



The Effect of E-portfolio on EFL Learners' Writing Accuracy, Fluency, and Complexity

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ABSTRACT

The current research examined the impact of electronic (E-) portfolio on EFL students' writing complexity, accuracy as well as fluency (CAF). To this end, 2 intact intermediate classes including 30 students at Iran Language Institute (ILI) in Urmia, Iran were selected randomly and divided into 2 groups, namely, experimental and control (15 learners in each class). During the treatment, the learners in the experimental group were divided into five groups (3 learners in each group) and were informed about E-portfolio and how to create and develop a Website on the Internet. Learners were asked to write two compositions each week. Having prepared each composition, learners presented their written pieces on Website to get feedback from their peers. After revising and finalizing, learners presented their final draft. The teacher provided feedback on their compositions as well. In the control group, however, the instructor provided feedback on the learners' writings. All the learners wrote 8 compositions. This procedure was followed for 4 weeks and at the end of the 8th composition, the post-test was conducted. For analyzing the data, the researchers followed Larsen-Freeman's (2006) rubric for measuring CAF. Analysis of an independent-samples t-test in the post-test demonstrated that experimental group outperformed the control group significantly in terms of the writing CAF. Moreover, the findings of the questionnaires regarding the teachers' and learners' attitudes toward E-portfolio revealed that both teachers and learners had a positive perception toward E-portfolio. The findings are beneficial to English language teachers, especially writing instructors, who are concerned about improving EFL learners' writing proficiency.

INTRODUCTION

E-portfolio is a new technological method for the students so as to improve self-regulation and self-learning skills that are among the primary goals of the current kinds of syllabus (Abdel-Moneim, 1997). Utilizing E-portfolios in pedagogical settings may bring about authentic and reliable means of assessment. According to Barrett (2000), E-portfolios are computerized

innovations which reflect development through time and enable portfolio developers to gather and structure artifacts in a variety of formats including audios, videos, images, and texts (p. 14).

According to Pajares (2003), writing ability refers to the learners' accomplishment in a given writing task. E-portfolio can be regarded an alternative approach to enhance learners' writing (Lorenzo & Ittelson, 2005) since it is in accordance with learner-centered approaches (Barrett, 2005). E-portfolio may empower learners to think about their work and encourage them to practice writing more willingly (Laird, 1997). In e-portfolio, the learners' audience may be peers, teachers, parents, or even prospective employers (Barrett & Carney, 2005).

Thus, E-portfolio encourages learners to contemplate about their knowledge, academic training, and career. Teachers taking advantage of e-portfolio obtain better understanding toward learners' learning and evaluation, and become more engaged with learners' learning (Acker, 2005; Barrett & Carney, 2005). Therefore, this research intended to study the influence of E-portfolio on EFL learners' writing complexity, accuracy and fluency (CAF). Moreover, teachers' and learners' attitude toward E-portfolio was explored.

Teachers have always tried to help the students produce accurate and fluent target language (Dolati & Mikaili, 2011) by making the language learning environment interesting and enjoyable for the learners (Tabatabaei, 2012). Vygotsky's socio-cultural theory (SCT) had a great effect on the education (Lantolf & Thorne, 2006). Mediation is a significant notion in sociocultural theory. For Vygotsky (1978), "mediation refers to the use of tools which refer to anything that is used so as to help accomplish a goal or solve a problem" (p. 65).

In sociocultural theory, Tools include the computer, TV, calendars, and symbols which are representational activities by individual (Lantolf & Thorne, 2006). Technology can help students in acquiring language skills. Through technology, teachers can create a more interactive and friendly environment for language learners (Butler-Pascoe & Wiburg, 2003; Tabatabaei, 2012).

Learners have different methods to gain knowledge throughout their learning activities, and many choices to keep their learning experience in many electronic formats on the Internet (Emmet, 2003). E-portfolios are used widely in higher education and are more advantageous in enhancing learning.

