

Digital Games as a Support for Stealth Assessment: EFL Teachers' Perspectives



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Abstract

The present study aims to shed light on the crucial roles of using digital games generally on enhancing English language learning and specifically on supporting stealth assessment which is a new technology that embeds ongoing formative assessment in game -based environments without the awareness of the students who are being assessed. The study also aims at guaranteeing complete comprehension of the term stealth assessment by Iraqi EFL teachers, investigating their perceptions toward using educational digital games to support stealth assessment and comparing their perceptions based on the variables of gender and age generation (25-35&35-55) . The study also aims to identify the main types of digital games that can be most effective for applying stealth assessment in English language classrooms. Sixty EFL teachers were chosen randomly from different distinguished secondary schools from the general directorate of Baghdad (Al -Rusafa District) to represent the study sample. The researcher has constructed a questionnaire after confirming its face validity by exposing it to

specialized experts in EFL teaching methods and applied linguistics. After analyzing the results of the study by using suitable statistical methods, they demonstrate that EFL teachers have high positive perceptions towards using educational digital games for supporting stealth assessment. They also indicate that Duolingo, Quizlet, and Minecraft digital games are the most effective for applying stealth assessment. This study also recommends that teachers can use educational digital games in learning and teaching English language as they are the best method for keeping the students engaged in teaching classrooms.

Key words: digital games, stealth assessment, teacher's perspectives

الألعاب الرقمية كمعزز او داعم للتقييم الخفي : آراء مدرسي اللغة الإنكليزية لغة اجنبية

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الملخص

تهدف هذه الدراسة إلى تسليط الضوء على الدور المحوري لاستخدام الألعاب الرقمية في تعزيز تعلم اللغة الإنجليزية، وتحديدًا في دعم التقييم الخفي، وهو تقنية جديدة تُدمج التقييم البنائي المستمر في بيانات قائمة على الألعاب دون وعي أو علم الطلاب الخاضعين للتقييم. إذ تهدف الدراسة إلى ضمان الفهم الكامل لمصطلح التقييم الخفي من قبل مدرسي اللغة الإنكليزية العراقيين، وتحديد تصوراتهم تجاه استخدام الألعاب الرقمية التعليمية لدعم التقييم الخفي، ثم مقارنة تصوراتهم بناءً على متغيري الجنس والعمر. كما تسعى الدراسة إلى توضيح الأنواع الرئيسية للألعاب الرقمية الأكثر فعالية لتطبيق التقييم الخفي في فصول اللغة الإنجليزية. تم اختيار ستين مدرسًا بشكل

عشوائي من مدارس المتميزين والمتميزات في بغداد ((الرصافة)) لتمثيل عينة الدراسة. تم تصميم استبيان من قبل الباحث بعد التأكد من صلاحيته الظاهرية وذلك بعرضه على خبراء مختصين في مجال طرائق تدريس اللغة الإنكليزية وعلم اللغة التطبيقي . وبعد تحليل النتائج إحصائياً، أظهرت أن مدرسي اللغة الإنكليزية كلغة أجنبية لديهم تصورات إيجابية تجاه استخدام الألعاب الرقمية التعليمية لدعم التقييم الخفي. كما أشارت إلى أن الألعاب الرقمية التالية Duolingo, Quizlet, Minecraft هي الأكثر فعالية لتطبيق التقييم الخفي. كما توصي الدراسة المدرسين باستخدام الألعاب الرقمية التعليمية في تعليم وتدريس اللغة الإنكليزية كونها من احسن الطرق للحفاظ على تفاعل الطلبة في الصف الدراسي .

الكلمات المفتاحية : الألعاب الرقمية ، التقييم الخفي ، آراء المدرسين

1-Introduction

1-1 The problem of the study and its significance.

Digital games have been used for many years and provide enormous benefits , challenges and opportunities over the process of learning and teaching English language.It can foster motivation and stimulate critical thinking .Among the main challenges that appear to have relation to this aspect is the effect of using digital games on stealthy assessment.

Stealthy assessment can be defined as performance-based assessment that is seamlessly embedded in game –based environment without the consciousness of the learners who are being evaluated.In a world that is globally interconnected and hyper-connected, stealthy assessment can be seen as an essential technology which inserts ongoing formative assessment into the digital learning environments (Shut , 2011) . Stealthy assessment is meant not only to measure essential competences, but also to enhance their development through game play or with other kinds of interesting environments (Shut & Rahimi , 2022) .

