

Digital Portfolios as Catalysts for Writing Autonomy and Test Anxiety Reduction: A Pragmatic Investigation in Iraqi EFL Classrooms

Lect. Dr Sabaah Abd Alhassan Alhamid

The General Education Directorate of Al-Qadisiyah

Sabahalhamid@gmail.com

Date Received : 1/12/2025

Date of Acceptness : 31/12/2025

Abstract

Digital portfolios function as a powerful educational instrument in EFL teaching because they empower students and lower their examination stress symptoms. Writing autonomy continues to present major challenges for Iraqi high school EFL students since their high levels of anxiety typically affect their test results. Research about non-Western educational settings, specifically focusing on Iraq, remains insufficiently studied, which creates a significant research gap. This research examines the impact of digital portfolios on writing self-determination, together with their ability to decrease test anxiety among Iraqi high school EFL students. Both quantitative surveys and qualitative interviews help researchers understand how effective digital portfolios are for their study through the mixed-methods research approach. The implementation of digital portfolios leads to better writing control through self-regulation and motivation practices and diagnostic assessment methods that reduce test anxiety, according to research findings. Such findings help educators develop better practices for utilising digital portfolios in resource-stretched EFL environments that typically focus on assessment.

Keywords: Digital portfolios, EFL writing autonomy, test anxiety, formative assessment, self-regulated learning, pedagogical implications, learner-centred instruction.



المحافظ الرقمية كعوامل محفزة لاستقلالية الكتابة والحد من قلق الامتحانات: دراسة براغماتية في فصول اللغة الإنجليزية كلغة أجنبية في العراق

م. د صباح عبد الحسن صابط الحميد

المديرية العامة ل التربية القادسية

Sabahalhamid@gmail.com

تاريخ الاستلام : ٢٠٢٥/١٢/١

تاريخ قبول النشر : ٢٠٢٥/١٢/٣١

الملخص:

تُعدّ المحافظ الرقمية أداة تعليمية فعالة في تدريس اللغة الإنجليزية كلغة أجنبية، إذ تُعزز قدرات الطلاب وتحفّف من أعراض التوتر لديهم أثناء الامتحانات. حيث لا تزال استقلالية الكتابة تمثل تحدياً كبيراً لطلاب المرحلة الثانوية في العراق، فقد اثبتت الدراسات ان ارتفاع مستوى قلق الطلاب يؤثر عادةً على نتائجهم في الامتحانات. ولا تزال الأبحاث المتعلقة بالبيئات التعليمية غير الغربية، وخاصةً في العراق، غير كافية، مما يُشكّل فجوة بحثية هامة. تتناول هذه الدراسة أثر المحافظ الرقمية على خصوصية الكتابة، وقدرتها على الحد من قلق الامتحانات لدى طلاب المرحلة الثانوية في العراق. وقد تساعد كلّ من الاستبيانات الكمية والمقابلات النوعية الباحثين على فهم مدى فعالية المحافظ الرقمية في دراساتهم من خلال منهجية البحث المختلطة. وتشير نتائج الأبحاث إلى أن تطبيق المحافظ الرقمية يُحسن من قدرة الطلاب على الكتابة من خلال ممارسات التنظيم الذاتي والتحفيز، بالإضافة إلى أساليب التقييم التخسيسي التي تقلل من قلق الاختبار. وتساعد هذه النتائج المعلمين على تطوير ممارسات أفضل لاستخدام المحافظ الرقمية في بيئة تدريس اللغة الإنجليزية كلغة أجنبية ذات الموارد المحدودة، والتي تُركز عادةً على التقييم العام للطلاب .

الكلمات المفتاحية: المحافظ الرقمية، استقلالية الكتابة في اللغة الإنجليزية كلغة أجنبية، قلق الاختبار، طلاب المرحلة الثانوية في العراق، التقييم التكيني، التعلم المنظم ذاتياً، الآثار التربوية، التعليم المتمحور حول المتعلم.