Abdul-Aziz (as cited in Alwraikat, 2012) states that E-portfolio is a "systematic collection of the student's work related to content based topics developed by the learner and under the supervision of the teacher" (p. 106). Additionally, Ismail (2005) defines E-portfolio as a "record of the student's best works within a course or groups of courses, and it employs multimedia elements and one can navigate by using hyper-links, and can be published on the Internet or on CDs" (p. 36). Furthermore, Bakkar and Al-Bassam (2001) added that E-portfolio is a "record that keeps the performance of the learner in order to highlight his work and achievements which indicate the extent of his growth, naturally, socially, psychologically, academically, skillfully, creatively, and culturally" (p. 147).

For Barrett (2006), a portfolio is "a collection of work that a learner has collected, selected, organized, reflected upon, and presented to show understanding and growth over time" (p. 1). Al-Ahmed and Osman (2006) more specifically refer to the E-portfolio as an "evaluation tool developed by the learner and not for learner, to help them learn how to assess and value their work during their learning" (p. 4). As Miller and Morgaine (2009) suggest:

The practices associated with e-portfolio-e.g., designing "authentic" assignments, using engaging and active pedagogy, periodic self-, peer- and teacher-formative assessments, and requiring students to reflect on their learning help to move *both* professors and students into a teacher/learner relationship where "guiding" really

works. Emphasis shifts from delivering content toward coaching and motivating students as they try to solve problems that are of genuine interest to disciplines, professions, or communities. (para. 31)

E-portfolios are mainly used for three purposes, namely, assessment, learning and employability (Acker, 2004; Barrett & Carney, 2005). As an assessment tool, E-portfolio is used for students' performance-based assessment (Williams, Davis, Metcalf & Covington, 2003). The second purpose relates to the students' learning (Boud, 2001; DiBiase, 2002). As Yancey (2001) states:

Students are responsible for telling their own stories of learning: for explaining what they did and did not learn, for assessing their own strengths and weaknesses as learners, for evaluating their products and performances, for showing how that learning connects with other kinds of learning (in the classroom and without), and for using the review of the past to think about paths for future learning. (p. 19)

DiBiase (2002) states that E-portfolios can enhance learners' deep involvement and encourage their responsibility in achieving educational goals through sharing ideas and experiences, receiving peers' and teachers' feedback and planning future goals. E-portfolios can increase learners' self-assessment (Kavaliauskiene, 2004). Self-assessment can promote students' learning and give them training in their evaluation (Oscarsson, 1989).

According to Jones and Shelton (2011), portfolios are “a medium for reflection” (p. 21). It means that E-portfolios can motivate learners to think about learning processes and reflect on them. This self-reflection plays an important role in enhancing learners' autonomy and critical thinking (Lam, 2018). Djoub (2017) stated that E-portfolios can enhance learners' critical thinking by involving them in reflective writing. E-portfolios can enhance a transition from a traditional learning environment to an autonomy-supportive one (Nakata, 2011) since they can promote learners' goals and responsibilities for learning (Babae & Tikoduadua, 2013).

E-portfolios can show the learners their weaknesses and as a result, they can raise learners' awareness toward self-directed learning (Babae & Tikoduadua, 2013). Technology has made its way both in education and in foreign language learning so much that researchers regard it as an inevitable part of education. Reviewing the literature on E-portfolios in EFL context shows their influential effects. For example, Masaeli and Chalak (2016) examined the influence of E-portfolios on Iranian EFL learners' writing skill. The findings demonstrated a significant difference between the experimental group, in which E-portfolio was used, and the control group.

Moreover, Khodashenas and Rakhshi (2017) explored the effect of E-portfolio assessment on the writing performance of Iranian EFL learners. Their findings revealed that E-portfolio improved the learners' writing ability and motivated the students to write. In the same vein, Karami, Sadighi, Bagheri and Riasat (2018) explored the effect of E-portfolio on the students' writing proficiency. The findings revealed that E-portfolio significantly enhanced EFL learners' writing proficiency.

