



Original Article

Teachers' Innovation and Learners' Academic Achievement in Public Primary Schools in Marakwet East Sub- County, Kenya.

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Innovative and creative instruction is key towards helping learners in schools understand concepts being taught and perform well in their studies. One of the expectations from teacher performance appraisal and development (TPAD) is that teachers should make sure that they make their lessons to be innovative and creative in order for learners to develop knowledge and acquire required competencies. This paper looks at how teachers are using creativity and innovation in their teaching and its influence on learners' academic achievement in public primary schools. The study was conducted in public primary schools in Marakwet East Sub County involving all teachers (581) and headteachers (83) employed by the Teachers Service Commission (TSC). A descriptive survey design was utilised for this investigation. A sample size representing 20.0% of respondents 17 head teachers and 117 teachers who were selected via a simple random sampling method. The instruments used to collect data consisted of questionnaires for teachers and interview schedules for headteachers. Data collected was analysed using quantitative and qualitative methods. The study found out that teachers' use of creativity and innovation methods influenced learner academic achievement. However, the research found that the usage of ICT resources was low and this explains how very few teachers were accessing and utilising online resources for their learners. This means that despite teachers having the capacity to effectively make sure their classrooms experiences involve innovation and creativity is hampered by a lack of adequate infrastructure facilities like computers, laptops, internet, and electricity. In conclusion, teachers' use of creativity and innovation approaches in teaching was found to influence the academic performance of learners in public primary schools in Marakwet East Sub County. The paper recommends that government needs to ensure that all schools are connected to the national grid of fibre optic cable and electricity.

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INTRODUCTION

Creativity and innovation aspects are becoming essential for the development of the 21st-century knowledge society (Narayanan, 2017). Primary education is central in developing creative and innovative skills for learners. Hence, teachers are expected to include creativity and innovation aspects in the preparation of their lessons (design) and delivery (implementation). According to TSC TPAD guidelines (2016), creativity and innovation are one of the areas in which they are assessed on a yearly basis and form the basis for establishing how it affects the performance of learners in schools. Didinya et al. (2018) said that teachers' performance appraisal performs an important role in the quality of education delivery in schools.

Osati (2019) argued that teachers need to be creative and innovative through the identification of appropriate materials which reinforce content being learnt in classrooms. This is because at times, learning could be complex and therefore when teachers incorporate the aspects of innovation and creativity to stimulate students thinking in the classroom. The creative and innovative aspects mainly involve the use of instructional learning resources to enhance learning in class. Commonly is when teachers integrate the use of technology in classroom learning. Through the implementation of creative teaching and learning and innovation in the curriculum, teachers can help learners to develop a skill set that includes ideas generally not

fostered within a traditional setting and at the same time can improve their academic performance (Wanjala & Osendo, 2019).

The purpose of this paper is to investigate how teachers use creativity and innovation approaches in their classrooms. The paper also describes the effects of teachers' use of innovation and creativity approaches on learners' academic performance in public primary schools in Marakwet East Sub County.

REVIEW OF LITERATURE

This section reviews empirical studies in relation to teachers' use of innovation and creativity and its influence on learners' academic achievement in schools. In Thailand, Yawman and Kubi (2019) determined how innovative instructional methods used influenced student performance in science subjects. A total of 50 learners from two classes were used (25 male and 25 girls). It was an experimental research study where the control group was taught through conventional methods whereas the experimental group was instructed via innovative teaching methods. Findings revealed that the performance of the two groups of students varied significantly, where those who were taught with innovative methods scored higher compared to those taught via conventional approaches. This study departs from Yawman and Kubi by focusing on how the teachers were using innovative approaches and their impact on KCPE

performance in Marakwet East Sub County public primary schools. In Malaysia, Narayanan (2017) investigated the relationship between creativity and innovation in classroom instruction on learners' academic achievement in private tertiary education colleges. Data was collected via secondary data (library research), questionnaires, depth interviews, and observations with teachers. Findings showed the creative and innovative instructional approaches which made a specific idea apparent to learners, they developed the interest to understand precisely the knowledge, created long-lasting memory of an idea and there was a positive association with creativity and innovation with learners' academic performance using various instructional approaches.

In Pakistan, Naz and Murad (2017) analysed the innovative approaches that teachers applied to respond to students' diversity in tertiary education (public and private sector). They assumed that innovative teaching had a positive influence on the performance of learners' diversity. The study was guided by a survey research design involving tertiary education teachers. Findings showed that most tertiary education teachers supported the use of innovative teaching approaches. Comparatively, the private sector institutions were found to be using innovative teaching approaches more across different disciplines compared to the public tertiary institutions. The gap created in this study is that it was conducted at the tertiary level, whereas this research focused on how creativity and innovation were used by teachers in public primary schools.

