

# Effectiveness of Course Portfolio in Improving Course Quality at Higher Education

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## Abstract

To fulfill the demand of teaching and learning quality in Higher Education, different means of evaluating, assessing, and accrediting academic programs have evolved. The need arises on finding scientific tools to measure and assess quality at different stages of educational processes. In Higher Education, course portfolio is considered one of essential quality assurance tools used. It is used to monitor and develop activities, to help students construct knowledge, and to improve the academic activities. This paper tackles the effectiveness of such tool for improving learning and teaching processes College of Health and Sport Sciences, University of Bahrain. The results of this study showed that the college faculty have a positive perceptions towards the use of course portfolio. They also, positively perceive the usefulness of audit results of the course portfolio and show good intention towards using electronic course portfolio; however, they need more training and support to use it effectively. In this study, the benefits of course portfolio as an independent variable was found to be a significant predictor of e-portfolio acceptance. College of Health and Sport Sciences need to improve the implementation of e-portfolio system through continuous faculty feedback and improvement plans.

**Keywords:** higher education, quality assurance, teaching, learning, e-portfolio, acceptance

## 1. Introduction

The expansion in Higher Educational institutions has resulted in creating new challenges in the mechanisms and means to guarantee the quality of the educational process. It became necessary for Higher Education institution to drive towards greater attention to the quality of educational services, which would be reflected on the performance of its graduates in the labor market and affect the reputation of the institution.

University of Bahrain (UoB) was not an exception. Since 2002, the demand for Higher Education is increased. Therefore, supporting Higher Education quality practices was considered vital to meet Kingdom of Bahrain 2030 vision where quality of education became mandatory, to sustain the improvement in Higher Education key elements, such as curriculum, faculty, resources, facilities, and research (QAAC Quality Manual [QAACQM], 2019). Consequently, UoB established in-house quality assurance system supported by written quality policies, procedures, and practices. The University uses varieties of practices to generate data directly intended to improve programs quality and to meet the employability needs (QAACQM, 2019). The course portfolio is one of the main practices used to ensure teaching and learning quality process (QAACQM, 2019).

Traditionally, portfolio was used as a tool to display samples for individual work. Today, portfolio is used in different disciplines and especially in education as a pedagogical and assessment tool. According to Scully et al., (2018) learning portfolios are used to support, measure and document long-term learning, and they are observed to be a valued academic instrument for higher education organizations looking for improved graduate's skills and experiences (Scully et al., 2018). The course portfolio at the level of Higher Education and its institutions began in 1992 (Cerbin, 1992) where Cerbin W. talked about his experience with the course portfolio for one of the courses he taught. The study results revealed that attention needs to be paid to the learning outcomes of the programs and the practices that led to those outcomes.

Kaplan M. (1998) found that a course portfolio has developed to become a document, which focuses on a specific course, with special emphasis on student learning. It helps faculty to determine relationships between what they teach

and what students learn. In other words, it provides opportunity to investigate the intersection between teaching and learning. Course portfolios offer advantages for faculty and curriculum development. Since then, the course portfolio has been used to guide the educational process and as an evidence for teaching quality and effectiveness of programs. It includes students intended learning objectives, the instruction approaches to achieve those objectives and evidence of students' knowledge for a specific course (Kaplan, 1998).

Other researchers discussed the content of the teaching portfolio to be consisting of number of documents and thoughts about teaching competences (Lally, 2000), and to include all teaching materials, such as worksheets, students' results, assignments and Writings (Chien, 2015), that contains reflections on educational practices (De Rijdt et al., 2006) as well as the progress and the achievement of a teacher (Ja'rvinen & Kohonen, 1995). Some authors stated that using teaching portfolio can be used for the following purposes: performance documentation, monitoring growth, showing differences in progress, and improving teacher responsibility (Smith & Tillema, 2001). When using a portfolio, the instructors pass through a learning process for improving their professional development (De Rijdt et al., 2006, Smith & Tillema, 2001, Kelchtermans, 1993), teaching quality (Smith & Tillema, 2001, Bernstein et al., 2007) and institutional quality (De Rijdt et al., 2006, Karakayal, 2015).