Similarly, Farahian and Avarzamani (2018) investigated the impact of E-portfolios on EFL learners' metacognition and writing skill. According to the results, E-portfolios had a great impact on learners' metacognition and writing proficiency. Moreover, it was revealed that students had a positive attitude toward E-portfolio and teacher/peer feedback. Furthermore, Nezakatgoo (2005) compared two classes, that is, portfolio-based and a non-portfolio-based. The results of the study revealed that the experimental group outperforming the control group. In the same vein, Taheri and Mashhadi Heidar (2019) aimed to explore the effect of portfolio

assessment on improving EFL students' paragraph writing ability. The results of the study revealed that portfolio assessment had a significant effect on improving learners' writing ability. Likewise, Faravani and Atai (2015) investigated the influence of merging dialogic feedback and multiple intelligence oriented writing assignments with portfolio assessment on the development of Iranian EFL learners' higher and lower order thinking skills. They concluded that dialogic feedback and multiple intelligence-oriented writing activities had positive effect on portfolio assessment process since they enabled the instructors to assess the writing assignments and motivated the students to become cognizant of the learning process where teaching and evaluation overlap.

Since most of the writing classes in Iran follow the traditional methods of the teacher's assigning a topic for the students to write and then correcting the papers and handing them in to the students, E-portfolio is drawing more attention in EFL contexts so as to promote learners' learning, autonomy, self-reflection, and critical thinking. However, there are no studies conducted on the impact of E-portfolio on EFL learners' writing complexity, accuracy and fluency and on Iranian EFL teachers' and learners' perceptions toward E-portfolio, the researchers attempted to fill these gaps by raising the following research questions:

- 1) Does E-portfolio affect intermediate EFL learners' writing complexity?
- 2) Does E-portfolio affect intermediate EFL learners' writing accuracy?
- 3) Does E-portfolio affect intermediate EFL learners' writing fluency?
- 4) What are Iranian EFL teachers' and student' attitudes toward E-portfolio-based writing courses? Is there any difference between their attitudes?

METHODOLOGY

Participants

This research was conducted with 30 female learners in one of the institutes called Iran Language Institute (ILI) in Urmia, Iran. Through the ILI Placement test, the researchers selected 2 intact intermediate classes. Each class included 15 students within the age range of 17-23. In the experimental group, the researchers applied E-portfolio; however, in the control group, the teacher followed the procedure in syllabus.

Instrument

The following instruments were utilized to pave the way for data collection procedures:

Iran Language Institute Placement Test

The ILI Placement test, used for the purpose of homogenizing the participants' proficiency level, consists of questions on grammar and vocabulary followed by an interview. It is reported to have a reliability of 0.90.

Researcher-adapted Attitude Questionnaire toward E-Portfolio

In exploring the teachers' and learners' attitudes toward E-portfolio, the researchers used the

adopted questionnaire including 18 statements about E-portfolio on a four-point Likert scale ranging from “strongly disagrees” to “strongly agree” (see Hucthinson & Waters, 1987; Dudley-Evans & St John, 1998). The reliability of the learners' questionnaire was 0.84 and teachers' was 0.88.

Larsen-Freeman's (2006) Rubric for Measuring CAF

The following describes Larsen-Freeman's (2006) procedure for measuring CAF grammatical complexity, accuracy and fluency through T-unit:

T-unit: A T-unit is an independent clause and any associated dependent clauses.

Grammatical Complexity: Average number of clauses per T-unit.

Grammatical Accuracy: The proportion of error-free T-units to T-units.

Fluency: Average number of words per T-unit.

The researchers scored the compositions in pre-test based on Larsen-Freeman's (2006) writing scale. Some of the papers were chosen randomly from among the papers and were scored by the two raters. A high inter-rater reliability, that is, 0.87, was established by another research assistant regarding writing proficiency.

