

The educational benefits of Matrix Game for learning Spanish.

Jose Anibal Ortiz Manrique

Burnham Lecturer Spanish, Defence Centre for Languages and Culture.

Defence Academy of the United Kingdom.

This work is the result of a collaborative process between the Modelling and Simulation department, and the Defence Centre for Languages and Culture (DCLC) of the Defence Academy of the United Kingdom. At the Modelling and Simulation department Tom Mouat has adapted Matrix Game, invented by Chris Engle in 1982, for military training purposes. After attending one of his workshops on the mechanics of the game, I found Matrix Game could be an educational tool for language training. In particular, it enables students to incorporate into language learning a range of skills they have gained during their military experience - such as, leadership, team-working, problem solving, and creativity. For this reason, I started working with Tom to integrating into learning Spanish at DCLC. The goal of this paper is to present an analysis of the educational benefits of the integration. The paper starts by explaining the learning approach adopted to carry out this integration. This explanation is followed by a pedagogical proposal for using Matrix Game in the classroom. Finally, the paper discusses the positive impacts of the game for learning Spanish.

The Spanish department at DCLC provides language training to personnel from the different Services of the Armed Forces. It offers four language proficiency levels according to a NATO Standardization Agreement (STANAG 6001). As an educational tool for blended learning, we have integrated Matrix Game into Spanish language level two. Matrix Game design uses the Matrix Game methodology invented by Chris Engle in 1982. The mechanics of the game are very simple. It starts with a *problem* players need to solve collaboratively. Then the teacher sets up the *scenario information* to carry out the game: the context, the characters, and their specific objectives. After creating this scenario, participants play in turns saying what they are going to do to solve the problem (Actions); why they are going to do that (Result); and some reasons why they think that it is possible to do it (Reasons). Every action must be supported with at least two arguments. The other players then

get a chance to interject any reasons they might think of in support of or against the argument. If they think the reasons presented by a player are good enough, then the following player should take his turn. The other players then get a chance to make additional arguments either in support of the original argument (Pros) or against it (Cons). When the reasons given by the players are not totally convincing, then the teacher or facilitator can roll a dice, and the player with the highest number wins. This keeps the narrative moving along. The teacher can provide players with a map of the town (*Figure 1*), as well as some *counters* with images of military personnel and civilians, weapons, vehicles, aircraft, and weather conditions (*Figure 3*). Both the map and the counters help players to develop their ideas, to support their ideas with the objects, and to feel the game as an embodied experience. The game ends when the problem is solved. It usually takes an hour, but the length depends on players' creativity and language abilities. To illustrate this, let us consider the following example designed for Spanish learning. The game is called, '*San Splendido*', and it is aligned with one of the topics of the Spanish syllabus, *drugs trafficking*.

Matrix Game: 'San Splendido'.

Problem: *A Drug Baron has kidnapped an activist in a town. As a result the governor has requested the Army Commander to rescue him.*

Scenario information

✓ **Context:** a typical town in Latin America surrounded by a jungle (See *Figure 1*).

