Exploring the Impact of Digital Escape Rooms on Postgraduate Students' Academic Achievement and Intercultural Awareness in Management Education: A Case Study in the UK

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Abstract

In the past few decades, educators have been questioning the effectiveness of traditional passive face-to-face learning and increasingly adopted innovative learner-focused digital game-based strategies which enhance student autonomy. This article presents an educational intervention that addresses the gap in the literature regarding the impact of Digital Escape Rooms (DERs) in Management Learning and Education offering insights of the adoption of this technique in the UK. This revolutionary method was used with 80 postgraduate students in terms of a Global HRM Course. Students were taught various Intercultural Management theories in terms of a module. The ultimate goal of this project was to increase students' engagement, academic achievement, and intercultural awareness responding to the increased demand for hybrid learning strategies catering for all learners' needs. DERs were used as a revision tool to enhance students' command of cross-cultural theories while working in teams. Learners offered anonymous feedback via Mentimeter after participating in a DER activity before their final assignment submission and wrote a report about their experience. Participants confessed that the use of DER had a positive impact on student teamwork and learning attitudes, academic achievement, development of intercultural awareness, attendance, retention, and progression. They revealed that the DER activity increased their autonomy, decision-making skills and team-bonding. It also helped even low-performing students better understand and retain the theories learnt. This project aspired to support educators, students, and academic managers by offering useful recommendations for the effective use of DER tasks into their existing teaching practices and activities.

Keywords: Digital Escape Rooms, Intercultural Awareness, Management Education, Academic Achievement, Human Resource Management, Learning Attitudes, Experiential Learning

1.   Introduction

Surrounded by technology from a young age, learners lately acquire new knowledge, process relevant information, and react in a different way to the old-fashioned face-to-face passive way of learning. Lengthy tutor-focused lectures in terms of which learners listen and keep notes belong to the past, and lecturers are recently challenged when they try to involve and interact with multilingual and multicultural cohorts of international students as is nowadays the norm in the increasingly internationalized Higher Education (HE) in the UK and globally. Traditional teaching, learning and assessment strategies belong to the past and there is a pressing need for new techniques which incorporate experiential and technology-infused learning and have a substantial impact on students' overall learning experience (Serdyukov, 2017). Therefore, lecturers around the world experiment with new approaches, especially in the post-Covid-19 era during which remote digital learning became the new norm for all educational institutions globally for almost 3 years. These innovative technology-enhanced techniques, which combine elements of digital and playful learning, seem to keep students' interest and involvement in learning alive, especially when theories are taught and applied within a playful game-oriented context. Several studies conducted in many universities around the world showed that the use of video games in HE enhanced learners' academic performance and approach towards learning as they may result in significant enhancement in students' understanding and application of theories, increased engagement, and more favorable attitudes towards learning (Fotaris et al., 2016). Furthermore, Barata et al. (2013) indicate that learners who attend a game-based course i.e., by using a Lego as a Serious Play game, attend classes with more enthusiasm, report that they find their classes more enjoyable, and believe that learning is more engaging and interactive.

Game-based learning (GBL) uses playful methods and techniques to make learning enjoyable, interactive, assist learners better understand and retain the theories learnt, and use them more constructively solving everyday challenges. This engaging highly interactive virtual learning context effectively promotes situated experiential learning. Unlike the repetitive lectures which foster passive learning, GBL can support participants' varying learning styles, preferences and needs promoting inclusion and Social Justice in learning thus preventing confusion, lack of engagement, and repetition enhancing participants' learning experience (Csikszentmihalyi, 1990). Several educators and researchers, who have examined how GBL could be implemented in HE classes, claimed that video games which participants could play either individually or as parts of a team could improve their comprehension of new theories (Giang et al., 2018) and enhance intercultural awareness and communication, exchange of ideas and problem-solving (Dietrich, 2018).

