

## **Differences between Portfolio and Traditional Test to Prospective Teachers' Academic Achievement: A Case of Ruaha Catholic University, Tanzania**

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East African Journal of Education and Social Sciences

**Abstract:** The use of portfolios towards prospective teachers' competence acquisition as compared to tests has been of concern to most scholars worldwide. This study therefore sought to determine differences between test and portfolios in academic achievement among Ruaha Catholic University prospective teachers. It involved the use of descriptive survey research design and was guided by one null hypothesis and one alternative hypothesis. The population of the study was four 450 Ruaha Catholic University second year prospective teachers who were studying research methods in education course for the academic year 2020/2021. The sample of the study was 50 participants who were selected by using simple random sampling. Data was collected by using two instruments namely test and portfolio which were administered and then later scores were used for comparison. Findings indicated that there is a statistically significant difference between test and portfolio in academic achievement among the prospective teachers. The study recommends that higher education institutions should put effort on the use of portfolios as one of authentic assessment tools rather than dominantly using traditional paper and pen tests.

**Keywords:** Portfolio; test; academic achievement; higher education

**How to cite:** Nyinge, B. (2022). Differences between Portfolio and Traditional Test to Prospective Teachers' Academic Achievement: A Case of Ruaha Catholic University, Tanzania. *East African Journal of Education and Social Sciences* 3(2), 178-186. Doi: <https://doi.org/10.46606/eajess2022v03i02.0172>.

### **Introduction**

There has been a concern among scholars on the use of portfolios as authentic assessment tool in higher education (Binh, 2021; Birgin, 2011; Farid, 2018; Farrell, 2020; Martin, Arrambide & Holt, 2016; Mhlauli & Kgosidialwa, 2016; Montgomery, 2010; Muin, Hafidah, & Daraini, 2021; Tyas, 2020) in contrast to the dominant use of traditional test assessment. Portfolio is defined as purposeful collection of a learner's works that can be considered as evidence of a learner's efforts, accomplishments and advancement (Caner, 2010; Farid, 2018; Mhlauli & Kgosidialwa, 2016). Tradition test assessment refers to the use of timed paper and pen test or examination as a measure of student academic achievement (Falchikov, 2005; Rawlusk, 2018). Scholars stress

that the use of authentic assessment tools such as portfolio may lead to students spending time on tasks which in turn may lead to deep learning, hence competence acquisition (Halimah & Syaddad, 2020; Montgomery, 2010; Syamsul Ma'arif, Abdullah, Siti Fatimah & Nurul Hidayati, 2021; Waugh & Gronlund, 2013). Furthermore, portfolio assessment, which is considered as authentic assessment, is less stressful allowing a friendly learning environment among learners (Martin et al., 2016). It makes learners acquire the competences in the process of accomplishing the tasks. It is regarded as one of the forms of assessment for learning as it helps learners improve the learning process (Binh, 2021). The concern of scholars on the usefulness of portfolio

has led to the use of such tool as assessment tool in most higher education institutions worldwide. The use of portfolio as authentic assessment tool has been given emphasis due to critics in the traditional paper and pencil tests (Gipps, 1994; Gullo, 2005; Händel, Wimmer & Ziegler, 2020; Natalia, Asib & Kristina, 2018; Yorke, 2009). Traditional assessments such as tests are considered to call for surface learning (Ramsden, 2003) which in turn measures lower order thinking skills (Villarroel et al., 2020). This may lead to memorization of facts rather than competences construction. Despite the weaknesses of traditional test assessment, there are some strengths associated with their uses such as stabilizing information stored in memory (Yang, Razo, J., & Persky, 2019). Likewise, traditional test assessment may promote recall of information among learners and enhance the teaching and learning process (Binks, 2018; Yang et al., 2019). That being the case, the need arises to find out if there are differences in terms of students' academic achievement with regard to the use of portfolio and tests as modes of assessment. The study has to be carried out to come up with vivid evidence since the criticism still persist on the weaknesses of traditional paper and pencil tests. This is due to the fact that, traditional paper and paper tests are dominantly used in higher education (Rawlasyk, 2018) and students show preference to be assessed by such tests rather than portfolios (Pereira, Cadime, Brown & Flores, 2021).