In Kenya, Wanjala and Osendo (2019) examined did research on the association between creativity in classroom instruction and academic achievement. The respondents were 512 teachers, 53 deputy headteachers, and 53 headteachers. A descriptive survey research design was utilised. The sample selected was 30.0% of the target population through stratified sampling. Instruments used to collect data were observation and questionnaires. Results showed that most deputy headteachers saw creativity in instruction as a chance for instructors to prepare and use instructional materials in class as it influenced their job performance positively. On their part, the teacher argued that ICT integration was an expensive affair and was not essential in their school environment which lacked the required infrastructure to aid in digitisation. This means that teachers had different views with regard to the

use of creativity in teaching and learning in schools. The gap created from this investigation is that it focused on establishing views held by three groups of respondents in relation to the use of creativity and did not how whether creativity was used or not used in teaching and learning in schools, a focus of this investigation.

MATERIALS AND METHODS

A descriptive survey design was applied to guide the study from participant selection, instrumentation, and analysis. The respondents constituted a population of 83 primary headteachers and 581 teachers. The sample size for the study involved 20.0% of the target respondents, which resulted in 117 teachers and 17 school heads. Teachers together with their headteachers were selected through a simple random sampling method. The data collection instruments were questionnaires for teachers and interview schedules were used on headteachers. Piloting was conducted in schools that were not involved in the study; the reliability of the instruments was tested via test and retest method while validity was ascertained by the supervisor. The collected data was analysed using SPSS version 23.0 to obtain descriptive statistics such as frequency, mean, mode, standard deviation, and percentages and presented using tables.

RESULTS AND DISCUSSIONS

The objective of the study was to examine how teacher creativity and innovation in the classroom and academic achievement of public schools in Marakwet East Sub County. The study collected information from interview scheduled and questionnaires. To teachers, they were asked to indicate the frequency at which: Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5) they applied creativity and innovation in performing their duties in schools. Their responses are provided in *Table 1*.

Results in *Table 1* show that 39 (35.1%) of teachers sometimes do improvise resources available in their school to promote active learning, 28 (25.2%) indicated that they often improvised and 35 (31.2%) mentioned that they were always improvised. Only 9 (8.1%) of teachers said that they did not improvise resources available for instructional effectiveness in their schools. The findings agree with Didinya et al. (2018) who found out that there was

improvisation on locally available materials this means that despite the inadequacy of learning materials provided by the government, parents, and school management, teachers are going further to improvise the existing resources in their vicinity to develop and instructional resource tool. In addition, Naz and Murad (2017) suggested that teachers' improvisation of curriculum learning materials was a way of introducing innovation in their teaching approaches.

On the usage of ICT for classroom instruction, 16 (14.4%) have never used, 31 (27.9%) rarely integrate their lessons with ICT, 38 (34.2%) sometimes use ICT in their lessons, 23 (20.7%) often used ICT and 3 (2.7%) always used ICT. From the above results, teachers are not using ICT media to teach in public primary schools in the area ($M = 2.63$, $SD = 1.04$). The reason for teachers' nonusage could be due to unavailability of ICT resources in schools, lack of supportive infrastructure to support ICT use, and teachers' lack of knowledge and skills on ICT use. In agreement with the study, Wanjala and Osendo (2019) found out that teachers' responses to the statement on whether teachers integrate ICT in their teaching were negative since the resources were unavailable in their schools. On the frequency to which teachers accessed online resources for teaching and learning activities, 21 (18.9%) have never, 22 (19.8%) rarely accessed, 32 (28.8%) sometimes accessed, 33 (29.7%) often accessed, and 3 (2.7%) always accessed. The result also shows that only 33.4% of teachers regularly access online resources for ($M = 2.74$, $SD = 1.14$) teaching and learning activities in their classroom. In line with the study results, Wanjala and Osendo (2019) found out that only 42.5% of teachers were able to access teaching and learning materials online in Mumias East Sub County public primary schools. This means that the capacity of teachers to get online materials for their teaching and learning is at a lower level in most schools in the area.