Digital escape rooms (DERs) were first employed by educational practitioners who could successfully use and were impressed by either recreational escape rooms or escape room video games (Veldkamp et al., 2020). Healy (2019) states that DERs, unlike other playful approaches, engage students by involving them in problem-solving tasks, which frequently require them to work in teams and complete the tasks within a strict time limit, using various quizzes, puzzles, problems and challenges based on suspense, educational challenge, cooperation, enthusiasm, and rewards (p. 24). Fotaris and Mastoras (2019) discuss the differences between ordinary games and DERs stressing that they have specific characteristics relevant to: game type (digital, face-to-face or mixed); location (home, class or lab); time limit (average of 30–60 min); and team size (3–10 members). Botturi and Babazadeh (2020) also talk about a star model which stresses that DERs have five characteristics: (a) the narrative - the story, (b) the game flow - the structure of the game, (c)

puzzles, (d) equipment items (digital), and e) learning process. Veldkamp and van de Grint (2020) indicate that tutors should align DERs with the classroom, and systematically assess learners' performance. To enhance the educational process, Eukel and Morrell (2020) suggest a cycle design process to improve learning and favourable students' attitudes comprising designing, experimenting, assessment, redesign, re-assess, and repetition. Fotaris and Mastoras (2019), who reviewed several projects examining the use of DERs, and Veldkamp and associates (2020) mention benefits in learning attitudes, cooperation, student interaction, learning, the creation of online learning contexts and interpersonal communication skills development.

DER activities are closely linked to many learning theories as scientists mention that they share characteristics of both social constructivism and behaviorism (Quariachi & Wim, 2018; Zhang et al., 2018) since gamers construct their knowledge based on realtime experiences within specific tasks in DERs (Franco & DeLuca, 2019; Quariachi & Wim, 2018) and behaviorism as positive behavior, cooperation and idea and knowledge exchange are further developed and retained through the use of DERs (Zhang et al., 2018). Moreover, as DERs are "live-action team-based games", they also have many characteristics which are closely linked to a socio-cultural approach to learning (Quariachi & Wim, 2018; Zhang et al., 2018), that is the influence of social settings that frame the players' social interactions which emerge among the gamers. In conclusion, DERs are employed for educational purposes and are seen as a solution to the challenges that tutors in HE face when they attempt to engage students in deep and meaningful communication and cooperation, other-awareness, critical thinking, decision-making and tolerance and active purposeful learning.

This article explored the use of a DER as a promising revision strategy that can be used to support learners while revising concepts they had learnt and enhance their understanding of existing theories and concepts by applying them while participating in entertaining but also well-designed games which support team-building, peer support, mental well-being and the enhancement of major professional skills, i.e., cooperation, problem-solving and critical thinking. The most prominent goal was to foster EDI and Social Justice in HE as DERs provide the necessary support for low-achieving learners, i.e., BAME, international and neurodiverse learners and develop their learning abilities while connecting at a deeper level with their fellow students. Instead of condemning students to isolation while revising for their exams or for writing their final assignment, tutors invite learners to work in teams, share their problems and find solutions to fun-loving puzzles while they try to make sense of the theories and apply them to meet challenges effectively. While they negotiate meaning with their classmates, they memorise and retain knowledge more easily getting support from their more knowledgeable peers. To sum up, the current project examined the impact of DERs on postgraduate MA Global HRM learners' academic achievement, learning attitudes, and Intercultural Intelligence Development by developing their intercultural and interlingual awareness as students tried to understand and use various cross-cultural management theories to solve real-world problems. It aimed to respond to the following research question:

- What are postgraduate students' perceptions of the impact of the use of a DER as an inclusive strategy that can increase learners' academic performance, develop their intercultural awareness, and improve their attitudes towards learning in Management Education?