The preferences on the use of tests might be due to that they are easy to administer and might appear objective (Waugh & Gronlund, 2013). Furthermore, traditional test assessment tends to be preferred by higher education because they are less expensive in terms of time and resources compared to portfolios (Mardjuki, 2018). However, tests are considered to call for surface learning (Ghosh, 2018) rather than deep learning as a requirement for higher education (Farrell, 2020; Ramsden, 2003). Surface learning involves recalling and memorization of facts by just focusing on signs of the task while deep learning involves understanding of ideas by focusing on what the task is all about (Ramsden, 2003). That being the case, the dominant use of tests may likely be due to lack of awareness on the effectiveness of other forms of assessment such as portfolios. Since some learners and instructors

have negative attitude towards the use of portfolio assessment, the use of tests still dominates the field of higher education (Childs & Baird, 2020). This paper, therefore, intended to clarify such misconception with the findings by comparing Ruaha Catholic University students' academic achievement in both tests and portfolios.

In higher education institutions, the mode of assessment is of concern since they are involved fully in the preparation of professionals in various fields by fostering development of human qualities (Barnett, 2007). For a competent professional to be prepared by higher education institutions; the nature of assessment is of significance because assessment dictates learning among students (Gibbs, 2003). Therefore higher education institutions should call for modes of assessment that actively engage students in the learning processes hence portfolio assessment (Farid, 2018). However, for the use of portfolios to be approved, there is a need to compare it with tests in order to check if it makes any difference in terms of academic performance. The differences in academic performance among students may provide evidence on effectiveness of such mode of assessment. It is expected that, professionals in higher education institutions are likely to be competent in their fields which may in turn be implicated from the achievement in the tasks they are engaged. It is therefore expected that good performance in the mode of assessment used compared to one another is an indication of effectiveness of such mode of assessment. Since the academic achievement of the students may be used as an indicator for the acquisition of competences, the mode of assessment whether authentic portfolio or traditional test is of concern.

Traditional paper and pen tests being assigned higher status in higher education institutions (Martin et al., 2016) is of concern as to whether it serves the purpose of academic performance among students. This leads to be question whether tests may lead to a good student's performance as compared to the portfolio assessment. Higher education institutions prefer using traditional tests as they are seen to be less expensive in terms of resources and timing. Portfolio assessment, however, is considered to be expensive in terms of timing spend in marking and feedback provision (Natalia et al., 2018). With

the dominant use of traditional paper and pen tests in higher education institutions; the concern for the criticism on the competences of the graduates might still persist. Therefore, there is a need to find out with evidence if tests compared to portfolio might bring the differences in terms of students' academic achievement. This is because performance may be one of indicators of competences acquisition among learners.

Studies have been carried out globally on uses of both portfolios and tests (Binks, 2018; Brallier, Schwanz, Palm, & Irwin, 2015; Putra, 2021; Yang et al., 2019). However, the concern of scholars on traditional test assessment has been on both summative and formative uses though summative use has dominate (Rawlusk, 2018). Traditional test assessment has been commonly used in all levels of education from primary level to higher education level. The use has focused on measuring if learning has taken place among learners. Likewise, traditional test assessment has been used for accountability purposes to both instructors and institutions (Anderson, 2003). The formative use for the sake of improving the learning process among students in higher education has been observed to be minimal (Takiguchi, Arai, Ieiri, Uejima & Hirata, 2012). That being the case, academic achievement among learners may likely be minimal since traditional tests involve policing role during administration which in one way or another may make learners anxious, hence affecting academic achievement (Brallier et al., 2015). From such concern, scholars have argued on replacement of traditional test assessment with authentic assessment such as portfolios (Waugh & Gronlund, 2013). They believe that authentic assessment with several tools such as portfolio may improve the learning process which in turn may improve learners' academic achievement (Binh, 2021; Farrell, 2018; Syamsul Ma'arif et al., 2021). Furthermore portfolios have been seen as tools to improve teaching and learning processes (Farrell, 2020).