1. Introduction

1.1. Background & Context

Educational use of digital technology changed how students and teachers learn, with platforms like digital portfolios, which build student interest and let them learn more effectively by thinking about their work and managing themselves (Chang, 2021). Students can monitor their development by using digital tools to get help from mentors while strengthening their writing performance on an online platform. Using digital portfolios helps students in Iraqi high schools learn without test stress, as these tools make learning easier, according to Rezaei & Hashim (2020).

Research about digital portfolios exists for both Western and Asian societies, but minimal studies have examined their effectiveness in Arabic-speaking settings, especially in Iraq. This research seeks to fill an existing knowledge gap in this area. EFL learners need strong writing autonomy skills because they provide better idea expression and self-editing abilities, and bolster writing self-confidence. The acquisition of language skills through long-term learning involves the development of writing autonomy, which closely relates to metacognition, self-efficacy, and motivation according to Benson (2019). Most Iraqi high school students struggling to develop writing independence face barriers because of their traditional classroom setup and insufficient exposure to student-centred writing assignments and intense test competition (Al-Mutairi, 2022).

Students experiencing test anxiety are typically affected in their language acquisition process, especially within educational systems where assessment results determine student outcomes. Evaluation environments create three distinct response patterns, including cognitive elements, along with emotional responses and physical manifestations that negatively affect students in their performance capabilities and their learning development (Zeidner, 2021). High test anxiety levels that are high among EFL learners lead to impaired language production while both decreasing student engagement and lowering their motivation to write (Horwitz, 2019). Digital portfolios need closer examination since they have the potential to resolve educational problems through student-driven learning assessment methods.

1.2. Research Problem

Research focusing on digital portfolios remains limited in Iraqi high school settings for EFL learning, although the practice has been thoroughly examined in different academic situations. The existing research primarily investigates digital portfolios in Western and Asian educational environments, yet it produces insufficient empirical evidence regarding their effectiveness within Arabic language-speaking settings, especially in Iraq (Al-Kaabi, 2021). The insufficient research regarding digital portfolios in Iraqi high schools leads to uncertainty about their potential barriers, along with limitations and benefits for this educational environment.

Research should establish verified evidence regarding how digital portfolios contribute to writing autonomy development, as well as test anxiety reduction among Iraqi high school EFL students. Educational leaders, together with policy creators, need research-based understanding to develop modern teaching approaches that will boost learner performance while fixing deficiencies found in current testing approaches. Research has a gap which this study attempts to address by providing empirical data about digital portfolios in Iraqi EFL classrooms.

1.3. Objectives of the Study

The goal of this research is to examine the effects that digital portfolios possess on EFL writing autonomy development and test anxiety reduction for Iraqi high school students. The specific objectives are:

1. Research evaluates the development of students' writing independence through an analysis of their independent plan-making and organisational abilities and revision strategies.
2. The researcher measured how much digital portfolios assist in lowering student testing anxiety through continuous formative assessments.
3. This research investigates students' views about digital portfolios as well as their practical use as learning and assessment platforms.



1.4. Research Questions

The research poses the following three questions to guide the investigation:

1. How do digital portfolios impact the autonomous writing development of Iraqi high school EFL students?
2. How do digital portfolios affect test anxiety levels among Iraqi high school EFL students?
3. Students maintain what thoughts regarding digital portfolios when they utilise them as part of their educational development.

1.5. Hypotheses

The research poses the following three questions to guide the investigation:

1. What impacts do digital portfolios create on the autonomous writing development of Iraqi students learning English as a foreign language?
2. Test the anxiety levels of students and show what effect digital portfolios have on them.
3. Students maintain what thoughts regarding digital portfolios when they utilise them as part of their educational development.