2.   Methodology

The current study used a mixed-methods approach and a semi-experimental design. 80 postgraduate (MA Global HRM) students took part in this project. Participants were chosen randomly, and learners were predominantly multilingual and multicultural local and international students, aged 22-40. They formed two large mixed ability groups which were taught by the same tutor. Learners attended a module on Intercultural International Business Management in a hybrid mode for one academic term (12 weeks). The majority of the students were international (85%) who spoke English as a second or third language and came from various mixed cultural and linguistic contexts. The principal goal of this intervention and this module was to enhance learners' writing, negotiation, collaborative, and research skills so that they could successfully write their final assignment combining various theories of the module, reflecting on a real-world problem and finding the best possible solution. The overall aim was to increase student engagement, promote student reflection, development of their critical thinking skills and interaction thus enhancing these students' learning attitudes in HE and their negotiation skills in the post-Covid-19 era which traumatized and isolated students in tertiary education (Meletiadou, 2023b).

Participants in this study attended a 3-hour session every week in terms of this module on Intercultural Business Management, were taught various cross-cultural management theories and worked in various case studies in teams of 3-4 learners to reflect on the topic they would choose for their final assignment and how they would resolve a challenge using the theories they have learnt. Students found it hard to understand and remember all the theories they had learnt. They needed help and support, and the use of this DER would prepare them to work independently in order to prepare their final assignment (100%) which was due 3 weeks after the end of the semester.

Students were invited to participate in a DER task in week 11 to help them revise the theories, understand and retain them so that they could use them successfully in their final assignment. This fun-loving game offered students the opportunity to work in small teams, negotiate meaning and better understand the theories they had learnt i.e., by matching the major theorists with the right concepts and definitions. This was merely a preparation before writing their individual assignment in terms of which they had to provide a solution to a real-world problem by using the right theories thus providing an evidence-based response to the problem posed by the assignment question.

All students were taught by the same lecturer using the same material in terms of an Intercultural Management Module. In terms of this module, the researcher first taught the theories building on students' previous knowledge and then invited learners to work in groups on case studies to apply the theories in various contexts and face a number of problems. In terms of the final assignment (100% of the assessment for this module), learners had to act as consultants and offer plausible solutions to the company (advocacy) in the specific context included in the case study to assist them in facing the challenges and resolve their real-world problems which were closely related to Global Human Resource Management. In the end, to help them effectively revise all the relevant theories and engage them in successful retention of the most important concepts of the module while they were preparing their final assignment on a chosen topic (different for every student), the tutor decided to design a DER task to surprise the students and help them relax while having fun in terms of a multicultural and multilingual group. The tutor called this DER "Escape

Unconscious Bias - Enhancing HRM leaders' Intercultural and Interlingual Intelligence". The goals of this DER activity can be seen in Figure 1.
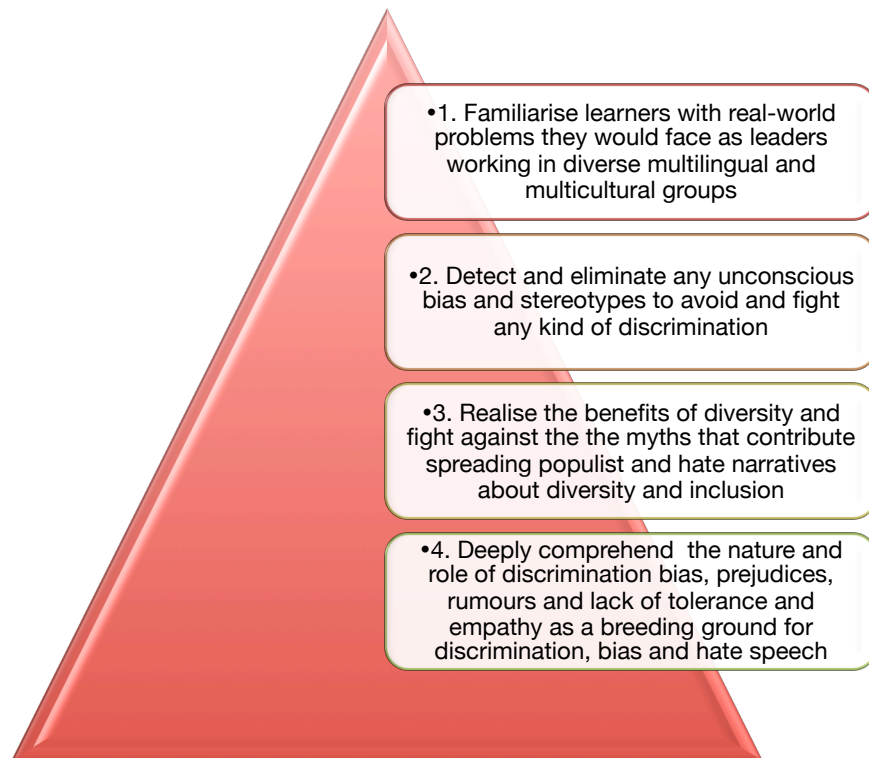