E-portfolios

E-portfolios consisted of the learners' and teacher's names, the learners' level of English language, topics and samples of work including multiple drafts, especially, the first draft and the final draft to show progress. It also contained teacher's and learners' reflective notes, answers to the viewers and viewers' comments.

Procedure

Before the treatment, using the ILI placement test, the researchers selected 2 intact intermediate classes at the ILI being held twice a week. During the study, one of the selected intact classes was randomly assigned to experimental group and the other one to the control one. During the treatment, the learners in the experimental group were divided into five groups (3 learners in each group). Learners in the experimental group were informed about E-portfolio. The researchers instructed the learners in experimental group on how to create and develop a Website on the Internet. The researchers defined the portfolio to them and motivated and boosted the students to work harder on their portfolios. Moreover, the students were informed to be more careful since their work would be accessed by their peers and teacher. The researchers asked the students to do peer correction or review and pay attention to peers' comments on their work and provide their own comments on someone else's work. Peer review on students' portfolio work was an essential part of the process of portfolio development.

The first topic about which learners wrote a composition was used as pre-test as well as post-test to see if there was a statistically significant difference between pre-test and post-test after E-portfolio treatment. In pre-test, a high inter-rater reliability, that is, 0.87 was established through double rating of the written data by another research assistant regarding writing ability based on Larsen-Freeman's (2006) writing scale for CAF. Learners were asked to write two compositions each week. Having prepared each composition, learners presented their written pieces on Website to get feedback from their peers. After revising and finalizing, learners presented their final draft

after several drafts. The teacher provided feedback on their compositions, too. All the learners wrote 8 compositions, having at least 150 words in each, on the topics in their books. This procedure was followed for 4 weeks and at the end of the 8th composition, the post-test was given to measure the immediate effect of the treatment.

Furthermore, at the end of the treatment, the researchers asked the teachers and learners to answer the attitude questionnaire toward E-portfolio having 17 statements about E-portfolio on a modified Likert scale. Before administering the questionnaire, the researchers conducted it on a sample having the same characteristics as the population to calculate its reliability which was 0.84 for learners and 0.88 for teachers.

By means of the SPSS (Statistical Package for Social Sciences) software, in order to analyze the obtained data, the researchers used an independent t-test to compare the mean scores of the experimental group with that of the control group in the post-test. Moreover, the frequency distribution of the scores on attitude questionnaire was calculated.

RESULTS

Quantitative Data Analysis for Homogeneity of the Participants' Writing Complexity in Pre-test

An independent samples t-test was conducted to ensure the homogeneity of the participants at the beginning of the study regarding the writing complexity (see Tables 1).

Table 1. T-test for the Writing Complexity in Pre-test

	Levene's Test for Equality of Variances		t-test for equality of means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.87	.35	.241	28	.811	.023	.095	-.171	.217
Equal variances not assumed			.241	28	.811	.023	.095	-.172	.218

As Table 1 shows there was no significant difference in scores for experimental group and control group [$t(28) = .24$ $p = .81 > .05$].

Equal variances assumed	3.04	.09	-.987	28	.331	-33.166	33.597	-101.4	35.112
Equal variances not assumed			-.987	28	.337	-33.166	33.597	-103.9	37.628

Table 3. Independent-samples T-test for Writing Fluency

As Table 3 demonstrates there was no significant difference in scores for experimental group and control group [$t(28) = -.98, p = .33 > .05$], that is, both groups were homogeneous regarding writing fluency.

Quantitative Data Analysis for the Participants' Writing Complexity in Post-test

An independent-samples t-test was conducted to compare the mean score of the experimental and control groups in terms of writing complexity in post-test (see Tables 4).