Brinkley et al .(2010) assert that conventional or traditional learning classrooms are not keeping up with the increased advances of technologies and the requirements of the (21 st) century education as the needs of high – level skills such as creativity , critical thinking , collaboration and communication. Therefore , it's very important for researchers and teachers to find effective methods of enhancing and

assessing high -level competencies and support deep learning to prepare their students for success in this century . Among the possible methods is game -based learning and assessment . Many academic studies and literature such as (Shut , 2009, VanEck et al ., (2017) and Fang et al .,2023 have recognized the benefits of using video games to support soft skills , literacy skills , knowledge and other personal attributes .

Conventional classroom assessment as ((quizzes and tests)) , on the other hand , have many demerits as they have constrains (time , space) and limited number of items and therefore they can't fully evaluate what has been taught in classroom.They also don't provide formative and ongoing feedback (DiCerbo et al . , 2017) .The traditional assessment may also cause test anxiety and stress which may negatively affect students' experiences of test -taking .

In contrast to conventional assessment , stealthy assessment can provide an innovative method by conducting literary assessment in computer -based learning environments.These types of assessment are usually taken through learning activities instead of checkpoint or summative assessment.Stealth assessments are also based on the students' natural performance and behaviors instead of being presented as tests . It can assess students' reading skills dynamically and unobtrusively and can offer timely feedback through the learning process.So , this research has been tackled to shed light on investigating Iraqi EFL teachers' attitudes or perspectives concerning the benefits of digital games on supporting stealthy assessment .Therefore , the findings of this study will contribute to the understanding and knowledge of the stealth assessment field.

Depending on what is mentioned above , the current study aims to address the questions below :

1-Do Iraqi EFL teachers have complete understanding of the term stealth assessment?

2-Do Iraqi EF L teachers have negative or positive perspectives regarding the use of digital-games on enhancing stealth assessment?

3- Are there any statistical differences among Iraqi EFL teachers' perspectives in respect to gender variable towards applying digital games for supporting stealth assessment?

4- Does the perspective on using digital games for improving stealth assessment differ statistically between teachers aged 25-35 and those aged 35-55 ?

5- What are the most effective digital games for applying stealth assessment in English language classrooms ?

1-2 Aims

The current study aims to investigate the opinions of Iraqi EFL teachers concerning the use of digital games for enhancing stealth assessment. It also sheds light on findings the statistical differences between male and female EFL teachers perspectives regarding the use of digital games to support stealth assessment. It also aims at identifying the most efficient types of digital games for implementing stealth assessment in teaching classrooms. It also aims at finding the statistical differences between the two age generations used in this study (25-35) and (35-55) towards using digital games to support stealth assessment.

1-3 Limits

This study is limited to :

- 1-The use of educational digital games on stealth assessment .
- 2-Iraqi EFL teachers in Distinguished -Students secondary Schools .
- 3- Baghdad General Directorate (Al-Rusafa District) .
- 4-The academic year 2024 -2025 .

1-4 Hypotheses

The following hypotheses are formed according to the study aims :

- 1-Iraqi EFL teachers have positive attitudes concerning the use of digital games to enhance stealth assessment.
- 2-There are no statistical differences between male and female EFL teachers' opinions regarding the use of digital games for supporting stealth assessment.
- 3- There are no statistical differences between the two age generations

(25-35) and (35-55) concerning using digital games as a support for stealth assessment.

1-5 Value

The results of this study can contribute significantly to the knowledge of the stealth assessment field by seeking for a more innovative approaches for assessing students' performance. It will also pave the way for EFL teachers to improve their students' ability to use online or educational digital games in teaching and learning environments.

1-6 Definitions of Basic Terms.

1-6 -1 Digital games .

Digital games are software -based educational or entertainment system .They are also known as electronic games and they are played on devices as tablets, mobile phones,....etc . They usually define clear objectives, feedback systems, conflict and challenges. (Shute , 2011)

1-6- 2 Stealth assessment

According to Shute et al., (2010) stealth assessment is a performance-based assessment that is embedded in game -based environments without the awareness of the students who are being evaluated and without disrupting students' flow.

2-Literature Review

2-1 Digital games .

Digital games are games that are played on a game system, computer, mobile device or television. They can be made or designed specifically for pedagogical or educational purposes. They can also be designed for online , single -player or collaborative play .