- 1. Familiarise learners with real-world problems they would face as leaders working in diverse multilingual and multicultural groups
- 2. Detect and eliminate any unconscious bias and stereotypes to avoid and fight any kind of discrimination
- 3. Realise the benefits of diversity and fight against the the myths that contribute spreading populist and hate narratives about diversity and inclusion
- 4. Deeply comprehend the nature and role of discrimination bias, prejudices, rumours and lack of tolerance and empathy as a breeding ground for discrimination, bias and hate speech

Figure 1: Goals of the DER task

"Escape Unconscious Bias" was an online highly interactive, playful game designed and piloted to contribute to enhancing HRM leaders' intercultural skills and engage them in building unconscious bias-free communities of global HRM leaders who promote empathy, tolerance, and inclusion. Gamers had to solve a series of tests/questions related to the knowledge of human rights, unconscious bias, and discrimination, and find effective solutions to thought-provoking and hard to resolve problems and situations provoked by unconscious biases, rumours and stereotypes, so to understand how they work and which strategies are most efficient to reduce, if not eliminate, their negative impact.

Escape Unconscious Bias was an amazing fun-loving approach to enhancing learners' intercultural awareness and communication in an amusing way while also allowing them to prepare their final assignment in a stress-free environment. In terms of this DER, learners were asked to match definitions of major concepts with the theorists who developed them, go through short case studies in small groups and reach a consensus about the most appropriate recommendation they could offer as consultants, find the words (major intercultural management concepts) in a crossword when the answers would reveal a scrambled word that should then be unscrambled and used as a code, and find their way in a maze that the tutor created by typing a phrase (the definition of a theory). The tutor asked a question and gave clues to the participants to find their way out of the maze. Gamers were informed and invited to engage in the DER activity via an email and were asked to work online in groups of 4 to play the game. The teams had three hours to escape the room and were invited to provide anonymous feedback via Mentimeter and write a final individual report reflecting on their

experience when they submitted their assignment indicating whether they thought the DER was a useful experience or not and why.

In terms of their DER team activity, learners were encouraged to translanguage, that is to use words or small phrases from their own native language in their verbal exchanges, but to provide their main answers concerning the DER in English (English as a Lingua Franca) as this would enable international students to become more actively involved in conversations and better comprehend the game and the concepts used (Meletiadou, 2023a; 2022). The researcher also triangulated the data provided by the participants with the tutor's observations. This allowed a more in-depth exploration and qualitative triangulation (Flick, 2018) with the findings from participants' reports. Qualitative data from student feedback via Mentimeter and students' reports were analysed in QSR NVivo 9 by the researcher. The researcher analysed all data using thematic analysis (Nowell et al., 2017) to identify patterns in the data and use these themes to find answers to the research question. She also had an assistant who analysed 20% of the data, which were chosen randomly, to increase the reliability of the analysis. The researcher and her assistant identified and agreed on themes which provided a response to the research question of this study.

3.   Findings

The researcher analysed all findings taking into consideration the research question of the current study and detected the following dominant themes which were referred to by more than 50 students and were also included in the tutor's observations.