Over the last decade as the technology grows, learning-teaching practices have been changed due to advances in technology. In addition to instructional changes, innovative assessment approaches have also been considered and employed in up-to-date instructive settings (Genc & Tinmaz, 2010). Electronic portfolio (also known as e-portfolios), have developed and expanded due to advances in network technologies, this development has affected teaching methods positively. E-portfolios is used in education primarily to advance students' learning methods and to sustain teacher's assessment (Amaya, 2013). An author defined electronic portfolio as "a soft copy document in computers comprising of text, graphic, audio and video materials" (Philippa, 2006). Another definition was reported by Abrami and Barrett (2005) as "a digital file for storing visual and auditory content including text, images, video and sound etc. to support number of educational methods and assessment purposes" (Abrami and Barrett, 2005). The literature found that developing of an e-portfolio provides many benefits since it serves different types of users with different purposes (Buzetto-More, 2010). Current research rationalizes the use of e- portfolios instead of paper portfolios in undergraduate nursing education, both nationally and internationally (Andrews & Cole, 2015, Birks et al., 2016, Collins & Crawley, 2016).

The course portfolio at UoB is one of the internal academic quality instruments. It has emerged from being a hard copy document into an electronic one. Being one of several colleges at UoB, the College of Health and Sport Sciences (CHSS) followed this mode and moved into the e-portfolio since January 2018. To guarantee effectiveness and success in the delivery of courses, the university mandates that updated e-portfolio for each of the courses offered in the various colleges is maintained. The course e-portfolio at UoB includes the following documents: course Specification form; course assessment (Mapping of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs), CILOs assessment form, and PILOs assessment form, student's assessment results, CILOs and PILOs improvement plans; sample of student assessment; exams questions and key answers; and grade distribution (QAACQM, 2019).

This file should be submitted to the Quality Assurance Committee (QAC) by each course coordinator at the end of every semester to assess their CILOs. The QAC should audit the course e-portfolio, and ensure that it satisfies the requirements. E-portfolio at UoB is intended to: document teaching and assessment activities; show level of success of the course; reference for evaluation and review; improve a course's efficiency; and make public and share educational insights (QAACQM, 2019).

The course assessment at the CHSS involves the assessment of each CILO, teaching materials, and assessment activities and resources. The course assessment comprises three quality instruments, CILOs assessment, and course evaluation survey and e-portfolio review. As mentioned above the CILOs assessment results are used to develop the course and are included as one of the main documents in the e- portfolio (QAACQM, 2019). The course evaluation is conducted every semester and at UoB. It includes evaluation of items related to the delivery of the course and faculty instruction. Finally, e-portfolio audit confirms that students are actually assessed on achievement of course results. All departments should maintain e-portfolio for each course as a regular mechanism for supporting teaching and learning activities (QAACQM, 2019). By the end of every semester, the QAC should audit course portfolios, which is used as an indication for the success of the course outcomes, as well as the success of the Program Educational Outcomes (PEOs) based on the direct relationship between PILOs and PEOs. Based on the audit results, decision will be taken by the department council to redesign the program curriculum, modify courses, or develop new pre-requisites (QAACQM, 2019).

### 1.1 Main Research Question

In this study we wanted to answer the following question “what is the perception of the CHSS faculty towards the effectiveness of course portfolios? In order to find an answer to the question, we formulated the following specific research questions:

1. What are the applications of course portfolios?
2. Are course portfolio audit results useful?
3. What is the faculty perception towards creating course portfolio?
4. What is the faculty view towards using paper or electronic course portfolios?

## 2. Method

In order to investigate the faculty perceptions towards the use of course portfolios, an exploratory study was set up by means of a questionnaire. Faculty perception about creating portfolios and their views towards the use of paper or electronic portfolios were evaluated.

### 2.1 Subjects

Convenience sampling was used, all faculty from College of Health Sciences and Sports were invited to participate in this study through an e-mail sent to them in February 2019. The questionnaire was accessed via a link to Microsoft forms. Ethical approval was obtained from College research committee. Consent was obtained from participants before sending the email and they were assured confidentiality of their responses. The exclusion criteria was faculty from other colleges at University of Bahrain.

### 2.2 Research Instrument

For the purpose of this explorative study a questionnaire was developed. The questionnaire was reviewed by an external expert and slightly modified. The questionnaire consisted of five sections. In section A, the characteristic of the study subjects includes demographic information such as gender, age group, years of teaching experience, academic qualification, average teaching load and academic duties. Section B contained 5 Likert scale questions about the purpose of course portfolio, and section C contained 5 Likert scale questions about the use of course portfolio audit results. Section D contained 3 Likert scale questions about faculty perception of preparing course portfolio and finally Section E contained 6 Likert scale questions about faculty perception of using hard verses electronic course portfolios.