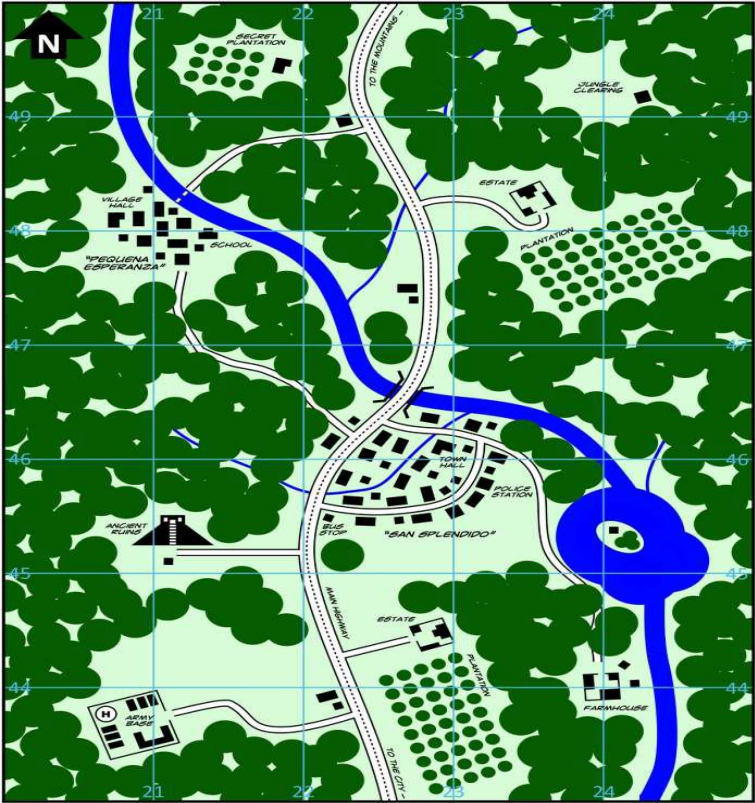
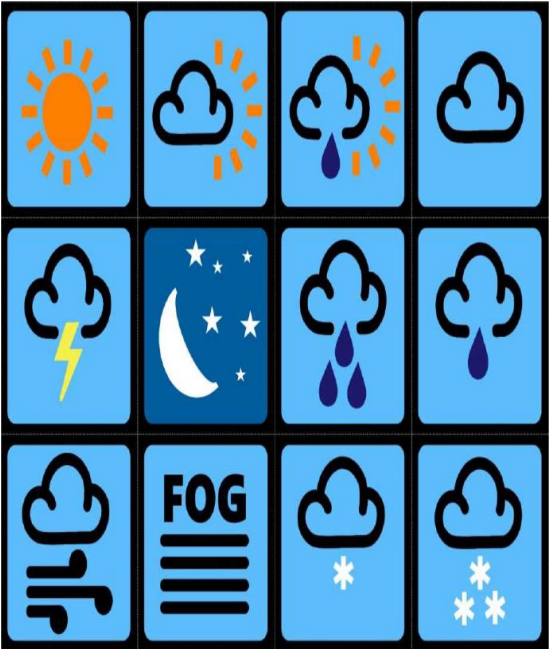


Figure 1: Map for the Matrix Game: 'San Splendido'.

Figure 2: Counters for the Matrix Game: 'San Splendido'.




✓ Characters:

- For 2 Players, the Army Commander and the Drug Baron.
- For 3 Players, the Army Commander, the Drug Baron and the Village Leader.
- For 4 Players, the Army Commander, the Drug Baron and the Village Leader, the Police Chief.
- For 5 players, add an additional role as “The Spirit of Drama.”

✓ **Objectives:**

Army Commander




You have heard that an outspoken critic of the Drug Baron has been kidnapped and taken hostage from the Village at GR2184. The Governor insists he must be rescued!

This is, of course, primarily a Police matter, but you know some of them are corrupt, and don't have the manpower or resources to mount a rescue, so it is time to show them what the Army can do!

Objectives:

1. Rescue the Hostage!
2. Show how great the Army is!
3. Do something that will get you promoted and transferred to the city!

Drug Baron




One of the local villagers has been an outspoken critic of you! You have ordered him to be kidnapped and held for ransom.

You do a lot for the locals in these hard times. If it wasn't for your kickbacks and employment many would starve. They are ungrateful and need a lesson! You have a Police informant in your pay...

Objectives:

1. Make money!
2. Teach the locals a lesson!
3. Survive the game alive and free!

Police Chief




You have heard that an outspoken critic of the Drug Baron has been kidnapped and taken hostage from the Village at GR2184. The Governor insists he must be rescued!

This is, of course, a Police matter, but you don't have the manpower or resources to mount a rescue, so you will need help from the Army!

Objectives:

1. Rescue the Hostage!
2. Show the Police are not corrupt!
3. Make sure you get credit from the operation!

Village Leader



A young man who was an outspoken critic of the Drug Baron has been kidnapped and taken hostage from the Village (GR2184). His family is distraught and are trying to raise the ransom!

This is a difficult situation. The Drug Baron provides money and employment to the village in these hard times and the corrupt Police are no use.