In Tanzania, there are several studies carried out in assessment in general (Byabato & Kisamo, 2014; Kitta, 2014; Mbalamula, 2018; Mkimbili & Kitta, 2019; Ndalichako, 2015). However, out of these only two studies addressed higher education (Mbalamula, 2018; Rubeba & William, 2019). The concern was on the competences of instructors in the preparation of traditional test

assessment by looking at whether they possess it (Rubeba & William, 2019). Similarly, another study focused on the relationship between individual test and group assignment in terms of students' academic performance (Mbalamula, 2018). Little has been done in higher learning on the area of authentic assessment tools particularly portfolio in relation to tests. This study therefore sought to fill the gap by looking at the differences between traditional test assessment and portfolio with regard to prospective teachers' academic achievement.

Scholars cited so far have indicated both tests and portfolios to have contribution in the teaching and learning processes among students. They have focused on comparison between portfolios as authentic assessment and tests as traditional assessment by comparing learners in different tasks. However, little has been done on academic achievement among the same individuals being given different tasks in terms of tests and portfolios. The focus of this paper was therefore to find out the differences in academic achievement of the individuals in portfolios and tests. The differences in performance among individuals in either of the assessment may signify the effectiveness of such mode of assessment. The question under consideration is whether there is a difference in terms of academic achievement among students in traditional tests and portfolios.

## **Methodology**

### **Research Design**

This study involved the use of the quantitative research approach as data collected was in numbers rather than words. Descriptive survey research design was employed in this study. According to Gall and Gall (2003), descriptive design involves making careful descriptions of educational phenomena. In this study, the researcher sought to describe the differences between portfolio and traditional test in terms of students' academic achievement.

### **Population and Sampling**

The study involved 450 second year Bachelor of Arts with Education students at Ruaha Catholic University who were taking research methods in education course. Ruaha Catholic University was chosen for the study because one of the courses involved specified the use of portfolios as a requirement for coursework fulfillment. Such

requirement was rarely observed in other higher education institutions course outlines. Second year Bachelor of Arts with Education prospective teachers were chosen for the study because research methods in education course which had two forms of assessment namely portfolio and tests was offered in such specific year. Out of those, 50 students were simple randomly sampled for the study. The choice of sample based on the fact that, there is no clear-cut answer for the correct sample size (Best & Kahn, 1998; Cohen, Manion & Morrison, 2000). The authors argue that samples of 30 or more are usually considered large enough and those with fewer than 30 are small samples.

### Instruments

The instruments used to collect data were test and portfolios which were administered to the population under study. Each individual had scores for both portfolio and tests; hence comparison was done to find out whether there was a statistical difference in academic achievement or performance among them. Test and portfolio comprised of questions and tasks from the same modules or content in the course of research methods in education. The test comprised of five questions on three modules namely; understanding the nature and paradigm of educational research, basic elements of educational research and research design and methodology. Similarly, portfolio comprised of five assignments basing on the three modules mentioned. This means that test and portfolio involved questions and tasks from the same modules, hence measured the same content. They were used because the concern was to

compare students' academic achievement basing on the analysis of scores in the two instruments.

### Validity and Reliability

Ary et al. (2010) defines reliability as the degree of consistency with which it measures whatever it is measuring. In terms of reliability, tests and portfolios were administered in a conducive environment without making students anxious. This was done to ensure reliability because the individual being measured may be a source of error (Ary, Jacobs & Sorensen, 2010). The marking was done by using marking guide and rubric to avoid biasness and subjectivity. Validity may be defined as the extent to which an instrument measured what it claimed to measure. In terms of validity, construct validity was well considered because tests and portfolios measured the same construct relating to research issues.

### Ethical Considerations

Ethics were taken into consideration by seeking clearance letter for the research from Ruaha Catholic University management which gave permission to meet with students for data collection. Confidentiality among participants was considered by making the tests and portfolios anonymous in that names were not attached but rather numbers were used.

### Results and Discussions

The findings are from the analysis of data by using a sampled paired t-test as seen in table 1 and 2, which was used to compare performance between test and portfolio per each individual. The purpose of the study was to find out the differences between test and portfolio in terms of prospective teachers academic performance.

