# Factors influencing professional development of teachers of agriculture in public secondary schools in Nyamira County, Kenya

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**Abstract**

Improved teacher professional development will positively impact on teacher competence through improved learner achievement, economic prosperity and eventually global cooperation. This study sought to investigate factors that influence the professional development of teachers of agriculture in public secondary schools in Nyamira County. An exploratory research design was used to taret teachers of Agriculture, Principals and Quality Assurance and Standards officers in Nyamira County. The study employed 167 public secondary schools with 210 teachers of Agriculture. Random sampling was utilized to sample 50 public secondary schools for the study. Simple random sampling was used to sample teachers of Agriculture and Principals while purposive sampling was used to sample Quality Assurance and Standards Officers. Questionnaires were administered to a total of 136 teachers of Agriculture while an interview schedule was administered on 50 Principals and 5 Quality Assurance and Standards officers for collection of primary data. Data collected were subjected to both descriptive and inferential analysis and presented using frequencies, percentages and tables. The study established that that recognition of professional development attained by teachers, provision of sufficient resources and making efficient government policies, availability of professional development opportunities, improvement of school leadership system, provision of sufficient resources/funds, build of better school/academic environment, cost of professional development programmes, recognition of professional development attained are significant factors influencing professional development of teachers of agriculture in public secondary schools in Nyamira county. Thus, stakeholders should identify and address these factors to enhance the professional development of Teachers of Agriculture in this study area and beyond.

**Keywords:** leadership, policies, professional, cost, nyamira

## 1. Introduction

Since effective teaching is a requirement for great education, several factors influence the professional growth of teachers. According to Barber and Mourshed (2017) [1], an educational system cannot outperform the caliber of its teachers because of issues including government policy and the availability of resources. Beyond this, according to Wedell (2015) [13], teacher professional development is a change process in the educational system that needs a favorable environment of material circumstances, institutional organizational culture, and human resources such as institutional leaders and teacher trainers with the capacity to effectively support the change implementation process.

Since teacher professional development is important for achieving high-quality education and creates a logical chain, Maria & Garca (2016) [8] contend that it must be given the support it requires. As a result, teacher professional development serves as the foundation for high-quality education. To effectively meet teacher professional needs, it is necessary to address the cost of the various professional development opportunities as well as to improve the school and/or academic environment (Barber & Mourshed, 2017) [1].

Both high-quality education and high-quality teaching are synonymous terms. Teachers review, renew, and extend their commitment to the moral purposes of teaching as part of their professional development process (Pokhrel & Behera, 2016) [11]. They also develop their knowledge, skills, planning, and practice with children through this process, so the management style can have a significant impact on this important aspect of teacher professional development (Mahmoudia, & Zkana, 2015) [7]. The ability to access professional development opportunities can help teachers advance in their careers because the quality of education is an all-encompassing development of learners that knows no bounds (Elliott, 2015) [4].

According to Pillay *et al*., (2017) [10], failure to recognize the professional development that teachers have attained can also have an impact on the demands of their profession, which include developing their values consolidated to national values, as well as learning the skills to translate educational goals into specific objectives, provide learning experiences for students, and assess students' progress. Teachers are compelled to pursue additional training and upgrading in order to ensure competence in their respective fields of training (Lathem, 2011; Desimone, 2016) [6, 3].

Teachers need the knowledge and skills of planning and teaching; assessing students through surveys, interviews, self-reporting, focus group discussions, observation and changing attitudes and beliefs about pedagogy to boost students' learning (Pillay *et al*., 2017) [10]. These skills attitudes, which are presented as distinct approaches to adult learning, including

constructivist, positivist, and cognitive (Creemers *et al*., 2013) [2], include self-learning, sharing, and cooperation with colleagues in every problem of students' learning.