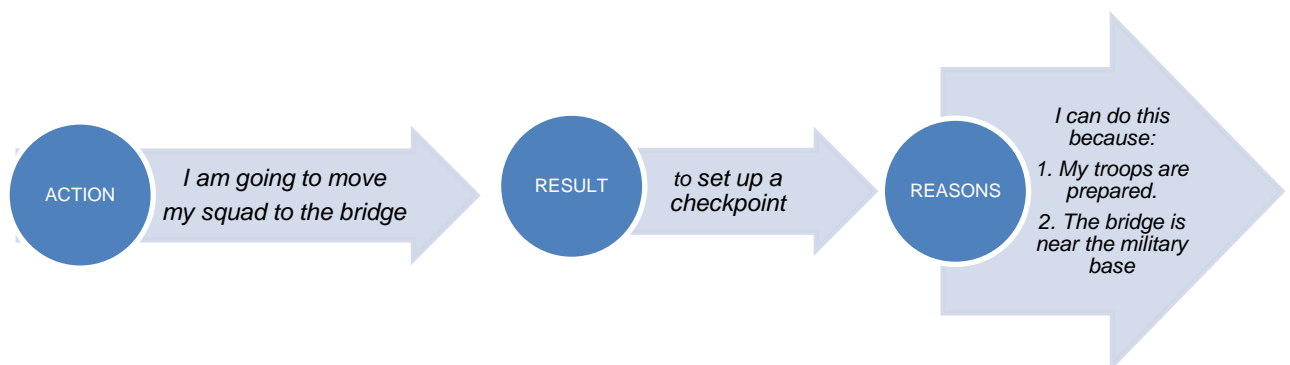
Objectives:

1. Have the Hostage returned!
2. Don't anger the Drug Lord!
3. Look after the Village!

Figure 2: Characters and objectives for the Matrix Game ‘San Splendido’.

Narrative: Action-Result-Reasons

The Army Commander player can start the game by saying:



If the other players do not have objections to the movement of the Army Commander, the squad and checkpoint counters are placed at the bridge in the village (*Figure 1*), and then it is other player's turn.

This is an example of one of the scenarios we have created for the design of Matrix Game as an educational resource to enhance Spanish language learning. For this design we have considered the Balanced Design Model (MIT, 2015, p.11) that ensures the game is constructively aligned with the learning outcomes of the language syllabus. The model is organised through three main elements: The Content Model, The Task Model, and The Evidence Model. Regarding Matrix Game design for Spanish learning, the first element concerns the learning outcomes expected according to the communicative competences for Spanish language level two. It includes linguistic competence: linguistic control of vocabulary, grammatical accuracy, phonology, and orthography (See *Table 1* and *Table 2*); sociolinguistic competence (relevant knowledge of the topic of the game); pragmatic competence (flexibility, turn taking, thematic development, coherence, spoken fluency); communication strategies for reception, interaction and production (identifying cues and inferring; turn taking, co-operating, asking for clarification; production planning, compensating, monitoring and repair) (CEFR (2001, p 9) .

Table 1: Vocabulary required for Matrix Game: 'San Splendido'.

Places	Weapons	Vehicles	Aircraft/ Watercraf	Military personnel, and civilians	Weather
Army base	Rifle	Car	Airplane	Soldier	It is sunny.
Police station	Machine gun	Police car	Helicopter	Commander	It is raining.
Checkpoint	Grenade	Jeep	Drone	Police Chief	It is windy.
Ruins	Rocket launcher	Van	Boat	Policeman	It is foggy.
Farm		Bus	Inflatable boat	Sniper	It is misty
house		Truck	Ship	Terrorist	There is a storm.
State		Tractor		Drug dealer	
Plantations		Ambulance		Hitmen	
Jungle		Tank		Kidnapper	
River		Armored vehicle		Hostage	
Lake		Patrol vehicle		Victim	
Tunnel				Undercover	
Bus stop				Informant	
Main highway				Village leader	
				Farmer	

Table 2: Grammar required for Matrix Game: 'San Splendido'.

ACTION + RESULT

Grammar structure: Be going to + Infinitive + to-infinitive

For example:

For military role:

- I am going to + take my troops to the bridge + to set up a checkpoint.
- I am going to + send a drone + to take photos of the area.

For terrorist role:

- I am going to + call the governor + to ask for money.
- I am going to put a bomb + to explode the police station.

REASONS

Grammar structures:

It is possible +

Because + Have

Because + Be

Because + Can

Because + It is sunny/windy/cold/foggy/misty

Because + There is a storm

Because + Be + Prepositions for place (near/far/next to/behind..)

For example:

For military role:

- Because + I have the military personnel.
- Because + I have the weapons.
- Because + the place is near the military base
- Because + we can
- Because + our troops are prepared /trained/ fast/brave. Because I can shoot the target.

For terrorist role:

- Because + I have money.
- Because + I have weapons.
- Because + I am powerful in the region.

