

Questionnaires for "A multi-agent system for an intelligent driving instruction application"

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1 Summary of Measures

<i>Independent Variable</i>	
(MO) Learning Mode	Linear or Adaptive. The mode determines the method of scenario selection. For linear, with a gradually increasing difficulty, for adaptive, to match to the user's performance.
<i>Dependent Variables</i>	
(S01-S07) Skills	How are the skills improving over playing scenarios?
(K01-K03) Knowledge	How is the knowledge acquired playing scenarios?
(CD) Calculated Difficulty	What is the expected difficulty as calculated by the application?
(PD) Perceived Difficulty	What is the difficulty perceived and experienced?
(ME) Mental Effort	How much cognitive work is required to perform the task?
(UN) Understandability	Is the information presented clear and understandable?
(RE) Realism	Is the simulation realistic enough to be useful in learning?
(SE) Self-Efficacy	Is the user confident in the improvement of their skills?
(FN) Fun	Is the user enjoying themselves?

Table 1: Summary of the Measures used for Evaluation.

2 Pre-Session Questionnaire

1. What is your gender?
☐ Female ☐ Male ☐ Other
2. What is your age?

3. What is your nationality?

4. How often do you play video games?
☐ Daily ☐ Weekly ☐ Rarely ☐ Never
5. On which platform do you play games?
Smartphone Console PC None of the above
6. What genre of games do you play?
Action Racing Casual RPG None of the above
7. Have you ever played a racing game with a steering wheel?
☐ Yes ☐ No
8. Have you ever played a virtual driving simulator?
☐ Yes ☐ No
9. Have you played Grand Theft Auto V before?
☐ Often ☐ Sometimes ☐ Once or twice ☐ Never
10. Do you have a driver's license?
☐ Yes ☐ No
11. If yes, how long have you had your driver's license?
☐ 0-2 years ☐ 2-5 years ☐ longer than 5 years

3 In-Game Questionnaire

1. How would you rate the difficulty of the scenario you just played?
1 2 3 4 5 6 7 8 9 10
2. How would you rate your confidence after playing the scenario?
1 2 3 4 5 6 7 8 9 10

4 Post-Session Questionnaire

NR	Code	Statement
After the first Session		
Q1	ME	The lessons were easy. (Repeating)
Q2	ME	The lessons were frustrating. (Repeating)
Q3	ME	The pace of the lessons was in line with my learning speed. (Repeating)
Q4	ME	I was focused when following the lessons. (Repeating)
Q5	FN	I enjoyed following the virtual lessons in the application. (Repeating)
Q6	SE	The lessons were useful. (Repeating)
Q7	SE	I would like to continue following virtual lessons in the application. (Repeating)
Q8	UN	It was clear what was expected from me during the lessons.
Q9	UN	The instructions at the start of the lessons were clear.
Q10	UN	The score card at the end of each lesson was clear.
Q11	UN	The evaluation report at the end of the game session was clear.
Q12	UN	It is clear what skills are being tested and evaluated.
Q13	ME	It was easy to remember the controls.
Q14	ME	I had difficulties handling the car.
Q15	RE	The controls/handling of the car felt realistic.
Q16	RE	The virtual environment looks realistic.
Q17	RE	The behaviour of the other traffic users in the simulation were realistic.
Q18	SE	I felt the grades accurately reflected my performance.
Q19	SE	I have learned about traffic rules.
Q20	SE	I already knew all the traffic rules shown in the application.
Q21	SE	I have learned about car handling.
Q22	SE	I got a sense about what it's like to drive a car.
Q23	SE	I believe the virtual lessons in the application to be a good entry into driving a real car.
Q24	SE	I believe the virtual lessons in the application can prepare me for a theory driving exam.
Q25	SE	After following the virtual lessons I feel more confident to follow real driving lessons.
Q26	SE	I believe I can improve my driving skills and knowledge using this application.
After the second Session		
Q1	ME	The lessons were easy. (Repeating)
Q2	ME	The lessons were frustrating. (Repeating)
Q3	ME	The pace of the lessons was in line with my learning speed. (Repeating)
Q4	ME	I was focused when following the lessons. (Repeating)
Q5	FN	I enjoyed following the virtual lessons in the application. (Repeating)
Q6	SE	The lessons were useful. (Repeating)
Q7	SE	I would like to continue following virtual lessons in the application. (Repeating)
Q27		I could tell there was a difference in the difficulty curve between sessions.
Q28		I could tell that in one session each consecutive lesson was adapting the difficulty to match my skill level.
After explaining the difference in sessions		
Q29	FN	I enjoyed the adaptive lessons more than the linear lessons.
Q30	ME	The adaptive lessons were more challenging than the linear lessons.
Q31	ME	The adaptive lessons were less frustrating than the linear lessons.
Q32		I prefer that each consecutive lesson adapts the difficulty to match my skill level.
Q33		I would like to choose the difficulty of the lessons.

Table 2: Post-Session Questionnaire

5 Overview Procedure Research Experiment

Step	Activity	Time (min)
1	Instructions	3
2	Pre-Session Questionnaire	2
3	Gameplay Session #1	10
4	Exam Scenarios	4
5	Post-Session Questionnaire #1	2
6	Gameplay Session #2	10
7	Post-Session Questionnaire #2	2
8	Explanation of the difference between the sessions	1
9	Post-Session Questionnaire #3	3

Table 3: Experiment Procedure