

## A CROSS SECTIONAL STUDY OF AUTHENTIC ASSESSMENT USES AMONG PUBLIC SCHOOL PHYSICAL EDUCATION TEACHERS IN GHANA

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### ABSTRACT

*This study investigated the extent of authentic assessment use in public school physical education and its impact on students. A cross section of public school physical education teachers (N = 178) from all ten regions in Ghana participated in this study. The teachers responded to the Mintah Physical Education Authentic Assessment Inventory (MPEAAI). Findings indicated that authentic assessment is used extensively by all public school physical education teachers in Ghana. Teacher observation, demonstration, peer observation, and checklist were the commonly used authentic assessment techniques; anecdotal record and parental report were the least used techniques. The physical education teachers perceived that authentic assessment use has positively enhanced students' motivation, self-concept, and skill achievement. Physical education teachers with bachelor degree perceived authentic assessment use has motivated students more than teachers with diploma certificate.*

**Keywords:** *Authentic assessment, extent of use, motivation, self-concept, skill achievement.*

### 1. INTRODUCTION

“When an educational problem persists despite the well-intentioned efforts of many people to solve it, it’s a safe bet that the problem hasn’t been properly framed. Assessment in education has clearly become such a problem..... (Wiggins, 1989b, p. 703).” Assessment is any planned technique used to measure, judge, or diagnose a student’s achievement (Doolittle, 1996; Hay, 2006). It is the systematic collection, review, and use of information about programmes

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undertaken for the purpose of accountability to improve learning and development, determine whether or not change is taking place, and for remediation and improvement of performance (Stiggins, 2002; Veal, 1992). Thus, the primary goal of assessment should be to enhance learning rather than simply documentation of learning (NASPE, 1995).

In the past, most students in public school physical education classes have obtained credits on attendance and participation rather than achievement and learning (Doolittle, 1996; Lund, 1993). Today, physical education teachers are required to show concrete evidence of students learning and progress (Stiggins, 2002). This has led public school physical education teachers to adopt assessment techniques that focus on complex motor, cognitive, and affective goals to document students learning and progress (James, 2001). One of such assessment techniques commonly used in physical education is performance-based authentic assessment (Goodman, Arbons, & De Rameriz, 2008; Mintah, 2003).

Wiggins (1989a) promoted the concept of authentic assessment. He defined it as any assessment task that uses multiple scoring systems to measure students' habits and repertoires on significant tasks related to life outside the classroom (1989b). Such assessments, according to him, should enable educators watch a learner pose and tackle problems, arrange arguments, marshal evidence, and take purposeful actions to address and solve ambiguous problems. With authentic assessment, students' competence is not assessed from one performance, but through series of activities so that they can demonstrate competence (Lund, 1997). Authentic assessments are holistic tasks that occur in real world contexts as opposed to a more sterile testing situation (Stiggins, 2002). Therefore, for an assessment to be deemed authentic, it should require the presentation of meaningful tasks designed to be representative in the field, emphasizes higher-level thinking and more complex learning, as well as articulate criteria in advance so that students know how they will be evaluated (Hensley, 1997). Thus, authentic assessment involves the examination of the process as well as the product (Lund & Kirk, 2002).

Authentic assessment emanated from the constructivist paradigm of teaching and learning. Constructivist learning is grounded on the idea that children's minds are not blank slates (DeVries, 1987; Von Glasersfeld, 1990). According to them, students have sets of beliefs, theories and perceptions. And, learning takes place when these are challenged through conversation, hands-on activity, or experience (Noel, 1993). Constructivist place the learner at the centre of teaching and learning. Appropriate assessment, according to constructivist learning theorist, will consider individual differences in experience and ability that focus on providing assessment on individual basis (DeVries, 1987; Von Glasersfeld, 1990).

Several types of authentic assessment practices exist in the literature. However, in physical education, the most common types of authentic assessment used include written essay, oral discourses, exhibitions, event tasks, portfolios, checklists, report cards, students' logs, peer observation, self-observation, teacher observation, and parental report (Lund, 1997; Mintah, 2003; Sofu, Ocansey, Nabie, & Asola, 2013). These authentic assessment tasks enable teachers assess students learning and account for their progress (James, 2001; Stiggins, 2002). In addition, they help teachers improve the teaching learning process by aligning assessment with content standards in physical education (Lambert, 1999). Furthermore, authentic assessment usage improves student motivation, self-concept, and skill achievement (Mintah, 2003).