The second element of the model refers to the types of interactive tasks students must be engaged in to put into practise their communicative competences. During the game students participate mostly in interactive tasks by using the structure Action-Result-Reasons. However, there are other optional tasks that are also aligned

with the learning outcomes such as role-plays, interpreting from L2 to L1, oral summaries after each round, and oral and written summaries of the story they have collectively created throughout the game. The implementation of these tasks may ensure equal participation, and enrich the learning practise. For example, when there is a student who is not very engaged in the game, the facilitator can encourage him to translate other players' argument, or to summarize the story after a round. The third element, The Evidence Model, is related to the assessment of students' language performances during the tasks. The teacher must collect evidence about students' communicative competences involved in various language activities such as reception, interaction, production, and mediation. This evidence allows both the teacher and the students to identify strengths and weaknesses, and to design extra activities to provide learners with support. Most of learners' performance is oral, thus it is recommended that the teacher records students' participation in the game to have a more effective learning experience.

The table below shows an example of how we can align the experience of playing the game with the language learning process by relating the three elements of the Balanced Design Model.

<i>Table 3: The Balanced Design for the Matrix Game: 'San Splendido'.</i>		
The Task Model	The Content Model <i>Learning outcomes based on communicative competences for Spanish level two.</i>	The Evidence Model <i>How we can assess students' performance.</i>

<p>TASK 1: The student creates an argument, and does not receive any objections by the other players.</p>	<p>Linguistic competences:</p> <p><i>Reception:</i></p> <p>Can understand essential information produced by the other players when they follow the language content required for the game.</p> <p><i>Production:</i></p> <p>Shows good control of</p>	<p><i>Excellent:</i> Player achieves the learning outcome during the entire game.</p> <p><i>Good:</i> Player has some difficulties to understand, but can repair the communication problem through negotiation of meaning strategies.</p> <p><i>Needs improvement:</i> Player has some difficulties to understand, and does not use any strategies to repair the communication problem.</p> <p><i>Excellent:</i> Player achieves the learning outcomes</p>
--	--	--

	<p>vocabulary related to the situation of the game (grammatical agreement, and pronunciation).</p> <p>Uses correctly the sentence patterns provided for the game.</p> <p>Pragmatic competence</p> <p>Can interact by using the structure required to express the actions, result, and reasons.</p> <p>Can expand learned phrases through simple recombinations of their elements (CEF, p. 125).</p> <p>Can use negotiation of</p>	<p>during each performance.</p> <p><i>Good:</i> Player uses sentence patterns correctly, but still systematically makes basic mistakes such as 'agreement'. However, the message is still clear.</p> <p><i>Needs improvement:</i> Player makes consistent errors in the type of sentences provided for the game (<i>grammatical agreement</i>). These errors interfere in communication.</p>
--	--	--

	<p>meaning strategies to confirm or clarify the understanding of the information produced by other players.</p> <p>Sociolinguistic competence</p> <p>Optional:</p> <p>Can understand and use information of previous learning activities related to the topic of the game.</p>	<p><i>Excellent:</i> Player achieves the learning outcome.</p>
<p>TASK 2: The student creates an argument, and other player interjects his argument producing a counter-argument</p>	<p>Linguistic and sociolinguistic competences used in the previous task.</p> <p>Pragmatic competence</p> <p>Can interact unprepared in a simple way by asking and answering questions,</p>	<p><i>Excellent:</i> Player achieves the learning outcomes during each performance.</p> <p><i>Good:</i> Player makes</p>

	<p>and by using negotiation of meaning strategies (repetition, clarification, and confirmation).</p> <p>Can co-operate with other players by helping them to produce new arguments.</p>	<p>mistakes, but they do not interfere in communication.</p> <p><i>Needs improvement:</i> Player makes consistent errors in the type of sentences provided for the game (<i>grammatical agreement</i>). These errors interfere in communication.</p>
<p>TASK 3: Role-plays.</p> <p>When one of the players expresses an action involving a conversation, the facilitator may ask him to re-create the scene of the dialogue. For example:</p> <p>‘<i>The Drug Baron</i> player’ says:</p> <p>‘I am going to call <i>the Governor</i> to ask for money. It is possible because I have his telephone number, and</p>	<p>All communicative competences used in the previous tasks.</p> <p>Sociolinguistic competence.</p> <p>Can establish basic social contact by using the simplest everyday polite forms of: greetings and farewells; introductions; saying</p>	<p><i>Excellent:</i> Player achieves the learning outcomes during each performance.</p> <p><i>Good:</i> Player makes mistakes, but they do not</p>