Table 4. T-test for Writing Complexity in Post-test

	Levene's Test for Equality of Variances		t-test for quality of means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Differences	Std. Error Difference	95% Confidence Interval of the Difference	
		g.						Lower	Upper
Equal variances assumed	3.73	.06	-7.99	28	.000	-1.113	.139	-1.396	-.830
Equal variances not assumed			-7.99	28	.000	-1.113	.139	-1.398	-.828

As is evident from Table 4, there was a significant difference in scores for experimental group and control group [$t(28) = -7.99, p = .00 < .05$], that is, writing complexity of the experimental group was significantly more than that of the control group.

Quantitative Data Analysis for the Participants' Writing Accuracy in Post-test

Equal variances assumed	6.09	.019	-5.7	28	.000	-47.944	8.404	-65.02	-30.8
Equal variances not assumed			-5.7	28	.000	-47.944	8.404	-65.36	-30.5

As illustrated in Table 6, there was a significant difference in scores for experimental group and control group [$t(28) = -5.70$ $p = .00 < .05$], that is, writing fluency of experimental group was more than control group.

Quantitative Data Analysis for the Students' Attitudes towards E-Portfolio-Based Writing Courses

The researchers, also, calculated the reliability of the second questionnaire using Cronbach Alpha (see Table 7).

Table 7. Cronbach Alpha for the Questionnaire

N of Items	Cronbach Alpha
17	0.84

Having calculated the reliability of the questionnaire using Cronbach Alpha which was .84, the researcher used the questionnaire to see the EFL students' attitudes toward E-portfolio-based writing courses. Table 8 presents the results of the questionnaire.

Table 8. Students' Attitudes towards E-Portfolio-Based Writing Courses

Items	Not Agree	Somewhat Agree	Agree	Strongly Agree
1. E-portfolios increase willingness to learn English more actively	0	0	2%	98%
2. E-portfolios increase classmates' cooperative learning and mutual growth in English	0	0	2%	98%
3. E-portfolios help find out our strengths and weaknesses in English	0	0	3%	97%
4. E-portfolios help reflect on our learning process	0	1%	3%	96%
5. E-portfolios help evaluate our learning	0	1%	1%	98%
6. E-portfolios help organize and arrange learning	0	2%	4%	94%
7. E-portfolios are a good tool to show learning is taking place	0	0	3%	97%
8. E-portfolios represent learning results	0	1%	4%	95%
9. E-portfolios increase teacher-student interaction	0	0	3%	97%

10. E-portfolios provide a multi-dimensional perspective about learning and assessment	2%	6%	7%	85%
11. E-portfolios provide a good sample to assess our performance	0	2%	6%	92%
12. E-portfolios provide a good source to save and store our artifacts	0	0	8%	92%
13. E-portfolios record evidence of learning	0	0	5%	95%
14. E-portfolios assist us with personal development	0	1%	6%	93%
15. E-portfolios provide a good diary of experience	0	2%	6%	92%
16. E-portfolios provide somewhere to release personal stress	0	3%	5%	92%
17. E-portfolios lead to more professional development	1%	4%	7%	88%

As Table 8 indicates, the majority of the students agreed that e-portfolios increase willingness to learn English more actively, increase classmates' cooperative learning and mutual growth in English, and help evaluate learning (98% strongly agreed). E-portfolios help find out strengths and weaknesses in English, are a good tool to show learning is taking place, increase teacher-student interaction (97% strongly agreed). They stated that e-portfolios help reflect on learning process (96% strongly agreed), and e-portfolios record evidence of learning and represent learning results (95% strongly agreed). E-portfolios help organize and arrange learning (94% strongly agreed). E-portfolios assist with personal development (93% strongly agreed). E-portfolios provide a good sample to assess our performance, provide a good source to save and store our artifacts, provide a good diary of experience, and provide somewhere to release personal stress (92% strongly agreed). E-portfolios lead to more professional development (85% strongly agreed). E-portfolios provide a multi-dimensional perspective about learning and assessment (85% strongly agreed). In sum, the upshot of the student-attitude questionnaire confirmed that on the whole the participants had a positive attitude toward the use of e-portfolio in class.