Despite these benefits associated with the use of authentic assessment, many public school physical education teachers do not use them because of large class size, lack of time, and inadequate preparation (Lund, 1993; Mintah, 2003; Sofu, Ocansey, Nabie, & Asola, 2013). In Ghana, the use of authentic assessment is worsened as public school physical education is not an examinable subject in the curriculum (Ministry of Education, 2001a, 2001b). As a result, physical education teachers have resulted to the use of traditional assessment practices such as knowledge tests, skills tests, and physical fitness testing (Akyeampong, Pryor, & Ampiah, 2006; Sofu, Ocansey, Nabie, & Asola, 2013).

Research on authentic assessment usage among public school physical education teachers found teacher observation, self-observation, checklists, demonstration, peer observation, and event tasks as the top authentic assessment tasks commonly used (Mintah, 2003). But, the same cannot be said about the state of authentic assessment usage among public school physical education teachers in Ghana. This is because literature on the use of authentic assessment among physical education teachers in Ghana is scarce. The only available research in Ghana conducted by Sofu, Ocansey, Nabie, and Asola (2013) adopted a qualitative approach using a small purposive sample size of 63 secondary school physical education teachers. The authors reported teacher observation, demonstration and skill test as the most frequently used assessment techniques. They recommended that a study involving larger sample size is warranted. It is upon these back drop and the benefits associated with the use of authentic assessment in public school physical education that the present study was conducted. Therefore, the intent of this study were to (a) further explore the extent of authentic assessment use by public school physical education teachers' in Ghana and (b) find out if authentic assessment use has improved students' motivation, self-concept, and skill achievement as postulated by Mintah (2003).

## **2. METHODS AND MATERIALS**

### **2.1 Participants**

Public school physical education teachers (N=178) who attended the 2017 National Senior High Schools Sports festival in Cape Coast, Ghana, participated in this study. There were 72 (40.4%) women and 106 (59.6%) men. For the physical education teachers surveyed, 53 (29.8%) taught at the basic school level and 125 (70.2%) taught at the senior high school level. Participants total number of years taught ranged from 1 to 30 years (M= 11.21, SD= 4.82). Years of physical education teaching ranged from 1 to 23 years (M = 7.89, SD = 3.89).

Further frequency analysis revealed that 44 (24.7%) hold diploma in physical education certificate, 112 (62.9%) bachelor degree, and 22 (12.4%) had master degree in physical education. The teachers' authentic assessment usage ranged from one to five years (M= 2.59, SD= 0.88). These teachers were representatives from all the ten regions in Ghana.

### **2.2 Dependent Measure**

Mintah Physical Education Authentic Assessment Inventory (MPEAAI) was used to collect data. The MPEAAI contains two sections. Section A requested the teachers to rate the extent with which they use each authentic assessment technique in their physical education classes. The teachers' ratings were from 5 (always use) to 1 (never use). Thus, the section A of the inventory was tabulated using a 5-point rating scale.

Section B of the MPEAAI requested the physical education teachers who use authentic assessment to rate their perceptions about the impact authentic assessment use has made on students' motivation, self-concept, and skill achievement. For these three rationally developed subscales in section B, the participants indicated their responses on a Likert scale ranging from 5 (strongly agree) to 2 (strongly disagree). The range for each subscale of motivation, self-concept, and skill achievement was from a high of 25 points to a low of 10 points. The section B was completed by only those who indicated they use authentic assessment in section A. Mintah (2013) reported moderate internal consistency reliability coefficients of 0.55 for motivation, 0.74 for self-concept, and 0.64 for skill achievement. For the present study, Alpha of 0.578 was found.

### **2.3 Procedure**

Approval to collect data was received from an institutional human subjects review board. Each participant was served with an introductory letter soliciting voluntary

participation and the MPEAAI. The physical education teachers were reminded on daily basis to submit the inventory if completed. Data collection took ten days.

### 3. RESULTS

**3.1 Extent of Authentic Assessment Use:** Extent of authentic assessment use was calculated on each of the assessment techniques, by grade level the physical education teachers teach (see Table 1). Results of the overall analysis showed that 98.3% of the physical education teachers reported using teacher observation. In addition, large percentages of the teachers in this study reported using demonstration (93.8%), peer observation (93.8%), checklist (93.3%), and oral discourse (89.3%). The least reported use authentic assessment techniques were parental report (62.4%) and anecdotal record (66.3). No statistical significant difference was found between the extent of authentic assessment used by gender or grade level teaching or by the physical education teachers' academic qualifications.