<p>because I can manipulate him’.</p> <p>The facilitator can ask both students (<i>the Drug Baron</i> and <i>the Governor</i>) to create the situation of the phone conversation.</p>	<p>please, thank you, sorry, etc. (CEF, p. 122).</p> <p>Can perform and respond to basic language functions, such as information exchange and requests and express opinions and attitudes in a simple way. (CEF, p. 122).</p>	<p>interfere in communication.</p> <p><i>Needs improvement:</i> Player makes consistent errors in the type of sentences provided for the game (<i>grammatical agreement</i>). These errors interfere in communication.</p>
<p>TASK 4: Interpreting-Translating.</p> <p>This interaction happens when the facilitator asks a student to interpret into L1 other student’s idea, a dialogue, or to translate a round of students’ ideas.</p>	<p>All competences used in the previous tasks.</p> <p>Can do short simultaneous and consecutive interpretation from L2 to L1 providing the correct meaning of the ideas.</p>	<p><i>Excellent:</i> Player achieves the learning outcomes during each performance.</p> <p><i>Needs improvement:</i> Player makes mistakes in providing the meaning of ideas.</p>
<p>TASK 5: Sum up a round of the game.</p>	<p>Competences used in the previous tasks.</p>	

<p>When all players have made an argument, <i>the facilitator</i> can get one of the players to sum up what happened that round, and then play moves on to another round. That could be both in L1 and L2.</p>	<p>Pragmatic competence</p> <p><i>If the summary is in L2:</i></p> <p>Can summarize a round of the story in past tense with accuracy in pronunciation, grammatical and lexical cohesion.</p>	<p><i>Excellent:</i> Player achieves the learning outcomes during each performance.</p> <p><i>Good:</i> Can summarize a round of the story in past tense with occasional errors (pronunciation, e.g. <i>grammatical agreement, verbal tenses</i>), but the meaning is still clear.</p> <p><i>Needs improvement:</i> Player makes consistent errors (e.g. <i>grammatical agreement, verbal tenses</i>). These errors interfere in communication.</p>
<p>TASK 6: Sum up the story</p> <p>Students summarize- orally and by writing- the story created during the game.</p>	<p>Linguistic competence used in the previous tasks.</p> <p>Pragmatic competence</p> <p>Can summarize the sequence of events of the story in past tense</p>	<p><i>Excellent:</i> Player achieves the learning outcomes during each performance.</p> <p><i>Good:</i> Can summarize a round of the story in past</p>

	<p>with accuracy in orthography, grammatical and lexical cohesion.</p> <p>Can summarize the sequence of events of the story in past tense with occasional errors, but the meaning is still clear.</p>	<p>tense with occasional errors, but the meaning is still clear.</p> <p><i>Needs improvement:</i> Player makes consistent errors (e.g. <i>grammatical agreement, verbal tenses, and orthography</i>). These errors interfere in communication.</p>
<p>TASK 7: Reading the stories</p> <p>Students read the stories written by their peers.</p>	<p>Competences used in the previous tasks.</p>	<p>All previous items.</p>

According to this model, we have designed a pedagogical proposal – based on the scenario ‘San Splendido’- for using Matrix Game for learning Spanish. It is only a guide with activities teachers can do before, during and after the game.

1. The teacher sets up the problem and scenario information.
2. Once the situation has been set up, the teacher:
 - Explains the game rules to the students.
 - Presents the initial situation or scenario, and distribute the roles and objectives.

- Revises with the students the vocabulary required to play the game (See *Table 1*).
 - Revises with the students the grammar required to play the game (See *Table 2*).
3. After revising the mechanics of the game, and the language required, students start playing in turns.
 4. After playing the game students can summarize – orally or written- the story they have collaboratively created.
 5. Students can read the stories to their peers. They can assess the stories by using The Evidence Model of the learning activity (See *Table 3*).
 6. The teacher can assess students' stories by using The Evidence Model of the learning activity (See *Table 3*).
 7. The teacher gives feedback individually and/or as a group about students' performance during the tasks (See *Table 3*).
 8. The teacher can plan extra activities to support students, in particular, those who 'need improvement' according to The Evidence Model (See *Table 3*).