As indicated by Alfarsi et al ., (2020 a) , digital games have become very popular among EF L students in recent years as they use them both as a source of entertainment and as means for learning and this is a natural consequence of the uses of the social media applications and the electronic education.

Relating to the various benefits of playing or using digital games, Shut et al .,(2010) state that good video games that coupled with evidence- based assessment, can provide a vehicle

for dynamically measuring conscientiousness and other essential competencies more precisely than the traditional methods . Many academic studies have also shown that besides being a very popular activity, playing video games has been viewed to relate positively to various cognitive skills on spatial-visual capabilities(Green and Bavelin , 2007 , on openness to experience(Chory and Goodboy , 2011) , on attention (Shaw et al ., 2005) , on persistence (Ventura et al., 2012) , on academic performance (Skoric et al ., 2009) and civic engagement (Ferguson and Garza , 2011) .

In addition, digital games can enhance creativity(Pikhart et al., 2024) They can also motivate learners to learn skills and the essential academic content , within and outside the games (Barb et al., 2010) .

It is worth mentioning that learning in digital games has been historically assessed in direct way or spontaneous manner . .So , the alternative to this is the actual time assessment and enhancement of learning which is driven by shifting demands of the learners (players) .This , in turn, requires performance assessment with automated scoring (Shute and Ventura, 2013).

2-2 Stealth Assessment : Background and Work .

Generally , assessment refers to the process of systematically collecting and analysing information. It also contains more than measuring , i. e it involves interpreting and acting on the information regarding the students' understanding and the performance relate to the educational goals (Shute and Ventura , 2013) .

There are two kinds of classroom assessment , summative which is assessment of learning .It often takes the form of tests and represents the end of the road , i. e the end point of learning . Formative or ongoing assessment which is the assessment for learning .It usually contains quizzes and exams integrated throughout the course of learning with the aim to give boost to the students along the way .

There are many shortcomings to summative assessment .First, they usually have limited number of time and items, therefore, they cannot fully evaluate what has been learned or taught in the classroom. In addition, Shute & Rahimi (2022 , P. 3) state that “they just measure learning at a single point in time summarized by an overall score with rarely any formative feedback “. So , the result of such type of assessment can lead to demotivated learners. One possible solution to this problem is stealth assessment which is defined by

Shute (2011) as a method or technology that can embed ongoing formative evaluation deeply into the video or online learning environment and diminishing the difference-between learning and assessment.

The term stealth assessment was initially presented in 2005 through an AERA symposium on the topic of (diagnostic assessment) . Generally , stealth assessment is an evidence-based method that unobtrusively or discreetly assess the progression of students’ learning while they are engaged with highly compelling and interactive environments as video games or any other digital learning environment (Shute & Kim , 2013)

Wang & Shute (2015) assert that the main aim of stealth assessment is to blur or diminish the boundaries between learning , game play and assessment by using secretly methods as log files and eye tracking to continuously collect the students’ data and evaluate their progressions for cognitive and non-cognitive competencies during the game . In this case , assessment is going to be part of the game play as indicated by Mayer (2018).

Stealth assessment can also be applied to measure social and emotional skills as persistence as indicated by Herold (2014) and there is no better way than digital games that can provide challenging problems without completely exhausting . Relating to this point , Shute (2011) assures regards the process of failing and trying again in the video or digital games as a source of evidence for persistence.

Regarding the work of stealth assessment, the following steps illustrate it very clearly:

When students interact with digital learning environment , they generate very rich sequences or successions of actions as the data points that they are seizing in the log files .These caught data are mechanically scored by the in -game rubrics , then combined in real – time Bayesian networks that indicate the developing probabilities of the estimated mastery levels of students on the target competencies (Shute and Rahimi , 2022)

In addition, Mislevy et al., (2003) state that stealth assessment usually follows Evidence-Centred Design) framework which supplies a method to reason about the design of assessment and the performance of students.This ECD framework contains of three main patterns or models : competency model , evidence model and task model .The competency model usually defines what is intended to be evaluated or assessed (e.g. skill , knowledge, or other attributes) by implementing the target competency into its constituting facets.After that , the students are classified into different levels (e.g.high , medium and low) depending on their actions with the game or the environment relative to the variables of competency model.The evidence model defines what the students do (i. e ., the observables) consisting the signs of the competencies of interest .This model also contains two parts .The first part is the scoring rules that are used to evaluate the observables by weighted evidence and the second part is the statistical model which works as feeding the competencies .i.e., they modify or adjust the values of the evidence, collect all the relevant evidence and link statistically the observables to the unobservables .Finally ,the task model which describes the types and the characteristics of the tasks that can extract evidence from the performance of the students about the competency of interest (i.e., it works as feeding the evidence model) .