## 2. Materials and methods

### 2.1 Description of the study area

The study was carried out in Nyamira County. The county is among the counties that were created out of the former Nyanza Province. It has 167 public secondary schools. The choice of the study area was due to a majority of the secondary schools, there students' academic performance and enrolment in agriculture subject over the years has remained poor, especially in the Kenya National Examinations.

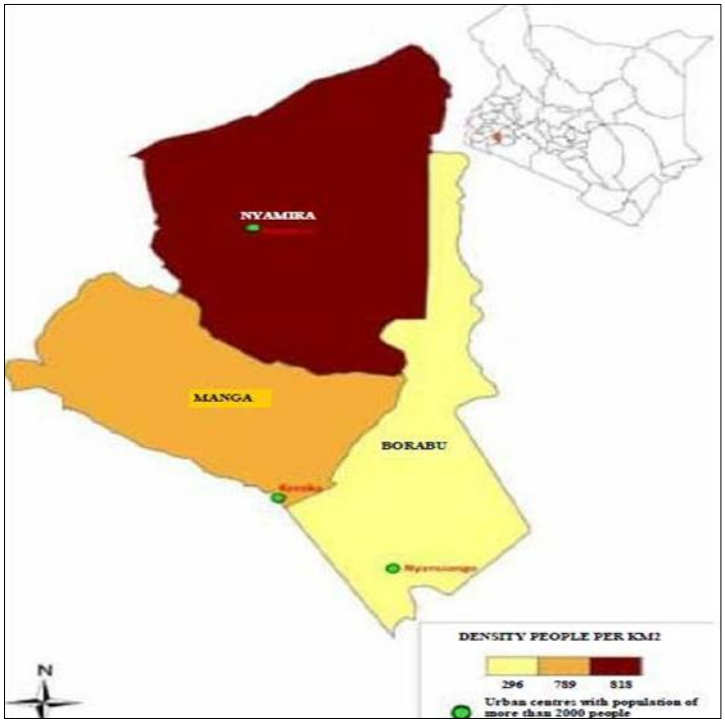


**Fig 1:** Map of Nyamira County, Adopted from County Commissioner office, Nyamira County

### 2.2 Sample size and sampling technique

#### 2.2.1 Sample size

The sample of the respondents for the study was determined using a formula for estimating the sample size from a given population as recommended by Kathuri, and Pals (1993) [5]. The formula is as follows:

$S = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$ where;

S = required sample size

N = the given population size

P = Population proportion that for this study will be assumed to be 0.50; this is the magnitude that yields the maximum possible sample size needed.

d = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion p about the proportion P-the value of d being 0.05 in the calculations for entries in the table, a quantity equal to plus or minus 1.96σ.p

$X^2$ =table value of chi square for one degree of freedom relative to the desired level of confidence, which is 3.84 for the 0.95 confidence level represented by entries in the table.

Based on the formula shown above, the recommended sample of teachers of Agriculture based on the population size was determined as shown below;

$S = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$

$S = 3.84 \times 210(0.5)^2 \div (0.05)^2(209) + 3.84(0.5)^2$

$S = 201.6 \div 1.4825$

$S = 135.98$

$S = 136$

The sample size was determined from the infinite population of two hundred and ten teachers of agriculture (210) as shown so that there was a 95% level of confidence. The sample proportion P was within plus or minus 0.05 of the population value of 0.05 for P for which a minimum of hundred cases are acceptable for research. The sampling units was the teachers of agriculture in Nyamira County. A total of 136 teachers of agriculture was used as the sample size which is statistically justified because, according to Kathuri, and Pals (1993) [5], a minimum of 100 respondents should be used during survey research. A total of 136 teachers of agriculture, fifty (50) principals and five (5) quality assurance and standards officers made the sample size for the study.

#### 2.2.2 Sampling procedure

Fifty schools constituting 30% of the 167 schools in Nyamira County were randomly sampled. According to Mugenda & Mugenda, (1999) [9], at least 10% of the target population is adequate, for social science research. From the sampled schools, simple random sampling was done to choose utmost three teachers of Agriculture per school in order to obtain a total of 136 teachers of Agriculture who participated in the study. Fifty Principals from the sampled schools were involved in the study while purposeful sampling was used to obtain the

5 quality assurance and standards officers.