1.6. Significance of the Study

The study's findings will add to the body of knowledge regarding digital portfolios in English as a foreign language instruction. Researchers can learn how digital portfolios should be incorporated into curriculum frameworks, instructional tactics, and assessment procedures according to this study of Iraqi high schools. In an effort to improve writing independence and reduce exam anxiety, this study will offer practical strategies that educators can implement when introducing digital portfolios. Because digital assessment tools solve two primary issues that arise from exam anxiety and writing autonomy, they offer EFL students promising alternatives.

By providing participants with self-managed writing projects, individualised instruction programs, and continuous feedback, contemporary portfolio evaluation systems have the



potential to transform conventional grading practices. In order to demonstrate their usefulness, the study examines the effects of digital portfolios in high school EFL classes in Iraq.

1. Literature Review

2.1. Theoretical Frameworks

2.1.1. Self-Regulated Learning (Zimmerman, 2002)

The framework of Self-Regulated Learning (SRL) helps students control their intellectual, motivational, and behavioural elements for reaching educational objectives. SRL, according to Zimmerman (2002), signifies "the process where people make their own thoughts, feelings, and actions work towards reaching their learning targets" (p. 66). The theory demonstrates that academic success usually belongs to learners who take control of their learning experiences by planning them and using monitoring and evaluation strategies. Digital portfolios serve to boost SRL through their tools, which help students monitor their educational growth as well as establish educational milestones and examination of their accomplishments (Eynon & Gambino, 2017).

2.1.2. Constructivist Learning Theory (Piaget, Vygotsky)

Learning theory from constructivism presents active knowledge construction as a process that occurs through environmental interaction according to Piaget and Vygotsky. According to Piaget (1950), learners build their knowledge by means of assimilation and accommodation, but Vygotsky (1978) stated that learning takes place through social collaboration and instructional support. Digital portfolios support constructivist learning theory because they provide students opportunities to take meaningful charge of their education while working with peers and getting feedback from instructors, according to Barrett (2007).

2.1.3. Cognitive Load Theory and Anxiety (Sweller, 1988)

Working memory learning efficiency depends on the amount of cognitive load imposed by Sweller (1988) in Cognitive Load Theory (CLT). High cognitive burdens have adverse effects on learning processes, resulting in anxiety, especially during testing periods. The



language learning complexity, together with assessment-related pressure, creates high cognitive load for EFL learners (Chappell et al., 2019). Learning through digital portfolios has been found to minimise mental workload through risk-free language activities, which both decreases performance-related anxiety and improves information retention (Kim & Kim, 2021).

2.2. Previous Research on Digital Portfolios

2.2.1. Benefits of Writing Skill Development

Researchers found digital portfolios to deliver enhanced writing abilities to students learning EFL. Digital portfolios act as a platform for students to receive ongoing assessments and revise their work, as Abrami and Barrett (2005) explain; such practice results in superior writing abilities. Digital portfolios support learning through reflection because they require students to check their development alongside defining clear aims for development (Tzeng & Chen, 2012). Students enrolled in EFL language courses achieved better writing skills as well as increased writing process participation through their use of digital portfolios in comparison to traditional assessments, according to Nunes (2020).

2.2.2. Effects on Learner Autonomy in Various EFL Contexts

Digital portfolios show complete potential to develop autonomous learning behaviours, which represent an essential aspect for language acquisition. Autonomous learners assume learning responsibility by establishing personal targets and using specific achievement methods, as Little (2007) suggests. The structured platform of digital portfolios allows learners to create documented records that help them evaluate their skills and produce effective decisions about their educational plans (Huang & Hung, 2010). Self-efficacy, along with motivation in EFL students, increased after they implemented digital portfolios, according to the research conducted by Chang et al. (2017), which resulted in higher language learning autonomy.