It should be mentioned that all these aforementioned models work together actively to assess the competency levels of the students and at different times .

2-3 Previous studies

The following are the main studies that tackled the main study variables from different perspectives :

2-3-1 DeRosier et al ., (2012)

This study investigated the effects of a novel computer game called Zoo u on developing the students' social skills .It concluded that this digital game has positive effects on improving the students social skills .

2-3-2 Shute & Ventura (2013)

The main aim of this study is to present the paradigm of stealth assessment and clarify the implementation of stealth assessment by Newton's playground.It measures persistence, creativity and conceptual understanding through the gameplay.

2-3-3 Shute et al .,(2021)

This study is an attempt to implement stealth assessment to measure creativity through physics playgrounds' game .It showed that creativity can be measured through the behaviour of the players in the game .

2-3-4 Fang et al .,(2021)

This study tackled the measurement and evaluation of student's literacy skills and vocabulary throughout the main digital games as (Dungeon, Vocabulary Flash and Escape) .It indicated that literacy skills can be measured better through the implementation of digital games .

3. Methodological Procedures

3.1 The Sample

For achieving the aims of this study, 60 English language teachers were selected randomly from the Distinguished -Students' Secondary Schools in Baghdad general directorate (Al -Rusafa District) to stand for the sample of the study .The choice of schools is justified on the basis that most of their students are well-trained on using educational digital games and many other technological innovations .

The researcher chose other 10 EFL teachers for representing the pilot administration of this study and for the

purpose of checking the time needed to answer the questionnaire's items .The aforementioned sample answered all the questionnaire items with some clarification and discussion with the researcher in appropriate period of time and without any difficulties .

3.2 Instrument of the study .

The researcher has constructed a questionnaire of three parts to be the main instrument of this study . In its first part, the researcher asks the participants whether they apprehend the exact meaning of the term stealth assessment or not. She also asks them to write a brief definition for clarifying the meaning of the term by using their own words and expressions .. By this way, the researcher make sure that all the participants understand the term under study .. The second part of the questionnaire represents the perspectives or the opinions of teachers toward using educational digital games as a support for stealth assessment in EFL contexts. It contains fifteen items that measure EFL teachers' opinions regarding the importance or the significance of using digital or video games on supporting stealth assessment . It is worth mentioning that the researcher has elicited the questionnaire' items depending on the literature review and the related previous studies. The final part of the questionnaire contains approximately all the digital games applications or types of digital games that can be most effective for implementing stealth assessment . The final form of the questionnaire was given to the sample of the study after ensuring its face validity .

3-3 Face validity

To estimate the face validity of the study instrument, the researcher presented the questionnaire to a jury of experts specialized in EFL teaching methods and applied linguistics. They agreed that all the items were clear and appropriate , with the exception of minor modifications , which have been taken into consideration (see appendix- B) .

3-4 Reliability

Reliability , according to Drost (2011), refers to the consistency of measurement results when conducted by different

individuals, at different times, under varying conditions, and potentially using different instruments designed to assess the same skill (p. 107).

In this study, Cronbach's Alpha formula was employed to assess the reliability of the questionnaire. The resulting coefficient was 0.83, indicating an acceptable level of internal consistency.

4. The Results of the study

The following are the results of each part of the questionnaire:

4.1. The Results of the First Question

The participants of the study are asked to answer whether they know the underlying meaning of the term stealth assessment. The results reflect that all the participants understand the meaning of the term. They assure that they apply it in informal ways in their English language classrooms. This means that most teachers deal with stealth assessment informally when their students apply some of the educational digital games in English material.

4.2 The Results of the Second Question

For the purpose of answering the study's second question, the responses of the participants have been investigated through estimating the value of the standard deviation which is found to be 6.009 and the mean score value which reads 50.68. After utilizing the formula of t-test for one sample, it is appeared that the computed t-value 26.697 is greater than the tabulated one which is 2000 at 58 degree of freedom and 0.05 level of significant. This finding indicates that Iraqi EFL-teachers have good and encouraging perceptions towards using digital games generally as a teaching aid for English language learning and development and specifically as a support for stealth assessment. So, the first hypothesis is verified and accepted.