Matrix Game positive impacts on Spanish language learning.

Matrix Game is a supportive learning tool that has promoted Spanish language learning as an interactive and collaborative process. The game contributes to enhancing language learning through a controlled interaction by using the specific

linguistic features of the structure provided to play the game (Actions-Result-Reasons). The tasks of the game enable students to interact with their peers by focusing on the control and reinforcement of the linguistic elements that are important for second language acquisition, such as the use of morphemes. In particular Matrix Game has contributed to enhance the practise of morphemes to indicate the gender and number in nouns, and the person, number, and tense in verbs. After each turn, the repetition and correction of those linguistic features allow students to be aware of the language they are using during the tasks. This kind of controlled interaction contributes to language acquisition, especially at beginner language levels, as students can internalize the knowledge in a more explicit way (Ellis, 1999, p 228). Matrix Game also provides students with the opportunity to interact spontaneously in the target language. This type of interaction allows them to explore their creativity by using different language content, and negotiation of meaning strategies when communicative problems arise. During the game students often use conversational strategies such as, comprehension and confirmation checks, repetition, and requests for clarification. These interactional adjustments enable students to have access to comprehensible input that, according to Ellis, facilitates L2 acquisition (1999, p 4).

Matrix Game is a situational-learning activity that allows both teacher and students to put language into context. Learners can relate words to meanings through meaningful problem-solving experiences, and with the help of visual resources. For example, the names of the places on the map, and the counters with images have 'inspired' students to create their ideas by associating the words and images with their corresponding meanings. This physical enactment is possible after students assume a new bodily presence through the characters they represent. The experiences facilitated by the game are crucial for learning because they have been structured around specific goals; students have the opportunity to critically reflect on the language used by receiving feedback from their peers and the teacher; and they have the opportunity to apply those experiences into new Matrix Game situations. Those conditions enable learners' experiences to be organized in memory in order to build cognitive simulations to predict, act, and assess other situations (Gees et al, p. 22).

Regarding the importance of affect in language learning, Matrix game facilitates a learning environment where positive emotions arise. Our emotions and rational

abilities are connected (Damasio, 1994; LeDoux,1996, cited in Arnold,1999, p.2). When learning language content, for example, our emotions may interfere or facilitate the learning process. For instance, Skinner (1957, cited in Arnold, 1999, p.2) claimed that positive reinforcement leads to more efficient long-term retention. On the contrary, negative feelings such as anxiety can be an obstacle for memory and reduce learning capacity (Stevick, 1998, cited in Arnold, 1999, p.2). After informal observations of students' participation when playing Matrix game, we have noticed the game – its mechanics as well as the visual (the map and counters), and the experiential learning (body-kinaesthetic) resources - has promoted autonomy, intrinsic motivation, a sense of engagement and equal opportunities for all learners. Matrix Game is a motivating resource for learning. According to Malone (1980, p.3) there are three aspects a game must have to ensure students' motivation: *challenge, fantasy and curiosity*. A game is challenging for the players when the attainment of the goals is uncertain, but achievable. Malone (1980, p.50) lists four aspects that ensure this uncertainty of a game: variable difficulty level, multiple level goals, hidden information, and randomness. For example, in Matrix Game every player has three variable goals, but they must accomplish at least one. In the case of the *drug dealer* character, his goals are *making money; teaching locals a lesson; and surviving the game alive and free*. These goals have been created on the base of a variable difficulty level. For example, the last goal seems to be more difficult to attain than the other ones. However, this difficulty depends on both the player and his peers' non-linguistic and linguistic knowledge. A player may not be good in negotiation language skills to *make some money*, but he may have sufficient tactical thinking to *survive the game alive and free*. The use of different goals maintains players' interest, and enhances their equal participation.

We have also included "hidden information" in the game. For instance, one of the players is "undercover" in the drug dealer's organisation. As a result, his identity cannot be exposed at the beginning of the game with the other characters. This uncertainty leads the other players to try some random strategies to discover his identity, first, and then to react accordingly. The selection of this character brings to the game a sense of incompleteness and inconsistency attracting the curiosity of all players. This situation engages students in the game because, apart from focusing on their specific goals, they need to solve an extra mystery. Matrix Game scenarios

are built in relation to the experiences or knowledge of military personnel. However, the elements of the game- the map, counters, situations, characters, goals- as well as the stories created by the students have a fictional content. This fictional content or 'fantasy' is important for an instructional environment to be more interesting and educational (Malone, 1980, p.56). For example, the 'Army Commander' character may create his ideas based on normal military procedures and ethical guidelines. On the contrary, the 'drug dealer' character may use a more fictional content coming from his knowledge of movies, and television. Both types of fantasy promote an unconstrained and motivated learning context where students can build their knowledge when connecting to their previous one learning.