Results also show that 28 (25.2%) of teachers sometimes used the storytelling approach in their classroom learning, 51 (45.9%) often used storytelling, while 29 (26.1%) always used the storytelling approach in classroom teaching and learning to arouse learner imagination in their schools. This outcome implies that the storytelling method is favoured by many teachers during classroom instruction. Results also show that 49 (44.1%) of teachers often formed creative groups

in classrooms for pupils to share ideas and discuss various topics in classism; 27 (24.3%) indicated that this is the approach that they normally use. This means that as part of developing the creativity and thinking skills of pupils, teachers form creative groups in class where they discuss topics and share ideas. Most 61 (55.0%) of teachers said that they always provide the opportunity for pupils to express themselves and make contributions to class time. This means that teachers not only act as the sole source of knowledge, they allow pupils also to give their opinion and make contributions during class time. This would boost learners' confidence in learning hence gaining the required understanding of curriculum content. The result coincides with Narayanan (2017) who discovered that teachers allowing learners to give their views on topical matters enhanced the development of cognitive and thinking skills.

Table 1: Creativity and Innovation Practices by Teachers in Schools

Creativity & innovation	Never	Rarely	Sometimes	Often	Always	Mean	SD
Improvising the available resources to promote active learning in classroom	9 (8.1%)	0 (0.0%)	39 (35.1%)	28 (25.2%)	35 (31.2%)	3.720	1.153
Use of ICT in teaching and learning activities	16 (14.4%)	31 (27.9%)	38 (34.2%)	23 (20.7%)	3 (2.7%)	2.693	1.042
Accessing online resources for teaching and learning activities	21 (18.9%)	22 (19.8%)	32 (28.8%)	33 (29.7%)	3 (2.7%)	2.774	1.149
Use of storytelling approach in classroom teaching to arouse learner imagination	0 (0.0%)	3 (2.7%)	28 (25.2%)	51 (45.9%)	29 (26.1%)	3.955	.790
Forming creative groups in class for learners to share ideas and discuss topics	9 (8.1%)	6 (5.4%)	20 (18.0%)	49 (44.1%)	27 (24.3%)	3.711	1.139
Providing opportunity for learners to express themselves in class by making contributions during class time	6 (5.4%)	6 (5.4%)	6 (5.4%)	32 (28.8%)	61 (55.0%)	4.225	1.125
Creation of topics for debate during teaching	6 (5.4%)	13 (11.7%)	44 (39.6%)	19 (17.1%)	29 (26.1%)	3.468	1.158
Use of brainstorming approaches like puzzles to stimulate learners' problem-solving skills	3 (2.7%)	12 (10.8%)	37 (33.3%)	29 (26.1%)	30 (27.0%)	3.639	1.076
Providing opportunity for learners to show their talents in schools	0 (0.0%)	9 (8.1%)	25 (22.5%)	32 (28.8%)	45 (40.5%)	4.018	.981
Incorporation of games and play activities in teaching	6 (5.4%)	11 (9.9%)	21 (18.9%)	43 (38.7%)	30 (27.0%)	3.720	1.129
Composite scores						3.592	1.074

Results also show that 44 (39.6%) of teachers sometimes created topics for debates during classroom lessons, while only 29 (26.1%) said that they usually create topics for debate during teaching. This means that some teachers create topics ($M = 3.46, SD = 1.15$) while others do not create debates in their classes. Finding also showed that 37 (33.3%) indicated that they used brainstorming approaches at times, 29 (26.1%) used brainstorming often and 30 (27.0%) used brainstorming methods always. This shows that the utilisation of brainstorming methods like puzzles to stimulate learners' problem-solving skills by teachers was common ($M = 3.63, SD = 1.07$). This means that when teachers were to improve the problem-solving capacity of learners, they infuse their lessons with puzzles. Results also showed that 45 (40.5%) of teachers admitted that they always provide an opportunity for learners to exhibit their talents in schools, 32 (28.8%) often created opportunities and 25 (22.5%) sometimes provide those platforms. The result, therefore, means that as part of ensuring learners develop their talents, teachers normally provide a platform for them to exercises and showcase their talents in the classroom.

On whether play and games activities were incorporated in teaching, 6 (5.4%) did not

incorporate, 11 (9.9%) rarely incorporated, 21 (18.9%) sometimes incorporated, 43 (38.7%) often incorporated, while 30 (27.0%) always incorporated. The result shows that as part of learning, teachers ensure that classroom activities are dramatised through play and games activities in the schools in Marakwet East Sub County. Composite data shows that teachers' application of creativity and innovation in classrooms was high ($M = 3.59, SD = 1.07$) in schools in the study area. This means that as part of the TPAD requirement, teachers are ensuring that aspects of innovation and creativity normally feature in their classrooms. The findings coincide with Yawman and Kubi (2019) who found out that through teachers' introduction of innovative methods of learning, a student-centred learning environment was created that made the learning process interesting and understandable to students.