**Table 1: Paired Samples Statistics**

|                  | Mean | N  | Std. Deviation | Std. Error Mean |
|------------------|------|----|----------------|-----------------|
| Test scores      | 4.73 | 50 | 1.263          | .179            |
| Portfolio scores | 7.60 | 50 | .535           | .076            |

**Table 2: Paired Samples Significance Results**

|                                | Mean  | Std. Dev | Std. Error Mean | t      | df | Sig.  |
|--------------------------------|-------|----------|-----------------|--------|----|-------|
| Test scores - Portfolio scores | -2.87 | 1.25     | 0.17            | -16.19 | 49 | 0.008 |

The research question which guided the study was 'is there a significance difference in academic performance among prospective teachers in tests and portfolios? The research question then led to two hypotheses null and alternative as follows: Ho:  $\mu_d \geq 0$ : There is no statistically significant

difference between test and portfolio in prospective teachers' academic achievement; Ha:  $\mu_d < 0$ : There is a statistically significant difference between test and portfolio in prospective teachers' academic achievement.

The results of the paired sample t-test in table 1 and 2 revealed that there was a significant difference between test ( $M=4.73$ ,  $SD=1.26$ ) and portfolio ( $M=7.60$ ,  $SD=0.54$ ),  $t_{(49)} = -16.19$ ,  $p \leq 0.05$ . Refer to the Tables 2 and 3 for the details.

Since  $p \leq 0.05$ , the results show there is a statistically significant difference between test and portfolio. This leads to rejection of the null hypothesis which states that 'there is no significant difference between test and portfolio to prospective teachers' academic performance. This then leads to retaining of the alternative hypothesis which states, there is a significant difference between portfolio and test in students' academic performance.

The findings indicate that there is a statistical significance difference between test and portfolio with regard to students' academic performance. This shows that the use of portfolio may have positive influence to students' academic performance, hence competences acquisition. Similarly, the difference which indicates portfolio to be better than tests in terms of students' academic achievement signifies the advantages of authentic assessment in higher education. It is believed that portfolios in particular and authentic assessment in general play a great role in competences acquisition among the students. Students acquire the competences because they spend much time and efforts in the process of learning. In addition, they are involved in deep learning which may make them perform the tasks given comfortably.

The findings are in line with some studies (Binh, 2021; Farid, 2018; Muin, Hafidah, & Daraini, 2021; Sokhanva, Salehi & Sokhanvar, 2021; Tyas, 2020; Waugh & Gronlund, 2013) which indicated the use of authentic assessment in general and portfolios as tools in particular to have positive influence in competences acquisition and demonstrations. Furthermore, scholars in the cited studies show that students perform better in portfolios than in traditional paper and pen tests. Händel et al (2020) furthermore argues that students are likely to effectively demonstrate the competences due to the fact that they internalize the learning process by being deeply engaged in doing the tasks. Portfolios assessment involves the use of tasks which are relevant to the working world hence making the learning among students meaningful (Paz-Albo Prieto, Herranz Llácer & Hervás Escobar, 2017). They are not doing the

tasks for the sake of accomplishing but rather by being motivated doing as the tasks relate to the professional world after graduation.

Some scholars have commented on the use of portfolio to ensure integrity and avoiding misconduct among students (Sotiriadou, Logan, Daly & Guest, 2019). This is because, portfolios relieves students from anxiety making them perform tasks without being pressured by high stakes consequences. Händel et al., (2020) and Petty, 2009) comment that the use of portfolios carries formative role which leads to improvement of learning, hence academic achievement among the prospective teachers. Therefore it may be argued that portfolios serve formative roles by providing students opportunities to monitor their learning progress (Syamsul Ma'arif et al., 2021). Contrary, tests serve summative roles by measuring whether learning has taken place or not among students.

Tests as forms of traditional paper and pen assessment have been found to have negative influence to students learning as they expose them to surface learning (Ramsden, 2003). Students may not acquire the required competences as they prepare for the tests because the questions asked might be calling for memorization of facts (Falchikov, 2005). The argument is supported by Gipps (1994) who states that tests may be used to raise scores but not the improvement of skills. Furthermore, some tests are of high stakes which might make students anxious at the time of doing (Gipps, 1994) hence increasing the likelihood of poor achievement as evidenced by the findings. The findings have indicated lower performance compared to portfolios. This is in line with the findings from Brallier et al. (2015) who indicated students to have performed lower in tests as compared to assignments. This means that the use of tests may not contribute to the competences among them (Sabtiawan et al., 2019). This might be due to anxiety incorporated to students as they perform the tests. They are not comfortably involved in performing the test questions since they might perform under pressure.