This motivation is also ensured by the alignment of the game with the topic that the students have previously studied. That alignment enables students to put into context that previous knowledge -both the language content and the cultural information related to the topic- into the game. For example, for those students who have played the role of the 'drug dealer' character, the information they have gained in previous learning activities about famous Latin-American *narcos*, are an 'inspiration' to create their ideas and arguments for the game. As a result it is common students use strategies to solve the problem of the game such as, crossing secret tunnels under rivers, building places surrounded by furious wild animals, and bribing the authorities.

Matrix Game has also promoted an inclusive learning environment because the students can integrate their prior video games experiences, military and non-military knowledge into language learning. For example, I have found that some students – due to their military knowledge- prefer to approach a situation in tactical way. Others use their video games or movies knowledge instead. In both cases the game encourages students to construct their language knowledge building on their own interests and knowledge (Biggs and Tangs, 2011, p 21). Matrix Game is a problem-solving task that can be only completed collaboratively. Without losing the 'spirit' of a competitive game, it creates a positive interdependence among the participants as every member's goal accomplishment is linked to an understanding of each other. Furthermore, it promotes the recognition of the others-not only the teacher- into language learning.

Conclusions

Matrix Game is an innovative educational tool resulting from collaborative work that has improved Spanish language teaching and learning at the Defence Academy of the United Kingdom. We often tend to believe games are solely a means to have a break from classroom routine. However, as has been explained in this paper, the use of an appropriate learning model can transform a game, such as Matrix Game, into a rich learning practise. As other interactive activities this game can also contribute to learning by enhancing inclusive and collaborative learning, autonomy, motivation, and communicative competences. It is another alternative for teachers to carry out assessments in the classroom, and to effectively manage group diversity. The evidence we have collected for this analysis has not been the result of a rigorous research, but of informal observations and students' feedback. Thus it must be seen only as a guide, and not the only one, to continue enhancing the design and implementation of Matrix Game, and other games, in language training.

Bibliography

Arnold, J. ed. (1999). *Affect in Language Learning*. Cambridge: Cambridge University Press, pp. 1-24.

Biggs, J. and Tang, C. (2011). *Teaching for Quality Learning at University* (3rd edition). Buckingham: SRHE.

(2002). *Common European framework of reference for languages: learning, teaching, assessment: case studies*. Strasbourg Cedex, Council of Europe Pub./Éditions du Conseil de l'Europe.

Ellis, R. (1999) *Learning Second Language through Interaction*. Amsterdam: John Benjamin.

Gee, J. (2008). "Learning and Games." *The Ecology of Games: Connecting Youth, Games, and Learning*. Edited by Katie Salen. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press, pp. 21–40. [Accessed: 20/11/2016]. Available from: http://ase.tufts.edu/DevTech/courses/readings/Gee_Learning_and_Games_2008.pdf

Groff, J., Clarke-Midura, J., Owen, V.E., Rosenheck, L., & Beall, M. (2015). *Better Learning in Games: A Balanced Design Lens for a New Generation of Learning Games*. Cambridge, MA: MIT Education Arcade and Learning Games Network. [Accessed: 12/02/2017]. Available from: <http://education.mit.edu/wp-content/uploads/2015/07/BalancedDesignGuide2015.pdf>

Kember, D. (2015). *Understanding the Nature of Motivation and Motivating Students through Teaching and Learning in Higher Education*. Springer Singapore, Springer Science + Business Media Singapore.

Malone, T. W. (1980). What makes things fun to learn? A study of intrinsically motivating computer games. Xerox Palo Alto Research Center Technical Report No. CIS-7 (SSL-80-11), Palo Alto, California. [Accessed: 15/02/2017]. Available from: <https://www.hcs64.com/files/tm%20study%20144.pdf>.

Morgan, H & Houghton, A-M (2011). *Inclusive Curriculum Design in Higher Education: Considerations for effective practice across and within subject areas*. The Higher Education Academy, York.