3.1.   Perceived Impact of DER on Students' Academic Performance

Participants in the present study testified that this task helped them delve deeper into the theories, ask questions about certain points that seemed obscure and better understand how they could apply them in practice (Figure 2). Students seemed unwilling to share their problems with the tutor and more willing to discuss them with more knowledgeable peers. The DER task offered the right space and abundant time for learners to share their concerns and use the new concepts in several real-life contexts leading to learning gains, improving their critical thinking skills, time management, interpersonal skills, resilience, problem-solving and creativity considerably (Adams et al., 2018; Foster & Warwick, 2018; Walsh & Spence, 2018). This innovative learning strategy had a very positive impact on their revision skills as they prepared their final assignment which required them to apply several of the new theories they learnt in real-world circumstances. It therefore supported students' sustainable learning development confirming previous research (Kinio et al., 2017). Students confessed that their performance, as indicated by their final assignment marks, improved by up to 25%. This was confirmed by their tutor who compared their marks with other assignments they wrote for similar modules.
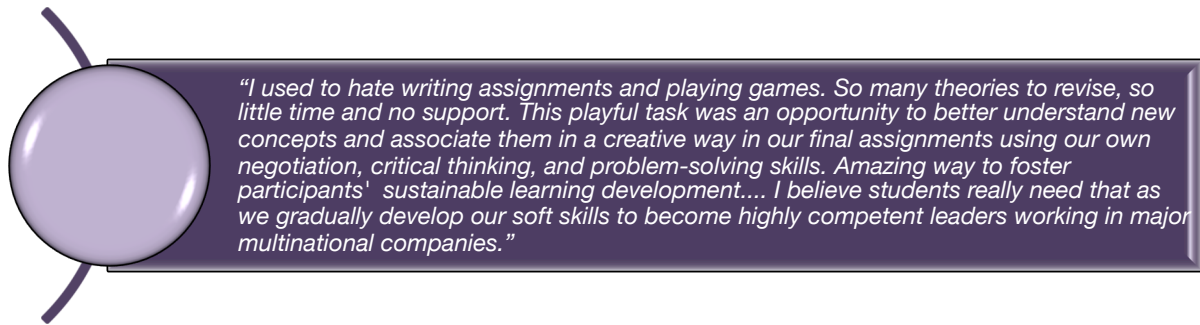
Figure 2: Impact on Students' Sustainable Learning Development

Students also noted that DERs facilitated their own understanding of their final assignment tasks and instructions as they could receive valuable support and guidance from their peers. This enhanced their group efficacy during the game (Bandura, 1997) and their individual performance (increasing their self-reliance) in their final assignment. They all seemed to have exchanged ideas and offered some kind of help and support to their peers. This contributed to improving everyone's academic performance offering either ideas, knowledge, complementary insights, their keen eye for detail or for the identification of problems in their way of thinking or in their written texts. All students were happy and deeply involved in the game. In fact, they asked for more DERs in other modules as well as these combined enhanced learning, bonding, and peaceful collaboration among students.
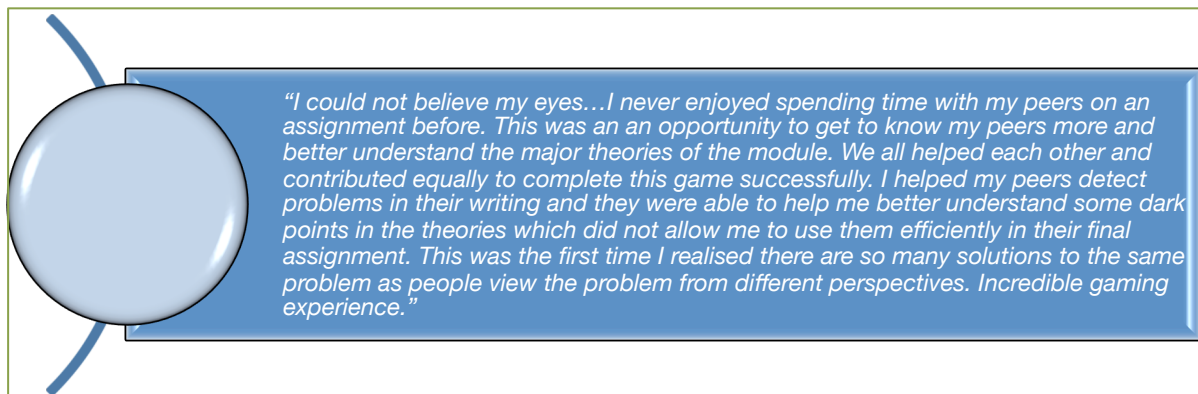