**Table 1: Physical education teachers' use of individual authentic assessment techniques by grade level**

Assessment	Basic School	Senior High School
Teacher observation	98.1 (52)	98.4 (123)
Demonstration	96.2 (51)	92.0 (115)
Peer observation	94.3 (50)	93.6 (117)
Checklist	96.2 (51)	92.0 (115)
Oral discourse	88.7 (47)	89.6 (112)
Event task	75.5 (40)	89.6 (112)
Group project	90.6 (48)	83.2 (104)
Essay	94.3 (50)	80.8 (101)
Student project	73.6 (39)	88.0 (110)
Student log	77.4 (41)	76.8 (96)
Video	79.2 (42)	73.6 (92)
Portfolio	81.1 (43)	69.6 (87)
Anecdotal record	66.0 (35)	66.4 (83)
Parent report	67.9 (36)	60.0 (75)

Basic School (n = 53), Senior High School (n = 125)

**3.2 Perceived Impact of Authentic Assessment Use on Motivation, Self-Concept, and Skill Achievement:** Another area of interest in this study was the physical education teachers perceived impact of authentic assessment uses on students' motivation, self-concept, and skill achievement.

In the section B of the MPEAAI, the participants indicated their perceptions about the impact of authentic assessment used on a Likert scale from

5 (strongly agree) to 2 (strongly disagree). Section B of the MPEAAI consisted of three subscales of five items each. Because there were equal numbers of items in each subscale, the subscale score was obtained by summing the ratings in each scale. The range for each subscale was from a high of 25 points to a low of 10 points, with 17.5 as the neutral score. This neutral score of 17.5 was obtained by multiplying the midpoint value of 3.5 by 5, the number of items in each subscale (see Mintah, 2003). To assess whether physical education teachers perceived authentic assessment use had positive, negative, or no impact on students' motivation, self-concept, and skill achievement, three separate one-sample *t* tests were calculated, to determine if the mean ratings for each subscale was significantly different from 17.5-the neutral score. The results of the one-sample *t* test on perceived impact on motivation was statistically significant,  $t(117) = 16.46, p < 0.05$ . The overall mean ( $M = 20.16, SD = 2.15$ ) was significantly higher than 17.5; therefore, the physical education teachers in this study perceived authentic assessment uses to have positive impact on students' motivation. The result of the one-sample *t* test on perceived impact on self-concept was significant,  $t(117) = 13.78, p < 0.05$ . The total mean ( $M = 19.79, SD = 2.21$ ) for self-concept was above the neutral score of 17.5. Thus, the physical education teachers perceived that authentic assessment use has impacted positively on students' self-concept. A third one-sample *t* test on perceived impact on skill achievement revealed a statistical significant difference,  $t(117) = 25.73, SD = 1.91, p < 0.05$ . The implication was that physical education teachers perceived using authentic assessment has improved students' skill levels. Considering the means and standard deviations, it could be concluded that public school physical education teachers in this study perceived authentic assessment use to have positively impacted students' motivation, self-concept, and skill achievement.

**3.3 Differences in the Perceived Impact of Authentic Assessment Use on Students' Motivation, Self-Concept and Skill Achievement:** To investigate this, the data were subjected to multivariate assumptions of normality, homogeneity and linearity. Pearson bivariate correlation analysis revealed a low ( $r = 0.2$ ) to moderate ( $r = 0.6$ ) relationships among the MPEAAI subscales of motivation, self-concept and skill achievement (Tolmie, Muijs, & McAteer, 2011). The inter-correlations among the subscales suggested that the researcher uses the multivariate analysis of variance (MANOVA) to test for differences in one or more categorical independent variables for the three related dependent variables (Mertler & Vannatta, 2005; Tolmie, Muijs, & McAteer, 2011). In addition, the technique can manage unequal sample sizes (Tabachnick & Fidell, 2001). To investigate gender, grade level, and academic qualification differences in the physical education teachers' perceptions about the perceived impact of

authentic assessment uses on motivation, self-concept, and skill achievement, a 2 x 2 x 3 (gender x grade level teaching x teacher academic qualification) MANOVA was calculated with the three perceived impact subscales (motivation, self-concept and skill achievement) as dependent measures.