### 2.3 Data analysis

For the analysis of the quantitative data, descriptive statistics was used to analyze the demographics of the study participants. Pearson correlation was used to measure the strength of association between any two variables. Finally, regression analysis was used to examine the influence of one or more independent variables on a dependent variable. The data were analyzed using SPSS version 23 .0 (SPSS. Inc., USA) where the statistical significance was set at  $P < 0.05$ .

## 3. Results

### 3.1 Characteristic of Study Subjects

Teaching faculty from CHSS completed the questionnaire and the response rate was 79% (45). The majority of participants were female (41).

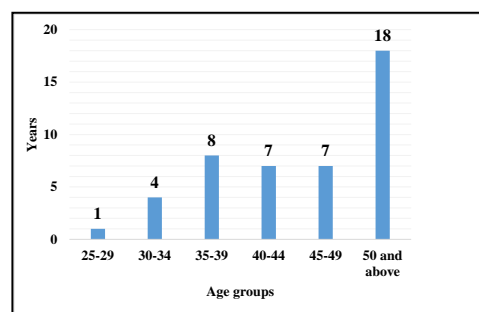


Figure 1. Shows Study participant's age group (n= 45)

Furthermore, 40% (18) of the participants were aged 50 years and above, 31% (14) were aged between 40-49 years, 27% (12) of the respondents were between 30-39 years old, and only 2% (1) of the age group between 25-29 years old (Figure 1). As per the teaching experience, 35% (20) of the teaching faculty had more than 20 years of teaching experience, 32 % (18) had teaching experience between 10-19 years, and only 15% (7) had teaching experience less than 10 years.

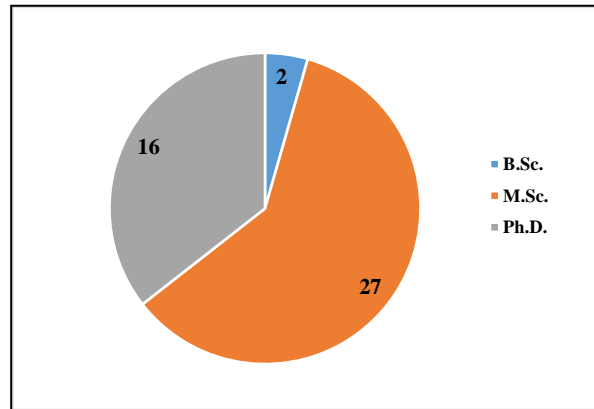


Figure 2. Study participant's academic qualifications (n=45)

As shown in figure 2, Majority of the participant were master degree holders (60%) (27), 35% (16) were Ph.D. degree holders and only 5% (2) were B.Sc. degree holders. The average teaching load of the participants ranged between 5 to 20 hours per week, with 6% (3) of them having teaching load of 20 hours and above, 49% (22) with teaching load of 15-19 hours per week, 35.5% (16) of them having teaching load of 10-14 hours per week and only 9% (4) with teaching load of 5-9 hours per week.

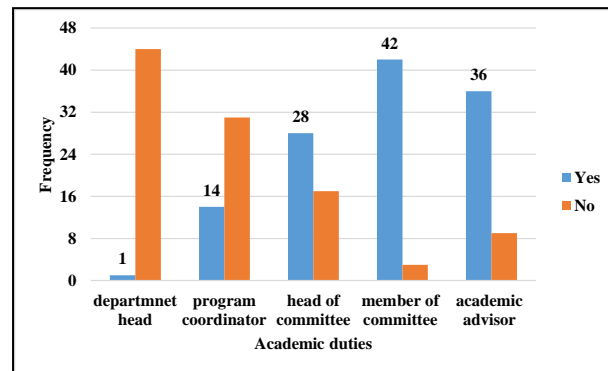


Figure 3. Study participant's academic duties (n=57)

Figure 3 shows the academic duties of study participants, 93% (42) of them were committee members, 80% (36) were academic advisors, 62% (28) were head of committees, 31% (14) of them were program coordinators and 2% (1) of them was department head. The Internal consistency for the 19 questionnaire items was high since Cronbach's alpha was 0.892.