2.3. Test Anxiety in Language Learning

2.3.1. Definition and Causes of Test Anxiety in EFL Students

Academic assessments generate test anxiety through totally excessive worry and intense nervousness coupled with deep fear of evaluation failure (Horwitz et al., 1986). EFL learners show increased test anxiety because they face language difficulties combined with performance evaluation concerns and new test evaluation complexities (MacIntyre & Gardner, 1991). The research from Cheng (2004) shows EFL learners develop test anxiety because of cognitive anxiety, which is performance-linked concern, as well as affective anxiety centred on test-related emotions and behavioural anxiety that manifests through avoidance actions.

2.3.2. Strategies for Anxiety Reduction through Digital Tools

Digital portfolios serve as effective digital tools that successfully reduce anxiety among EFL students taking tests. The results demonstrate how digital portfolios work to reduce students' anxiety through improved learning process control, decreased performance stress, and a better supportive educational atmosphere (Dörnyei, 2005). Sun and Yang (2015) discovered that EFL students using digital portfolios experienced lower anxiety than students who depended on conventional assessment approaches only. Students benefit from formative feedback within digital portfolios since this feature helps eliminate uncertainty and strengthens their self-belief (Yastibas & Cepik, 2015).

The fundamental understanding of digital portfolios' effects on EFL learners stems from using self-regulated learning and constructivist learning theory, and cognitive load theory. The usage of digital portfolios in education demonstrates multiple positive results for writing skill development, together with learner independence and decreased anxiety during testing situations. Programs using digital portfolios in EFL classes present an effective teaching strategy that both develops students' writing independence and decreases their test-related stress.



2.4. A critical perspective

Digital portfolio review needs a thorough critical evaluation to determine its benefits. Research shows that digital portfolios help students achieve writing independence and reduce their anxiety, but several obstacles must be considered for this framework to succeed:

- a. Not all students maintain regular access to digital equipment due to various reasons (Smith & Brown, 2021).
- b. Educators do not easily embrace digital portfolios because of their insufficient training (according to Alharbi, 2022).
- c. Doncaster (Johnson, 2020) found that students sometimes encounter mental confusion during their shift from conventional to digital composition.

3. Methodology

3.1. Research Design

The research design implements mixed methods, which combine quantitative and qualitative methods to study digital portfolio effects on writing autonomy and test anxiety in Iraqi high school EFL students. Mixed-methods research provides extended educational phenomenon knowledge by joining statistical techniques with deep qualitative results (Creswell & Plano Clark, 2018). The research utilises writing autonomy and test anxiety evaluations through pre-test and post-test methods, along with student surveys and semi-structured interviews for qualitative examination of participants' feelings and experiences.

3.2. Participants

The research participants consist of Iraqi high school EFL students who come from both public and private institutions to achieve socio-economic and language proficiency diversity. The acceptance requirements for study participants encompass three factors: being an EFL program student at the high school level (1), together with (2) existing experience in writing tasks, and (3) agreement to work with digital portfolios during the semester. The researchers excluded students with severe learning disabilities combined with limited access to digital resources for maintaining digital engagement consistency.

The researchers utilised power analysis to calculate the sample size, which provided adequate statistical power. A total of 120 students joined the research according to the experimental and control group division, where 60 students utilised digital portfolios and 60 others practised traditional writing methods (Dörnyei, 2007). The selected sample size enables reliable extrapolation of data and meaningful comparison of conclusions. To ensure sufficient representation of individuals from a range of gender groups, skill levels, and socioeconomic backgrounds, the study used stratified random sampling.

3.3. Instruments

Three main data collection tools produced the combined findings:

1. When assessing students' self-regulated writing skills, the validated pre-test and post-test instrument WAS used by Chang (2010). Using a 5-point Likert scale, the WAS test measures writing motivation, planning, evaluation, and monitoring skills.
2. The exam Anxiety Inventory (TAI), created by Spielberger in 1980, was utilised by student participants to assess their exam anxiety both before and after employing digital portfolios. The exam illustrates two facets of language test anxiety that impact emotional reactions and cognitive processes.
3. Students used a combination of organised and semi-structured interviews and questionnaires to share their experiences with digital portfolios. In addition to assessing students' reported stress levels and using Likert-scale questions about motivation and usability, the research design also incorporated qualitative interviewing approaches to examine how students' use of digital portfolios affected their writing confidence and anxiety levels.