Table 1 The Results of the Second Question

Group	Sample	Mean	Standard deviation	Degree of freedom	t-value		Level of significance t
					Computed	Tabulated	
Male and female	60	50.68	6.009	58	26.697	2.000	(0.05) Statistically significant

4-3 The Results of the Third Question .

To answer the third question of the study , the t-test method for two independent sample (male and female) has been used .The results indicate that the estimated t-value which reads 3.668 exceeds the tabulated one which is 2.01 at degree of freedom 58 and the significance level of 0.05 .This result illustrates that there are differences of statistical significance between female and male EFL -teachers' perceptions in favour of male EFL teachers concerning using digital games as a support for stealth assessment .Therefore , the second hypothesis of the study is verified.

Table (2) The Results of the Third Question

Group	sample	Mean	Standard deviation	Degree of freedom	Estimate	Tabulated	
Male	30	27.76	5.04	58	3.668	2.01	(0.05)Statistically significant
female	30	22.93	5.016				

4.4 The Results of the Fourth Question

Table (3) shows that the calculated t -value(3.1) is more than the tabulated one 2.000 at the degree of freedom 58 and the level of significance 0.05 This displays that there are statistically significant differences between EFL teachers who age (25-35) and teachers who age (35-45) and in support of the first group (teachers who age (25-35).Therefore, the third hypothesis of the current study has been verified and accepted.

Table 3 The Results of the Fourth Question

Group	Sample	Mean	Standard deviation	Degree of freedom	t-value		Level of significance
					Computed	Tabulated	
Age (25-35)	30	28.5	32.37	58	3.1	2.000	(0.05)Statistically significant

Age (35-55)	30	25.1	3.88				
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4.5 The Results of the Fifth Question

In the questionnaire's last part , the researcher lists some types of educational digital games that could be most effective for applying stealth assessment specifically those that are accessible of app store for Iraqi users of iPad or mobile phones. These are puzzles games , Duolingo , Vocabulary Spelling City , Adventure Academy , Quizlet , Minecraft, Kahoot and Memrise educational apps with embedded assessment . The researcher asks the participants to select three of the widely used digital games that used by their students . The results revel that students used Dulingo, Quizlet and Minecraft more than other digital games . These digital games contribute to the aim of keeping the students engaged and they also contain many features such as a library of tutorials and lesson plans .They are also designed to be used in the classroom with engaging learning quizzes.

5. Discussion of the Results

The results of the current study demonstrate that most of EFL teachers are aware of the meaning of stealth assessment as a new method to assess and support skills within gaming environments without disrupting their students' flow. The results also indicate that the study participants hold positive perceptions towards using digital or video games as a support for stealth assessment as most of them believe that these games are the best methods to keep their students engaged and motivated in learning English language. In this respect, the current study comes in line with Fang et al.,(2021) and DeRosier et al.,(2012) study's results in that playing digital games are the best method for evaluating students' literacy skills, social skills and vocabulary.

The results of the current study be in agreement with the results of Shute & Ventura(2013) study in finding that the online or digital games are considered the best tools for embedding

ongoing formative assessment into these digital learning environments.

In addition, these games help the students process the information of the English content in a different method from the lesson mode .To achieve these aims , teachers need platforms that can assist them up-skill and stay updated. These results also prove that Iraqi EFL teachers seek for innovative methods for assessing their students high -order skills as problem solving, critical thinking and creativity and the best approach for achieving this is via using digital or online educational games in the classroom.In this aspect , this study is consistent with Shute et al .,(2021) study.

6. Conclusions

Taking into account the results obtained, the researcher concludes the followings :

1-Most Iraqi EFL teachers of distinguished secondary schools apprehend and apply stealth assessment when their students use special educational digital games .

2-The use of educational digital games has proven to be an efficient method for teaching , learning and assessing in English language classroom .Video games can also provide a meaningful contexts where students or players are required to apply different skills and knowledge to succeed.

3-Stealth assessment represents a powerful and innovative method that can supply real -time feedback and many other kinds of learning supports in a direct way within the game .