### 3.2 The Purpose of Course Portfolio

The responses of strongly agree and agree were merged under the response agree, and the responses of strongly disagree and disagree were merged under the response disagree.

Table 1. Study participant's responses about the purpose of using course portfolio

<i>Course portfolio can be used:</i>	<i>Response</i>	<i>Frequency</i>	<i>%</i>
1. As a tool to assess course and program learning outcomes.	Agree	29	64.4
	disagree	9	20
	neutral	7	15.6
2. To share educational insights between faculty teaching the course.	Agree	27	60
	disagree	12	26.6
	neutral	6	13.3
3. To verify how much students achieved from course learning outcomes.	Agree	28	62.2
	disagree	23	28.9
	neutral	4	8.9
4. As an evidence for program accreditation processes.	Agree	38	84.5
	disagree	2	4.4
	neutral	5	11.1
5. By new faculty to teach the course for the first time smoothly.	Agree	24	53.3
	disagree	12	26.6
	neutral	9	20

(60%) of the participants agreed that the course portfolio can be used to assess course and program learning outcomes, to share insights between faculty teaching the course and to verify how much students achieved from course learning outcomes. Most of the participants (84.5%) agreed that course portfolio is needed as an evidence for program accreditation process. One half (53.3%) of the participants believed that the course portfolio can be used by new faculty to teach the course for the first time (Table 1).

### 3.3 Use of Course Portfolio Audit Results

The study participants were also asked about the usefulness of course portfolio audit results.

Table 2. Study participant's responses about the use of course portfolio audit results

<i>Course portfolio audit results can be used to:</i>	<i>Response</i>	<i>Frequency</i>	<i>%</i>
1. Modify course assessment.	Agree	29	64.5
	disagree	10	22.2
	neutral	6	13.3
2. Modify teaching methodology of the course	Agree	21	46.6
	disagree	11	24.5
	neutral	13	28.9
3. Modify course-learning outcomes.	Agree	28	62.3
	disagree	10	22.3
	neutral	7	15.6
4. Restructure the program curriculum.	Agree	27	60
	disagree	9	20
	neutral	9	20
5. Introduce new pre-requisites to the course.	Agree	23	51.1
	disagree	10	22.2
	neutral	12	26.7

The participant's responses is summarized in Table 2. 64.5% of them agreed that the results could be used to modify the course assessment; 62% agreed that it could be used to modify course-learning outcomes and 60% agreed that the results could be used to restructure the program curriculum. Only 46.6% of them agreed that, it could be used to modify

teaching methodology of the course and 51.5% agreed that the results could be used to introduce new pre-requisites to the course.

### 3.4 Participants' Perception about Preparing Course Portfolio

The study participants considered preparing the course portfolio is important.

Table 3. Study participants' perception about preparing course portfolio

<i>I consider that:</i>	<i>Response</i>	<i>Frequency</i>	<i>%</i>
1. The course portfolio helps new faculty to teach the course.	Agree	23	51.1
	disagree	13	28.9
	neutral	9	20
2. The faculty should prepare a course portfolio by end of the semester.	Agree	30	66.6
	disagree	10	22.2
	neutral	5	11.1
3. I will always use the course portfolio whenever I teach the course again.	Agree	23	51.1
	disagree	12	26.7
	neutral	10	22.2

The results showed that 51.1% agreed that it helps the new faculty to teach the course and 51.1% used the course portfolio whenever they teach the course again. Accordingly, 66.6% agreed that a course portfolio should be prepared by end of the semester (Table 3).

### 3.5 Participants' Perception about using Hard Copy Verses Electronic Portfolio

<i>I consider that:</i>	<i>Response</i>	<i>Frequency</i>	<i>%</i>
1. It is easy to prepare a hard copy of course portfolio	Agree	18	40
	disagree	22	48.9
	neutral	5	11.1
2. Preparing hard copy course portfolio is time consuming	Agree	34	75.5
	disagree	6	13.3
	neutral	5	11.1
3. I am willing to adopt electronic portfolio for my courses	Agree	27	60
	disagree	10	22.2
	neutral	8	17.8
4. Creating electronic portfolio is an easy task.	Agree	13	28.9
	disagree	22	48.8
	neutral	10	22.2
5. Collecting electronic documents for electronic portfolio is time consuming	Agree	34	75.5
	disagree	6	13.3
	neutral	5	11.1
6. I need training/support to create electronic portfolio	Agree	21	46.7
	disagree	14	31.1
	neutral	10	22.2

Majority of participants (48.9%) disagreed that preparing a hard copy course portfolio is an easy task. Furthermore, 75.5% agreed that preparing hard copy course portfolio is time consuming. Interestingly, 60% of the participants were willing to adopt electronic portfolio in their courses. However, 48.8% disagreed that creating electronic portfolio is an easy task and 75.5% agreed that collecting electronic documents for electronic portfolio is time consuming. 46.7% reported that they still need training and support to create electronic portfolio (Table 4).