3.4. Procedure

The sixteen-week academic semester was used for research operations. These stages were taken in the process:

1. All students completed the Writing Autonomy Scale (WAS) and the Test Anxiety Inventory (TAI) as pre-assessments at the beginning of the semester.
2. Using digital portfolio services like Google Docs, OneNote, and Padlet, the experiment's subject group sent in their written work. Students received peer assessments and comments

via the teaching portal. Due to the researchers' denial of access to digital intervention, every member of the control group did traditional paper-based writing tasks.

3. At the halfway mark, the students answered surveys to find out how engaged they were with using the Digital Portfolio and what technological difficulties they were facing.

4. During the Post-Test Phase at the end of the semester, students took part in the WAS and TAI sessions a second time. To learn more about the experiences and perceptions of a subset of students in the experimental group (N-20), the researcher conducted qualitative interviews with them.

3.5. Data Analysis

The study utilized statistical and *qualitative* data analysis methods, which were combined.

- The Writing Autonomy Scale (WAS) and Test Anxiety Inventory (TAI) pre-test and post-test data from participants in the experimental and control groups were subjected to ANOVA and paired t-tests, according to Field (2018). Calculations for effect sizes were part of the investigation to determine the magnitude of observed changes.
- In accordance with Braun and Clarke (2006), the researchers employed theme analysis as their methodology to examine students' survey responses and interview data. The study found recurring patterns that centered on students' capacity for self-regulated learning, their development of confidence, and their ability to manage their anxiety.
- A thorough understanding of the impacts of digital portfolios on writing autonomy and test anxiety in EFL teaching contexts was produced by combining the findings of quantitative and qualitative research.
- Results and Discussion

4.1. Findings on Writing Autonomy

Students developed better writing independence through digital portfolios implementation, which both statistical and qualitative data confirmed. The analysis of pre-test and post-test results through statistics showed that students became better at independent writing. Digital portfolios proved effective in developing self-regulated writing behaviours because the participants demonstrated higher writing autonomy scores through a pre-to-post assessment period (pre-test 55.2 mean score, SD 6.8, and post-test 72.4 mean score, SD 5.9).



The investigation was confirmed through student reflection data interpreted qualitatively. Students showed better confidence in the generation of ideas, as well as content organization and writing refinement tasks, even when teacher intervention was minimal. The student journal reflections demonstrated that students became better at editing their work and expanded their vocabulary range, together with increased enthusiasm for writing. Students have observed their writing development through digital portfolio review, which led them to become more responsible about improving their writing skills. This reflection demonstrated how simple it was for students to return to past drafts, along with monitoring their growth as writers through digital tools, thus confirming the importance of technology in developing personal autonomy.

4.2. Findings on Test Anxiety Reduction

Student test-related anxiety dropped considerably when digital portfolios were introduced for academic practice. According to the FLCAS measure, students showed lower mean anxiety scores, which started at 68.5 (SD = 7.3) before the intervention, yet fell to 49.7 (SD = 6.5) after utilizing digital portfolios. The participants' lower FLCAS scores indicate that mentoring them through writing tasks and personal evaluation minimized their performance anxiety during tests.

Anxious feelings observed in students were confirmed by their personal comments. Students believed their decreased stress came from systematic work review and revision capabilities. Students wrote about their experience with digital portfolios, which revealed improved writing test reactions before their adoption. These new organisational skills enable me to enter tests with confidence because I understand proper thought organisation and error detection methods. The ability to access previous work proved beneficial since students gained confidence, which decreased their anxiety about failure.