Quantitative Data Analysis for the Teachers' Attitudes towards E-Portfolio-Based Writing Courses

The researchers calculated the reliability of the second questionnaire using Cronbach Alpha (see Table 9).

Table 9. Cronbach Alpha for the Second Questionnaire

N of Items	Cronbach Alpha
17	0.88

Having calculated the reliability of the questionnaire using Cronbach Alpha which was .88, the researcher used the questionnaire to find out the EFL teachers' attitudes towards e-portfolio-based writing courses. Table 10 presents the results of the questionnaire.

Table 10. Iranian EFL Teachers' Attitudes towards E-Portfolio-Based Writing Courses

Items	Not Agree	Somewhat Agree	Agree	Strongly Agree
1. E-portfolios increase willingness to learn English more actively	0	0	0	100%
2. E-portfolios increase students' cooperative learning and mutual growth in English	0	0	0	100%
3. E-portfolios help find out strengths and weaknesses in English	0	0	0	100%
4. E-portfolios help reflect on learning process	0	0	0	100%
5. E-portfolios help evaluate learning	0	0	1%	99%
6. E-portfolios help organize and arrange learning	0	0	2%	98%
7. E-portfolios are a good tool to show learning is taking place	0	0	1%	99%
8. E-portfolios represent learning results	0	0	2%	98%
9. E-portfolios increase teacher-student interaction	0	0	0	100%
10. E-portfolios provide a multi-dimensional perspective about learning and assessment	0	0	4%	94%
11. E-portfolios provide a good sample to assess performance	0	0	2%	98%
12. E-portfolios provide a good source to save and store our artifacts	0	0	3%	97%
13. E-portfolios record evidence of learning	0	0	0	100%
14. E-portfolios assist with personal development	0	0	2%	98%
15. E-portfolios provide a good diary of experience	0	0	0	100%
16. E-portfolios provide somewhere to release personal stress	0	0	5%	95%
17. E-portfolios lead to more professional development	0	0	5%	95%

As Table 10 indicates, the majority of the teachers agreed that e-portfolios increase willingness to learn English more actively, increase students' cooperative learning and mutual growth in English, help evaluate learning, help find out strengths and weaknesses in English, help reflect on learning process, increase teacher-student interaction, record evidence of learning, and provide a good diary of experience (100% strongly agreed). E-portfolios help evaluate learning and are a good tool to show learning is taking place (99% strongly agreed). E-portfolios help organize and arrange learning, represent learning results, and assist with personal development (98% strongly agreed). E-portfolios provide a good

source to save and store our artifacts (97% strongly agreed). E-portfolios provide somewhere to release personal stress and lead to more professional development (95% strongly agreed). E-portfolios provide a multi-dimensional perspective about learning and assessment (94% strongly agreed). To summarize, the questionnaire on the whole showed that the teachers had a positive attitude toward the use of e-portfolio in class.

Quantitative Data Analysis for Inter-rater Reliability

The researchers calculated the inter-rater reliability regarding writing proficiency in pre-test using Pearson product-moment correlation coefficient (Table 11).

Table 11. Pearson Correlations for Writing Proficiency

		Rater 1	Rater 2
Rater 1	Pearson Correlation	1	.87**
	Sig. (2-tailed)		.00
	N	30	30
Rater 2	Pearson Correlation	.87**	1
	Sig. (2-tailed)	.00	
	N	30	30

** . Correlation is significant at the 0.01 level (2-tailed).

A high inter-rater reliability (i.e., .87) was established through double rating the written data by another research assistant.