### 3.6 Correlation Analysis

Correlation analysis was used to examine the relationship between the questionnaire items and the demographics of the participants. Results indicated a positive relationship between the use of course portfolio and the portfolio audit results, and being a program coordinator,  $r(45) = 0.314$ ,  $p < 0.036$  with  $R^2$  of 0.098. This suggests that course coordinators

positively perceived the use of the portfolio and the audit results more than others did. The amount of explained variance between the two variables is 9.8%. On the other hand, an inverse relationship was found between the use of course portfolio on one hand and the portfolio audit results and being a member in committees,  $r(45) = -0.362$ ,  $p < 0.015$  with the amount of explained variance of 13.1% ( $R^2 = 0.131$ ). Another inverse relationship was found between preparing course portfolio and all the demographics items,  $r(45) = 0.314$ ,  $p < 0.036$  with  $R^2 = 0.098$ . Inverse relationship was also found between the use of electronic course portfolio on one hand  $r(45) = -0.321$ ,  $p < 0.032$  and average teaching load, and being a member in committees,  $r(45) = -0.307$ ,  $p < 0.040$  with the amount of explained variance of 13.1% ( $R^2 = 0.103$ ), and 9.4% ( $R^2 = 0.094$ ) respectively. In summary, it is worth mentioning that although there were significant correlations between the questionnaire items and the demographics of the participants, the correlations were weak in all the tested relationships.

### 3.7 Regression Analysis

A simple linear regression was calculated to investigate whether e-portfolio acceptance could significantly predict the benefits of course portfolio.

Table 5. Regression results for e-portfolio acceptance vs. benefits of course portfolio Predictor

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig. p-value
	B	Std. Error	Beta		
(Constant)	.068	.425		.160	.874
mean score of portfolio benefits variables from 2 to 12	.757	.117	.701	6.450	.000*

Dependent Variable: e-portfolio acceptance, \*significant at  $<0.005$ , Predictor: benefit of course portfolio

The results of the regression analysis (Table 5) indicated that the model explained 49.2% of the variance and that the model was a significant predictor of e-portfolio acceptance,  $F(1, 43) = 41.601$ ,  $p < 0.000$ . Which means that the predictor can explain 48% of the variability in the acceptance of e-portfolios. Benefits of course portfolio contributed significantly to the model where the value of the standardized Beta coefficient was 0.701 at a significance level of  $p = 0.000$ .

Table 6. Regression results for e-portfolio acceptance vs. intention to use e-portfolio Predictor

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig. p-value
	B	Std. Error	Beta		
(Constant)	2.231	.592		3.767	.000
Mean Score of Course Portfolio Intension to Use Variables	.165	.194	.129	.851	.399

Dependent Variable: e-portfolio acceptance, Predictor: Intention to use course portfolio.

No significant relationship was found between the intention to use the course portfolio and the acceptance of the e-portfolio (Table 6), where the value of the standardized Beta coefficient in this regression was very low ( $B = 0.129$ ) and the significance level was higher than 0.05. On the other hand a positive relationship was found between intension to use course portfolio and benefit of course portfolio.

Table 7. Regression results for e-portfolio acceptance vs. benefits of course portfolio Predictor

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig. p-value
	B	Std. Error	Beta		
(Constant)	1.510	.455		3.316	.002
Mean Score of Benefits of Course Portfolio Variables	.676	.149	.568	4.529	.000*

Dependent Variable: e-portfolio intension to Use, \*significant at  $<0.005$ , Predictor: benefit of course portfolio

The regression results in Table 7 indicated that the model explained 30.7% of the variance and that the model was a significant predictor of intension to use course portfolio,  $F(1,43) = 20.511$ ,  $p = 0.000$ . Benefit of course portfolio

contributed significantly to the model where the value of the standardized Beta coefficient in this regression was very low ( $B = 0.568$ ) and the significance level was less than 0.05.