4.3. Correlation Between Autonomy and Anxiety Reduction

The strong negative results showed the relationship between writing *autonomy* and *test anxiety* based on a Pearson correlation analysis with $r = -0.67$ and $p < 0.01$. The research findings showed that the growth of the students' *autonomy* in writing simultaneously reduced their *test anxiety* levels. The method that was organized of digital *portfolios* brought a *controlled environment* for writing, which comforts students from fear and uncertainty



regarding their writing processes. Research conducted by Zimmerman and Schunk (2011) supports the findings that demonstrate how self-regulated learning strategies minimise academic anxiety.

5. Discussion

The research outcomes match previous studies about digital learning tools that promote language student independence and decrease foreign language learning anxiety. Research conducted by Hyland (2016), together with Benson (2017), demonstrates how digital portfolios enable student empowerment through self-assessment practices and development progress. Research indicates that student independence plays a vital role in lowering performance stress since students enhance their self-confidence (Little, 2007).

5.1. Implications for Digital Learning in EFL Contexts

Educational institutions should implement digital portfolios into their EFL curricula because they help students direct their learning better and lower their test stress levels. Becoming a digital portfolio implementation tool for educational reflection, together with revision practice and personal self-assessment, should be an educational consideration. Teaching programs need to establish a digital literacy curriculum because this will lead to better implementation of such interventions.

5.2. Potential Challenges and Limitations

Several challenges developed in spite of the shown positive results. Specific students encountered problems using digital portfolio software because they lacked appropriate technological abilities. Results can only be applied broadly to other English as a foreign language (EFL) contexts because the study happened exclusively in an Iraqi high school. Future research needs to study extended impacts, and it needs to analyse the effect of student motivation combined with feedback on writing freedom and reduced writing-related anxiety.

5.3. Implications for Digital Learning in EFL Contexts

The results indicate digital portfolios have the power to change EFL teaching through student learning independence and lower test stress. Perseverative integration requires institutions to do the following:



- a. Educational institutions should organise workshops that train teachers about digital portfolio management systems.
- b. Schools need to dedicate funds to building accessible digital infrastructure that enables learning technology.
- c. Students require clear guidance for digital portfolio usage through the development of specific student instructions.

Additional investigations are needed to examine the long-term effects of digital portfolios, along with their performance results, across diverse English as a Foreign Language teaching settings.

6. Conclusion & Implications

The investigation evaluated how digital portfolios affect both writing autonomy enhancement and test anxiety reduction in Iraqi high school EFL student populations. Digital portfolio usage substantially improves students' abilities to monitor themselves and develop writing plans, which results in better writing autonomy. Students gained confidence in their writing abilities through feedback and self-assessment, thus experienced lower test anxiety while using digital portfolios. *Digital portfolios* can lead to a feeling of control for learning, which affects students manage their educational development.

6.1. Pedagogical Implications

This study discusses important knowledge that should lead EFL educators connect with curriculum experts. Teachers have to develop *digital portfolios* as assessment patterns that help students construct independence in their writing while *decreasing* their *anxiety*. *Digital portfolios* show better results for learning when there is an establishment of teachers' structured reflection spaces together with feedback systems from peers, which build communicative educational environments. Curriculum writers need to appreciate digital portfolios' worth by adding them to writing curricula so students can develop reflective learning methods that establish lasting writing abilities.

6.2. Recommendations for Effective Integration

Educators need to provide detailed guidelines for portfolio use, teach digital tool skills, and maintain continuous support for their students to reach maximum digital portfolio benefits. The most beneficial approach for writing instruction merges traditional practices with digital portfolio implementation. Digital portfolios function more effectively as students receive integrated feedback systems and assessment criteria while maintaining their writing independence and lower nerves. We can say that the assessment of digital portfolio effects on writing development for high school graduates needs investigation through future research. Further research should investigate how the curriculum adjusts to different educational contexts, mainly based on schools with restricted access to resources. Research evaluating the feedback role of artificial intelligence in digital portfolios enables the development of approaches to improve English as a Foreign Language writing instruction.

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