Figure 3: Development of Students' Collaborative Skills

Nevertheless, few participants also confessed that they were sometimes minor conflicts among some of their peers as some local students wanted to dominate the conversations. Students admitted that these were quickly resolved by the tutor who closely monitored the whole procedure, but participants claimed that the use of specific written commonly agreed among students and the lecturer rules would ensure that all students had equal involvement and contribution in the DER.
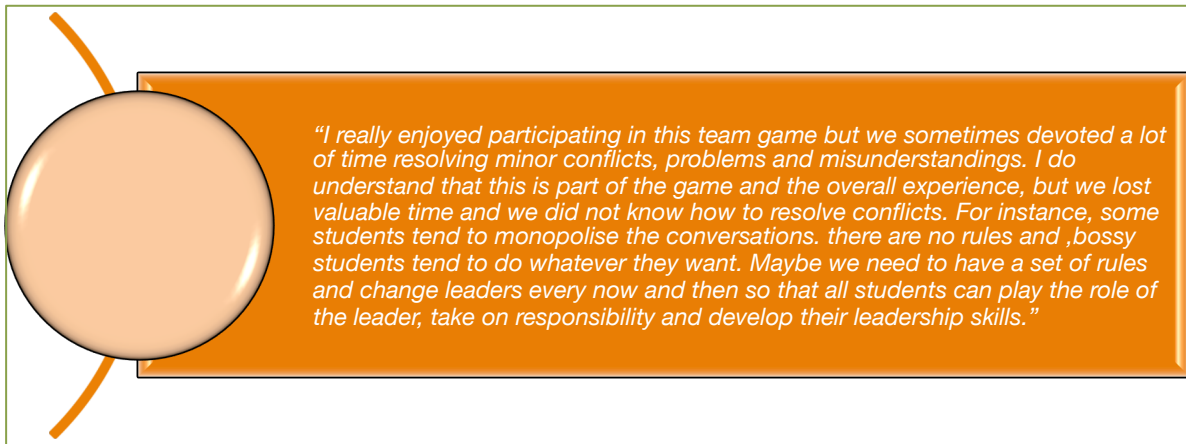
Figure 4: Conflicts About Equal Contribution

To sum up, participants in this study referred to countless benefits for students involved in DERs but they also offered several suggestions and ideas to improve the overall implementation of DERs in Management Education.

3.2. Perceived Impact of DER on Student Engagement and Development of Intercultural Intelligence

Participants repeatedly remarked that they felt inspired and relaxed with this new highly interactive and collaborative game as it fostered cooperation, intercultural communication, and negotiation while gamers tried to understand the underlying concepts and theories and use them effectively for their final assignment. They confessed that this DER increased their interest in the module, their engagement and improved their learning attitudes. This confirmed previous studies (Ho, 2018; Peleg et al., 209; Zhang et al., 2019) which also examined the application of DERs in HE, stressing the multiple gains it may offer to students. As indicated in students' feedback, this digital game-based strategy increased students' intercultural intelligence while fostering Social Justice.
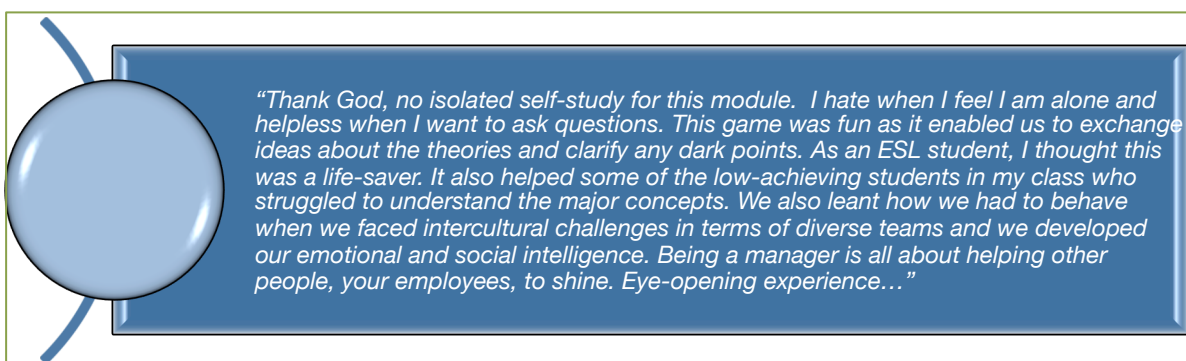