4- Stealth assessment can also be used to measure social and emotional skills such as persistence as the process of failing and trying again in the video or digital games can be regarded as a source of evidence for persistence.

5- There is no better way than digital games that can provide challenging problems without completely exhausting students.

6- Students are expected nowadays to develop 21st century skills as creativity, problem solving and critical thinking .These high -order skills are essential to be productive and successful in school and life in general.Therefore , it is essential for teachers to be able to assess their students on these complex skills .One

possible and promising method is stealth assessment which is the process of embedding assessment smoothly into gaming environments such that the student is unaware of being assessed. 7- Male teachers have more willingness for using digital games and other innovation technology as a support of stealth assessment due to their gender differences as they often exhibit higher activation , competitive and technology-based activities.

References

- 1.AlFarsi, G., Yusof, A. B. M., Tawafak, R. M., Malik, S. I., Mathew, R., & Ashfaque, M. W. (2020). *An overview of electronic games in the academic areas [Paper presentation]. iee International Conference on Advent Trends in Multidisciplinary Research and Innovation (icatmRI) (pp. 1–6). iee.*
- 2.Barab, S. A., T. Dodge, A. Ingram-Goble, P. Pettyjohn, K. Pepler, C. Volk, and M. Solomou.(2010). *Pedagogical Dramas and Transformational Play: Narratively Rich Games for Learning. Mind, Culture, and Activity 17,(3),235-264*
- 3.Brinkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., and Rumble, M. (2010)‘*Defining 21st Century Skills. Assessment and Teaching of 21st Century Skills*’, draft white paper, The University of Melbourne
- 4.Chory, R. M., and A. K. Goodboy. (2011) . *Is Basic Personality Related to Violent and Non-violent Video Game Play and Preferences? Cyberpsy- chology, Behavior, and Social Networking 14, (4),191–198.*
- 5.DeRiser , M , Craig, A and Sanchez, R,(2012) *Zoo U: A Stealth Approach to Social Skills Assessment in Schools. Volume 2012, Issue 1 / 654791*
<https://doi.org/10.1155/2012/654791>
- 6.DiCerbo, K. E. (2014). *Game-based assessment of persistence. Journal of Educational Technology & Society, 17(1), 17–28.*
- 7.Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and Perspectives, 38(1),105-123.*

- 8.Fang L , Tong , L , Hung, L , Roscoe, R and McNamara, D,(2021) *Stealth Literary Assessment via Academic Games* . Computers 2023, 12(7), 130;
- 9.Ferguson, C. J., and A. Garza.(2011) . *Call of (Civic) Duty: Action Games and Civic Behavior in a Large Sample of Youth*. Computers in Human Behavior 27 : 770-775 .
- 10.Green, C. S., and D. Bavelier. (2007). *Action-Video-Game Experience Alters the Spatial Resolution of Vision*. Psychological Science 18, no. 1:88–94.
- 11.Herold , B (2014) .*Video Game ‘ Stealth Assessment’ Gauge Social Skills*. Education Week .
- 12.Mayer, R. (2018)‘*Educational Psychology’s Past and Future Contributions to the Science of Learning, Science of Instruction, and Science of Assessment*’, Journal of Educational Psychology 110(2): 174–179.
- 13.Mislevy, R. J., Steinberg, L. S., & Almond, R. G. (2003). Focus Article: *On the structure of educational assessments, Measurement: Interdisciplinary Research & Perspective* 1(1): 3–62. https://doi.org/10.1207/S15366359MEA0101_02
- 14.Shaw, R., A. Grayson, and V. Lewis. (2005) . *Inhibition, ADHD, and Computer Games: The Inhibitory Performance of Children with ADHD on Computerized Tasks and Games*. Journal of Attention Disorders 8, no. 4:160–168. doi:10.1177/1087054705278771.
- 15.Shute, V.J. (2009)‘*Simply Assessment*’ *International Journal of Learning, and Media* 1(2): 1–11. doi:10.1162/ijlm.2009.0014.
- 16.Shute, V. J., Y. J. Kim, and R. Razzouk. (2021)*Stealth Assessment of Creativity in a physics Video Game*.
- 17.Shute, V. J. (2011). *Stealth assessment in computer-based games to support learning*.In S.Tobias and J.D.Flecher (Ed’s) , . Computer Games and Instruction, 55,(pp. 503–524).Charlotte, NC: Information Age Publishers.
- 18.Shute,V , Ventura, M.,(2013) *Stealth Assessment:Measuring and Supporting Learning in Video Games*.The MITPress.