## **Conclusions and Recommendations**

### **Conclusions**

The study concludes that there is a significant difference between test and portfolio among students' academic performance in that, students

performed highly in portfolio compared to tests. The use of portfolio may lead to competence acquisition as evidenced by high academic performance compared to tests. Portfolio assessment as a tool of authentic assessment is therefore more effective than test assessment in promoting learning, which leads to maximized students' academic achievement.

### Recommendations

Basing on conclusions of the study, it is recommended that there should be an assessment policy that dictates the use of both forms of assessments. This is due to the fact that, studies have shown tests assessment dominates in higher education as compared to portfolios assessment. Higher education institutions should provide in-service training to instructors on the uses of assessment methods in general and portfolios, in particular.

Dominant use of tests should be discouraged by supplementing it with the use of portfolios which have been observed to affect students' academic achievement in a positive way.

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**Table 3: Test and portfolio Results for prospective teachers academic performance ( $\alpha = 0.05$ )**

| STUDENT | TEST (X1) | PORTFOLIO (X2) | D      | D <sup>2</sup> |
|---------|-----------|----------------|--------|----------------|
| 1       | 5         | 8              | -3     | 9              |
| 2       | 4         | 8              | -4     | 16             |
| 3       | 4         | 7              | -3     | 9              |
| 4       | 7         | 7              | 0      | 0              |
| 5       | 6         | 7              | -1     | 1              |
| 6       | 2         | 7              | -5     | 25             |
| 7       | 2.5       | 7              | -4.5   | 20.25          |
| 8       | 6         | 8              | -2     | 4              |
| 9       | 5         | 8              | -3     | 9              |
| 10      | 2.5       | 7              | -4.5   | 20.25          |
| 11      | 6         | 8              | -2     | 4              |
| 12      | 5         | 8              | -3     | 9              |
| 13      | 4         | 8              | -4     | 16             |
| 14      | 4         | 7              | -3     | 9              |
| 15      | 4         | 8              | -4     | 16             |
| 16      | 5         | 7              | -2     | 4              |
| 17      | 5.5       | 8              | -2.5   | 6.25           |
| 18      | 3.5       | 8              | -4.5   | 20.25          |
| 19      | 5.5       | 7              | -1.5   | 2.25           |
| 20      | 6         | 7              | -1     | 1              |
| 21      | 4         | 7              | -3     | 9              |
| 22      | 5         | 8              | -3     | 9              |
| 23      | 4         | 7              | -3     | 9              |
| 24      | 4         | 7              | -3     | 9              |
| 25      | 4.5       | 8              | -3.5   | 12.25          |
| 26      | 4.5       | 8              | -3.5   | 12.25          |
| 27      | 6         | 7              | -1     | 1              |
| 28      | 4         | 7              | -3     | 9              |
| 29      | 5.5       | 8              | -2.5   | 6.25           |
| 30      | 4.5       | 8              | -3.5   | 12.25          |
| 31      | 2.5       | 7              | -4.5   | 20.25          |
| 32      | 3         | 8              | -5     | 25             |
| 33      | 6.5       | 8              | -1.5   | 2.25           |
| 34      | 5         | 8              | -3     | 9              |
| 35      | 6         | 7              | -1     | 1              |
| 36      | 5         | 7              | -2     | 4              |
| 37      | 2         | 8              | -6     | 36             |
| 38      | 3.5       | 8              | -4.5   | 20.25          |
| 39      | 7.5       | 8              | -0.5   | 0.25           |
| 40      | 6         | 8              | -2     | 4              |
| 41      | 5         | 7              | -2     | 4              |
| 42      | 6         | 8              | -2     | 4              |
| 43      | 6         | 9              | -3     | 9              |
| 44      | 4         | 7              | -3     | 9              |
| 45      | 4.5       | 8              | -3.5   | 12.25          |
| 46      | 4.5       | 8              | -3.5   | 12.25          |
| 47      | 4         | 7              | -3     | 9              |
| 48      | 5         | 8              | -3     | 9              |
| 49      | 6         | 8              | -2     | 4              |
| 50      | 6         | 8              | -2     | 4              |
| TOTAL   | 236.5     | 380            | -143.5 | 488.75         |