Through open-ended questions, the teachers asked how they applied creativity and innovation in classroom learning in their schools to improve academic achievement. The responses obtained were in qualitative forms, which were transformed to numerical form to enable descriptive analysis, as presented in *Table 2*.

Table 2: Other areas of creativity and innovation used by teachers

Areas	Frequency	Percent
Involving learners in the collection and production of learning resources	26	28.9
Use of music, poetry, and movement	23	25.6
Inviting other teachers in case of technical knowhow or inviting a resource person	9	10.0
Use of realia in teaching	8	8.9
Through the use of group discussions	6	6.7
By assigning them responsibilities	3	3.3
Use of more than one method of teaching and learning	3	3.3
Organising different tasks for gifted and talented learners separately	3	3.3
Link learning activities with present scenarios/situations	3	3.3
Informing parents on the need of having gadgets that can access content materials to enable their children to learn while at home	3	3.3
Creative activities like drawing	3	3.3
Total	90	100.0

According to the results in *Table 2*, 26 (28.9%) of teachers make sure that when improvising learning materials, they involve their pupils. Further, 23 (25.6%) said that they consider the use of music (songs), poetry, and movements strategies as teaching approaches in schools. Other teachers indicated that they always invited

resource people to come and talk to the learner in classrooms, among other areas. All these were aimed at promoting creativity and innovation in classroom learning. The results are in agreement with Narayanan (2017) who found out that creativity and innovation provided learners with more freedom and opportunities for them to select

their learning mode hence enhancing curriculum implementation.

During the interview, the headteachers were asked to indicate how teachers' use of creativity and innovation had changed after the introduction of TPAD. Responses showed that 10 were of the opinion that creativity and innovation by teachers had improved, 6 mentioned that it has changed at an average level, while 1 indicated that there has not been any change. For those who noted improvement by their teachers HT No. 5 indicated that:

Teachers have prepared and used appropriate teaching and learning aids, integration of ICT in teaching and learning has also been emphasised by teachers.

The result confirms that teachers are now using varied creative and innovative methods to ensure teaching and learning succeeds. For those who indicated that the change has been on average, HT No. 7 remarked that:

Average, since some teachers are unable to access online content using ICT tools.

This agrees with what teachers reported that the accessibility of online content is a challenge to some teachers in schools in the study area. This is due to the fact that some headteachers indicated that some of their teachers were unable to retrieve activity areas using smartphones. Further, those who reported teachers' use of creativity and innovation to be on average had this to say (HT No. 9).

Though TPAD advocates for creative and innovative learning, teachers in my school find it hard to do each day.

This means that despite efforts to ensure innovation and creativity in learning succeeds, there is an inability by some teachers to use the methods in daily classroom learning. For those who were using creativity and innovation, the headteachers reported that the performance of their classrooms was higher. This means that the application of innovation and creativity by teachers in classroom instruction raised the academic performance of public schools in the study area. In line with this finding, Yawman and Kubi (2019) research in Thailand found out that students taught using innovative approaches performed better compared to those who were

taught using conventional methods of teaching. Even in Malaysia, Narayanan (2017) found out that academic achievement improved in subjects in which teachers used more creativity and innovation than subjects that were taught using the conventional method. In Kenya, Didinya et al. (2018) found out that teachers' innovation and creativity had a positive influence on quality education provision in Hamisi Sub County public secondary schools. This means that schools whose teachers normally use creativity and innovation record higher academic achievement scores compared to those whose teachers do not favour the use of creativity and innovation approaches.

CONCLUSIONS AND RECOMMENDATIONS

Creativity and innovation practices are required to be the approach that teachers in the 21st century apply to make their classrooms active, captivating, and enjoyable for all parties. The study found out that teachers applied various innovative approaches like storytelling and allowing children to make points/share their ideas. What was lacking in most schools were new technological devices which were considered to be the challenge influencing the effective application of creativity and innovation. Nevertheless, teachers went ahead to involve learners in designing local instructional materials to boost learning. Continuous teachers' usage of creativity and innovation resulted in the improved academic achievement of public primary schools. In recommendations, the government needs to ensure that all schools are connected to the national grid of fibre optic cable and electricity. If it is not possible due to remoteness, solar panels need to be installed in addition to network boosters to facilitate the usage of ICT. Government should also ensure that schools are stocked with ICT resources. The teachers also need to be supported to undergo training on ICT use.

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