19. Shute, V.J., Masduki, I., and Donmez, O. (2010) 'Conceptual Framework for Modeling, Assessing, and Supporting Competencies Within Game Environments' *Technology, Instruction, Cognition, and Learning* 8(2): 137–161.
20. Shute, V. J., & Rahimi, S. (2022). *Stealth assessment. Rapid Community Report Series*. Digital Promise and the International Society of the Learning Sciences. <https://repository.isls.org/handle/1/76>
21. Shute, V.J. and Kim, Y.J. (2013) 'Formative and Stealth Assessment', in Spector, J.M., Merrill, M.D., Elen, J., and Bishop, M.J. eds. *Handbook of Research on Educational Communications and Technology* (4th edn), New York, NY: Lawrence Erlbaum Associates, Taylor & Francis Group, pp. 311–323.
22. Skoric, M. M., L.L.C. Teo, and R. L. Neo. (2009) . *Children and Video Games: Addiction, Engagement, and Scholastic Achievement*. *Cyberpsychology and Behavior* 12, no. 5:567–572.
23. Pikhart, M , Al-Obaydi , L, H & Klimova , B (2024) *Does digital learning stimulate creativity?*, *Cogent Arts & Humanities*, 11:1, 2407103, DOI: 10.1080/23311983.2024.2407103.
24. Van Eck, R.N., Shute, V.J. and Rieber, L.P. (2017) 'Leveling Up: Game Design Research and Practice for Instructional Designers', in Reiser, R. and Dempsey, J. eds. *Trends and Issues in Instructional Design and Technology* (4th ed.), New York, NY: Pearson, pp. 227–285.
25. Ventura, M., Shute, V , J and Kim , y, J (2012) . *Video Gameplay, Personality, and Academic Performance*. *Computers and Education* 58:1260–1266.
26. Wang, L.&Shute, V. (2015) . *Lessons learned and best practices of stealth assessment*. *International Journal of Gaming and Computer-Mediated Simulations* 7, 66.

Appendix A

Stealth Assessment questionnaire (RPQ)

Age:

- a) 25-35
- b) 35-55

Gender:

- a) Male
- b) Female

1. Do you know the meaning of stealth assessment ? Yes/No
2. Provide your rating for the following statements by choosing one of the following choices:

	agree	neutral	Disagree
1-Stealth assessment in digital games permits for a more authentic assessment of students skills.			
2-.Stealth assessment through digital games is more effective compared to traditional assessment..			
3- It also provides realtime feedback .			
4-It engages students in a more interactive way.			
5- It reduces test anxiety.			
6-It allows for individualized assessment .			
7-It helps in tracking long term progress.			
8-It can be integrated in most teaching activities and practices.			
9-There are challenges of using stealth assessment in digital games as the lack of familiarity with technology and difficulty in interpreting the results.			
10-The use of digital games for both stealth assessment and entertainment could be a great way for making learning fun and effective.			
11-Stealth assessment in digital games			

could be regarded as unfair or biased in any way.			
12-Stealth assessment can provide an innovative method by conducting literacy assessment in computer-based learning environments.			
13-Through digital games, stealth assessment can be implemented to evaluate the students' soft skills as creativity and solving problems.			
14-Stealth assessment is based on the students' natural performances and behaviors instead of being presented as tests .			
15-It can assess students' language skills unobtrusively and dynamically.			

3.What types of digital games do you think would be most effective for applying stealth assessment in English language classrooms? Choose three of them .

Vocabulary Spelling City

Duolingo

Adventure Academy

Quizlet

Puzzle games

Memrise

Educational apps with embedded assessment.

Appendix (B)

List of Jury Members

1-prof .Dr .Shaimaa Abdel - Baqi AlBakri .University of Baghdad .College of Education for (In Rushed) for Humanities.

2-Prof .Dr.Salam Abbas Al Timimi.University of Baghdad.College of Education (In Rushed) for Humanities.

3-Prof .Dr .Madeha Seif Al -Deen .University of Tikrit .College of Education (for girls) .

- 4- Prof .Dr .Dhea Mizhir . University of Baghdad .College of Education (In Rushed) for Humanities .
- 5-Prof .Dr. Shathaa Khadhm Al -Saadi .University of Baghdad.College of Education (for girls) .