MANOVA results revealed that grade level teaching (Wilks' lambda,  $\lambda=0.98$ ,  $F(1,166)=3.85$ ,  $p<0.05$ ,  $\eta^2=0.003$ ) and teacher educational level (Wilks' lambda,  $\lambda=0.95$ ,  $F(2,166)=14.78$ ,  $p<0.05$ ,  $\eta^2=0.021$ ) significantly affect the impact authentic assessment has made on motivation, self-concept, and skill achievement. Univariate ANOVA and Tukey post hoc test were conducted as follow-up tests. ANOVA results indicated that motivation significantly differ by teacher educational levels,  $F(2,175)=4.92$ ,  $p<0.05$ ,  $\eta=0.045$ . Tukey post hoc results indicated that teachers with bachelor degree perceived authentic assessment usage to have positively impacted students' motivation more than teachers with diploma certificates (see Table 2 for data).

**Table 2: Means and standard deviations for motivation, self-concept, and skill achievement by teacher educational levels**

		Diploma	Bachelor	Masters
Motivation	M	19.30*	20.42*	20.55
	SD	2.04	1.87	3.16
Self-concept	M	19.11	20.04	19.73
	SD	2.21	2.18	2.16
Skill Achievement	M	21.11	21.24	21.00
	SD	1.93	1.93	1.80

Note: \*statistically significant at  $p < .05$ . Diploma ( $n = 44$ ), Bachelor ( $n = 112$ ), Masters ( $n = 22$ )

#### 4. DISCUSSION

Findings from this study revealed teacher observation to be the most extensively used authentic assessment technique. This is not surprising as the field of physical education especially in the public school system is mostly performance oriented. A possible reason for the extensive use of teacher observation could be that physical education classes deal with overt students behaviours, and focus on student learning and active participation (Lund, 1997). Students are provided with multiple opportunities to showcase their skills practically. Therefore, the teachers depend on observation and professional knowledge to assess students' performance in their classes; hence the overdependence on observation to examine, correct, and assess students' performances. In addition, physical education classes provide students many opportunities to showcase behaviours

that may be directly observed by their teachers (Hensley, 1997; Lund, 1997; Mintah, 2003).

Teacher observation, peer observation, demonstration, and checklist were among the top four authentic assessment techniques commonly used by basic and senior high school physical education teachers in Ghana (see Table 1). The standard approach in teaching most physical education practical class is for the teacher to describe the technique, demonstrate, encourage students to practice as their peers observe them perform. This order has worked effectively at all levels of physical education practical lessons in Ghana. Therefore, it was not surprising when the physical education teachers in this study selected the above four authentic assessment techniques as the most commonly assessment tasks. Already, Sofu, Ocansey, Nabie, and Asola (2013) and Mintah (2003) had documented the above authentic assessment techniques as the most frequently used in public school physical education classes. Another finding is the teachers' choice of anecdotal record and parental report as the least used authentic assessment techniques. Physical education as a subject is not examinable in the public school curriculum in Ghana (Ministry of Education, 2001a, 2001b). Because of that, some physical education teachers did not consider it important to formally document students' progress let alone reporting students' progress to parents; thus, the low use of anecdotal record and parental report.

All the physical education teachers perceived authentic assessment has positively improved students' motivation, self-concept, and skill achievement. Physical education in the public schools are practical and performance oriented. Students are assessed on their performances every class session. Utilizing authentic assessment tasks enabled physical education teachers document students' progress. Thus, the physical education teachers are able to identify the significant gains in performance; hence the perception that authentic assessment usage has positively influenced students' motivation, self-concept, and skill achievement. Even though bachelor degree holders consider authentic assessment use to have had significant positive impact on students' motivation more than their diploma counterparts.

## 5. CONCLUSION

In conclusion, authentic assessment is extensively used in public school physical education programmes in Ghana. Teacher observation, demonstration, and peer observation continue to dominate as the most frequently used authentic assessment techniques. Public school physical education teachers perceived authentic assessment to have positively impacted students' motivation, self-concept and skill achievement. Yet, bachelor degree holders perceived authentic

assessment use has positively influenced students' motivation more than those who hold diploma certificate. Further research is needed to investigate why public school physical education teachers in Ghana hardly use anecdotal record and parental report.

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