#### 4. Discussion

Portfolio serve as a guide reflection on faculty teaching and learning to develop courses and teaching practices in tertiary education. It has been reported that portfolios are used as a tool for continuous improvement of teaching and learning (Cerbin, 1994). Although many educators claim benefits of course portfolios and number of online handbooks for creating course portfolios were published on universities websites (QAACQM, 2019, Course portfolio Handbook, 2000, Course portfolio Handbook, 2017), no studies in the Kingdom of Bahrain have investigated faculty perceptions towards the benefits of using course portfolios in higher education. The results of this study indicated that the majority of CHSS faculty were willing to adopt e-portfolios although they reported that it's not an easy task and that it's time consuming. This finding contradicts the evidence in the literature that electronic portfolios have provided number of advantages (Abrami and Barrett, 2005, Strudler & Wetzel, 2005, Challis, 2005). Some of the reported advantages of electronic portfolios in the literature: the ease of use, less time and efforts for preparation, ease of access from anywhere and possibility of sharing the documents with others.

CHSS faculty agreed that a number of challenges arises when using the e-portfolios similarly; some of these challenges were reported by ePortConsortium organization (ePortConsortium, 2003). One of the main challenges was hardware and software challenges. It was hard to decide whether to use readymade or customized portfolio system. In addition, security and privacy issues were also addressed to determine who would access e-portfolio content. When choosing a system it must be easy to learn and to use by faculty. Another challenge was the extra administrative inconvenience imposed on staff during the implementation phase which was also reported by other reserachers (ePortConsortium, 2003). Despite conducting group and individual training sessions by QAC to familiarize the faculty with the new e-portfolio system, almost half of the participants stated that they still need support and training.

If an e-portfolio is to be used, then CHSS must provide introductory workshops on how to use the system and how to upload documents on e-portfolio system. A study conducted at UoB highlighted that instructors and students need training on how to use the e-portfolio system for better implementation of e-portfolio in university (Qaddoumi et al., 2018). The results of this study are also consistent with Challis (2005) who found that faculty have different technological abilities and needed training and preparation on different features of the system to build the e-portfolio (Challis, 2005). Moreover, it has been have stated that purchasing a new technology must be supported by ongoing training to all academic staff (Softić et al., (2013). From another point of view, it has been reported that course coordinators must be aware of the basic technical features of the system and have enough skills required for using the system (David, 2017). It is evident in the literature that Institutional support always was not sufficient for the implementation of an e-portfolio system as shown in several of previous studies (Slade et al., 2013, Luera et al., 2016, Andrews & Cole, 2015, Collins & O'Brien, 2018). In this study, 46.7% of faculty reported that they need support and training to use the e- portfolio system effectively. CHSS need to conduct more training sessions to familiarize faculty with the system.

In summary, this study examined number of questions such as “faculty perceptions towards the use of course portfolio and their benefits” , “the usefulness of course portfolio audit results” as well as “faculty views towards using paper verses electronic course portfolios”. In general, the study shows that CHSS faculty positively perceived the benefits of course portfolio and the usefulness of audit results; they also had high intension to use course e-portfolio. In addition, benefits of course portfolio were found to be a significant predictor of e-portfolio acceptance.

#### 5. Conclusion

Course portfolio at the CHSS is considered an instrument that can have important positive effects on educational practices such as reflecting on teaching practices, refining assessments and improving course outcomes and teaching materials. In addition, the audit results can be used to modify course assessment, learning outcomes, program curriculum and teaching methodology. The study findings revealed a good perception of faculty towards the use of portfolio in general and e-portfolio in particular. Although they find collecting the portfolio documents is a hard job and the electronic portfolio is a time consuming work, they had the intention to create the course portfolio every semester. The faculty also have accepted using e-portfolio instead of paper portfolio; however, they need more time and training to use it successfully as they may have limited technological abilities. If CHSS implemented e-portfolio system properly, it can be a powerful tool for improving educational practices such as assessing course and program outcomes, for program accreditation and for new faculty to teach the course for the first time. We also need to be aware that the implementation of e-portfolio system may take several years to see its results and get its full benefits.



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**Authors' contributions:** both authors contributed equally in this article. RA and AA developed the research idea and study design, collected the samples, did the statistical analysis and wrote the manuscript.

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