvements to the paper following reviewers comments. |  |
| B | A synoptic table, like the one on page 3, would be very significant, but the columns and entries are quite vague and do not allow a real comparison of features. The authors should consider a more structured (e.g., with grouping by topics/technology/intended audience – this would better support the important statement about the lack of professional games) and detailed approach. | The table has been updated and labels made more clear. A similar table was added to the product search results. |  |
| B | Product search is interesting, but why (differently than literatureanalysis) is also security (not only cyber-security) considered? Overlap and non-overlap of games between literature and product analysis could be discussed, in order to have a better appreciation of the similarities and differences between literature and market products, and try to understand if there are recognizable trends. Also, the “product” description could be more detailed. | The reviewers make a good point. The product search has been re-focused on cyber security only. Apart from ceiberceige there is little overlap between the two and this has been highlighted in the discussion chapter |  |
| B | Effectiveness is a key factor for serious games. The survey could stress the games for which an analysis of effectiveness has been performed and discuss the relevant results. | A brief discussion of this has been added to the result section describing the academic literature |  |
| B | The conclusion that current SGs substantially support motivation and creation of awareness is important and relevant, but should be better backed. In general, the paper could address the analysis so to provide answers to such questions (an explained selection of them would be fine) as:which topics are covered, which not? What is the context of use? The authors may consider the serious games studies framework (<http://studies.seriousgamessociety.org>, Popescu et al. in Else 2012) as a model for SG analysis and description. | We have investigated the mentioned website and taxonomy and included the game cyber protect found in it. However our paper focuses on the existing state of the evidence of any actual measurable effects on learning a priory We agree that classifying the games according to the taxonomy would be interesting future work but it is beyond the scope of this study. |  |