### 2.3 Data collection procedures

Prior to data collection, the researcher acquired a research permit from Ministry of Education through Graduate school, Kisii University. In data collection, the researcher visited the sampled schools, and the heads of the various schools introduced the teachers of Agriculture. The researcher then administered the questionnaires to teachers of agriculture in the sampled schools. The interview was also be administered on the principals and the quality assurance and standards officers for collection of primary data. Questionnaires and the interviews were administered when schools were in session and therefore the teachers of agriculture, principals and the quality assurance and standards officers were available for this study.

### 2.4 Data analysis

The completed questionnaires were scored and values tabulated using a five-point likert scale of strongly agree, agree, disagree, strongly disagree and not sure and the responses of strongly agree and agree may be combined while strongly disagree and disagree also combined. The data collected was coded and analyzed using statistical package for social sciences (SPSS Version 22) and presented using percentages and frequencies.

## 3. Results

### 3.1 Questionnaire response rate

The study targeted a population of 191 respondents which constituted 136 teachers of Agriculture, 50 Principals and 5 Quality Assurance and Standard officers. The study got a response of 120 teachers of Agriculture which was 88.2 percent response rate, 50 Principals which was 100 percent response rate and 5 Quality Assurance and Standards Officers who had a 100 percent response rate. According to Mugenda and Mugenda (1999) [9], 50 percent response rate is adequate for analysis and reporting; 60 percent response rate is good and 70 percent response rate and above is remarkable, therefore the response rate of this study was sufficient for analysis.

### 3.2 Responses on factors that influence professional development of teachers of agriculture

The study sought to establish the factors that influence professional development of teachers of Agriculture. The respondents were requested to indicate the extent of significance of each factor provided.

#### 3.2.1 Teachers of agriculture's responses on factors that influence teacher professional development

Twenty five percent (25.0%) of the teachers of Agriculture indicated that making efficient government policies was a greatly significant factor that influenced professional development of teachers of Agriculture, 21.7 percent indicated that it was a most significant factor, 28.3 percent indicated that it was a significant factor, 15.0 percent indicated that it was a least significant factor while 10.0 percent indicated that it was not significant as illustrated in Table 1. The study findings implies that there were factors that influenced professional development of teachers of Agriculture which needs to be addressed.

**Table 1:** Teachers of agriculture's responses on the factors that influence professional development of teachers of agriculture

| Factors | Not significant | | Least Significant | | Significant | | Great Significant | | Most Significant | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc |
| Making efficient government policies | 12 | 10.0 | 18 | 15.0 | 34 | 28.3 | 30 | 25.0 | 26 | 2.7 | 120 | 100 |
| Availability of professional development opportunities | 9 | 7.5 | 21 | 17.5 | 20 | 16.7 | 33 | 27.5 | 37 | 30.8 | 120 | 100 |
| Improvement of school leadership system | - | - | 26 | 21.7 | 20 | 16.7 | 30 | 25.0 | 44 | 36.6 | 120 | 100 |
| Provision of sufficient resources/funds | 13 | 10.8 | 17 | 14.2 | 21 | 17.5 | 39 | 32.5 | 30 | 25.0 | 120 | 100 |
| Build of better school/academic environment | 50 | 41.7 | 32 | 26.7 | 19 | 15.8 | 8 | 6.6 | 11 | 9.2 | 120 | 100 |
| Cost of professional development programmes | 42 | 35.0 | 36 | 30.0 | 15 | 12.5 | 16 | 13.3 | 11 | 9.2 | 120 | 100 |
| Recognition of professional development attained | 7 | 5.8 | 10 | 8.3 | 21 | 17.5 | 57 | 47.5 | 25 | 20.9 | 120 | 100 |

There was statistical significance ($p<0.05$) on teachers of Agriculture's responses on factors that influence professional development of teachers of Agriculture as presented in Table 2.