Figure 5: Increased Level of Engagement and Interaction

However, some local students confessed that certain international learners created groups with their peers, with who shared the same native language, using their mother tongue rather than their target language (English) as they could not understand local students who spoke either too fast or used phrases or words they could not understand. Moreover, they felt intimidated and ashamed to express themselves in English and contribute their own ideas to their group. Local students quickly realised that and showing understanding and empathy

decided to talk more slowly and allow their international colleagues to contribute by offering them the first turn in every conversation showing intercultural intelligence and promoting inclusion. This helped them to prepare themselves as they would face similar challenges as managers in multinational companies in the future.

"I think DER was a life-changing experience for all of us. However, some students created groups with their friends and talked in their native language. They could not undersantd local students and it was easier for them to avoid interacting in English. I interevened right away asking my classmates to talk more slowly. I also offered international students the first turn when all of us had to contribute our ideas. My patience and support helped them and ultimately helped me finish the game faster as they had brilliant ideas. We also praised these students for their contributions. Incredible experience! We developed our problem-solving and decision-making skills as well as our tolerance. We have to, if we want to lead international teams and bring in innovative ideas in the future."
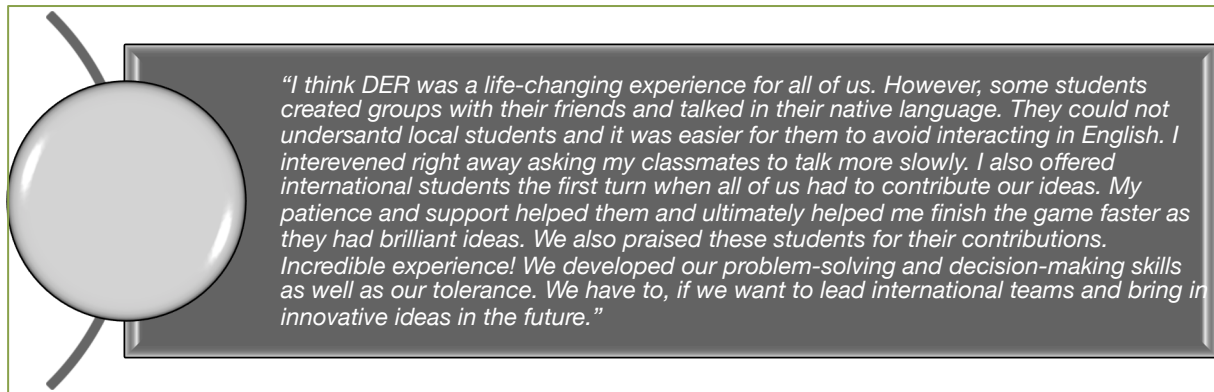
Figure 6: Empathy and Development of Students' Intercultural Intelligence

To sum up, the findings from the present intervention showed that learners enjoyed these fun-loving games as they thought the whole experience was inspiring and valuable for their future academic, personal, and professional development. Students developed various valuable professional skills, i.e., interpersonal skills, decision-making and strategic thinking and prepared themselves and their peers to become successful leaders by showing empathy and tolerance developing their intercultural and emotional intelligence and becoming more inclusive. They thus promoted Social Justice supporting their peers, irrespective of their background, tastes, needs and preferences. They did face some minor challenges, but they confessed they had to develop important skills i.e., emotional, cultural, linguistic, and social intelligence if they wanted to succeed as leaders in their future workplaces around the world.