CONCLUSION

The current research tried to examine the influence of E-portfolios on the intermediate Iranian EFL learners' writing over time. The result of immediate and delayed post-tests revealed a significant difference between the performance of the experimental group and that of the control group. The findings indicated that e-portfolio was influential in enhancing learners' writing quality both in the short and the long runs. Moreover, all the learners in the experimental group had a positive perception toward E-portfolio.

The results are in line with the study conducted by Motallebzadeh and Babae (2009) who came to the conclusion that subjects benefited from E-portfolio produced more reflective writing pieces. In addition, the results confirm the findings found by Lopez-Fernandez and Rodriguez-Illera (2009) and Yang and XU (2008) that E-portfolios possibly improve learners' autonomy and self-assessment. In addition, findings support Karami, Sadighi, Bagheri and Riasat's (2018) and Khodashenas and Rakhshi's (2017) studies which indicated that E-portfolio has a great impact on learners' writing skill.

This study was consistent with Al Kahtani's (1999) study indicating that E-portfolio in comparison with paper portfolio facilitates access to knowledge, and assists instructors in instructional planning. Therefore, E-portfolio application promotes contemplation, greater control over learning process and offers flexibility for both the instructor and the student. E-portfolios offer the chance to archive drafts, modify and rewrite papers, and enable the students to learn from

prior peer or teacher feedback. Furthermore, E-portfolios support social activities (Gerbic & Maher, 2008; Zeichner & Wray, 2001) and reflections (Batson & Chen, 2008; Stefani et al, 2007). E-portfolio helps the learners in creating and developing their ideas (Baris & Tosun, 2013).

Regarding learners' attitudes, E-portfolios motivate students to create profound writings. The results are in accordance with Derya and Abdullahs (2011) study suggesting that the online world and atmosphere leads to writing proficiencies. Thus, E-portfolios can be incorporated into foreign language educational system. Furthermore, in line with Farahian and Avarzamani's (2018) study, the results indicated learners had a positive perspective toward E-portfolio evaluation.

In the present investigation, the researchers came to the conclusion that E-portfolio had a significant influence on Iranian EFL learners' writing complexity, accuracy and fluency. Moreover, both teachers' and learners' had positive attitudes toward E-portfolio. In other words, implementation of E-portfolio as a teaching and evaluating writing method is efficient in improving EFL learners' writing complexity, accuracy and fluency.

The possibility of posting, exchanging information, and commenting is pleasant for modern students who utilize the latest technologies in their everyday lives. Furthermore, representation of learners' development, engagement in the decision-making, self-regulated learning, self-assessment, critical thinking, problem-solving and negotiation with educators about the contents of portfolios facilitate learning (Alexioua & Fotini, 2010; Baturay & Daloglu, 2010). To support these issues, the results of the present research indicated that E-portfolio had a significant effect on EFL learners' writing complexity, accuracy and fluency. Moreover, both teachers' and learners' had positive attitudes toward E-portfolio assessment in writing classes.

The findings have some implications for writing instructors in EFL educational settings. Educators need to understand their students, their desires and their preferences in order to make the best possible use of E-portfolios. Instructors who are willing to implement E-portfolios in their classes should, therefore, undergo training prior to the courses. They ought to explore and figure out about the strategies utilized in classrooms that are applying E-portfolios.

To integrate portfolios into autonomous learning, instructors ought to present the learners the notion of autonomous learning. It is necessary to provide guidance to assist learners to improve their portfolios, and to encourage portfolio exchange and checking. Moreover, educators are expected to teach, empower, and motivate students to comment on their peers' portfolios in order to enhance student-student interaction. As a result, students will be able to exchange their information and learn from each other. The present investigation may offer language educators other tools to employ in language learning process.

This research has some limitations that should be taken into account. A serious limitation of this investigation was that it failed to incorporate the proficiency level. Moreover, the subjects were just females. However, other studies on males as well as comparative studies on both male and female learners can be done. The present research can be repeated on a larger scale to make it more generalizable. Moreover, data collection tools such as observations or interviews were not used to triangulate the findings.

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