4.   Conclusion

The present intervention showed some of the gains and shortcoming of involving students in DERs while preparing them to become successful leaders and work effectively in terms of multinational and multicultural teams at their workplace. Working in terms of a multinational team can be quite challenging for the members of the team, but also for the leader of this group. As part of extended multinational and multicultural teams, members need to reach specific aims and goals and establish a common purpose, clarify the roles played by various participants to avoid conflict, and agree on specific rules for conduct, effective collaboration, and interaction (Earley & Gibson, 2002). This was also evident in terms of these learners' participation in the specific DER activity. Gamers disclosed these as some of the problems they faced and had to resolve to facilitate interpersonal communication and reach their final goals successfully so that they could complete the game and compete with their peers effectively.

The current project has many limitations and offers directions for further research. Initially, many factors that were not tested in this study might have influenced either positively or negatively these learners' attitudes towards DERs. For example, the impact of DER on student academic performance could have been assessed more reliably via a digital test or a face-to-face quiz given prior and post intervention, comparing the knowledge acquired by the research group and another group which would act as a control group. This would have

enhanced the reliability of our findings and claims about the impact of DERs on students' academic performance.

Moreover, the self-report features of this study could be enhanced by quantitative tools elaborating on the links between various characteristics of the intervention, i.e., impact on students' writing performance in their final assignment, impact on students' oral fluency etc. Further studies may benefit from interviews with participants eliciting their experiences with the use of DERs and revealing the impact of challenge for instance, or the mediation of cooperation between DER tasks and learning motivation. Interviews with tutors and observations of teaching via DER could be beneficial for understanding the pitfalls of the approach and the problems tutors may face when implementing DERs in class, whether online or face-to- face. Finally, the current project focused on postgraduate HRM students. Future studies could explore DER impact on undergraduate or foundation students and/or students in other courses, i.e., Digital Marketing, Law or International Management and compare their findings.

The need for gamers to collaborate in a time-specific but enjoyable context allows students to develop valuable interpersonal skills; it may also reduce the "free-rider" issue (i.e., students who take advantage of the gains, but do not contribute to the groupwork), which is one of the most significant challenges tutors and learners face in terms of traditional team-based learning tasks. Additionally, DERs provide an opportunity to bring technology to the classroom, as simulations, videos, or other interactive digital material can easily be combined with the various puzzles of any DER activity. Creating puzzles that meet the learning objectives and enable students to engage with the theories of the module, instead of just searching for clues, requires time, patience, the right context and critical thinking skills. Once the game has been designed though, it can be used repeatedly in forthcoming years, other modules and or courses. Any successful use of DERs should include pilot testing in order to estimate the time required to complete the digital game and to detect any challenges and/or mistakes that could prevent successful implementation of the game and successful completion. This would also develop tutors' confidence in supporting participants to complete the activity successfully.

During learners' participation in any DER task, the debriefing stage is their only chance for reflection; without reflection, experience cannot lead to long-term effective learning and retention of learning. Surprisingly, less than half of the studies conducted so far on DERs included debriefing in their escape room experience and only one fifth included details of the implementation process. Further projects incorporating debriefing with more rigorous evaluation are necessary to confirm the educational value for various designs, different kinds of content, and in various contexts. More research is also necessary to begin to gauge the "return of investment" of time, effort, and resources in relation to the achieved results. To sum up, the current study intends to contribute to instructional education design by providing additional evidence of DER's potential to support student learning experience in HE. The outcomes may extend the road map for future research, offer new insights to researchers and educators, and provide tutors with significant and valuable advice and recommendations on how to add DERs into their classes. Finally, it may indicate educational approaches to support the development of students' writing skills and enhance students' learning experience fostering Social Justice and Sustainable Development.

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