**Table 2:** Statistical analysis on teachers of agriculture's responses on the factors that influence professional development of teachers of agriculture

| Statements | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 62.833 | 27 | 2.327 | 2.273 | .132 |
| Within Groups | 7.167 | 7 | 1.024 | - | - |
| Total | 70.000 | 34 | - | - | - |

#### 3.2.2 Principals' responses on the factors influencing professional development of teachers of agriculture

Principals were asked to rate factors that influence professional development of Teachers of Agriculture. Thirty four percent (34.0%) of the Principals indicated that making efficient government policies was a greatly significant factor that influenced professional development of teachers of Agriculture, 24.0 percent indicated that it was a most significant factor, 30.0 percent indicated that it was a significant factor while only 12.0 percent indicated that it was a least significant factor while 10.0 percent indicated that it was not significant that influenced professional development of

teachers of Agriculture. The findings implies that the principals agreed that there were factors that influenced professional development of teachers of Agriculture which needs to be addressed as illustrated in Table 3.

**Table 3:** Principals' responses on the factors that influence professional development of teachers of agriculture

| Factors | Not significant | | Least Significant | | Significant | | Great Significant | | Most Significant | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc |
| Making efficient government policies | - | - | 6 | 12.0 | 15 | 30.0 | 17 | 34.0 | 12 | 24.0 | 50 | 100 |
| Availability of professional development opportunities | 1 | 2.0 | 7 | 14.0 | 10 | 20.0 | 13 | 26.0 | 19 | 38.0 | 50 | 100 |
| Improvement of school leadership system | 27 | 54.0 | 23 | 46.0 | - | - | - | - | - | - | 50 | 100 |
| Provision of sufficient resources/funds | - | - | - | - | 15 | 30.0 | 13 | 26.0 | 22 | 44.0 | 50 | 100 |
| Build of better school/academic environment | 30 | 60.0 | 11 | 22.0 | 9 | 18.0 | - | - | - | - | 50 | 100 |
| Cost of professional development programmes | - | - | 3 | 6.0 | 11 | 22.0 | 23 | 46.0 | 13 | 26.0 | 50 | 100 |
| Recognition of professional development attained | - | - | - | - | 5 | 10.0 | 30 | 60.0 | 15 | 30.0 | 50 | 100 |

However, there was no statistical significance ($p$>0.05) on Principals' responses on factors that influence professional development of teachers of Agriculture as shown in Table 4.

**Table 4:** Statistical analysis on principals' responses on the factors that influence professional development of teachers of agriculture

| Statements | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 33.121 | 17 | 1.948 | .898 | .0586 |
| Within Groups | 36.879 | 17 | 2.169 | - | - |
| Total | 70.000 | 34 | - | - | - |

### 3.2.3 Quality assurance and standards officers' responses on the factors that influence professional development of teachers of agriculture

All, 100 percent of the quality assurance and standards officers indicated that availability of professional development opportunities was a greatly significant factor that influences professional development of teachers of agriculture as illustrated in Table 5. These findings implies that there were factors that influenced professional development of teachers of agriculture which needs to be looked into by stakeholders.

**Table 5:** Quality assurance and standards officers' responses on the factors that influence professional development of teachers of agriculture

| Factors | Not significant | | Least Significant | | Significant | | Great Significant | | Most Significant | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc | Freq | Perc |
| Making efficient government policies | - | - | - | - | - | - | 4 | 80.0 | 1 | 20.0 | 5 | 100 |
| Availability of professional development opportunities | - | - | - | - | - | - | 5 | 100 | - | - | 5 | 100 |
| Provision of sufficient resources/funds | - | - | - | - | 1 | 20.0 | 3 | 60.0 | 1 | 20.0 | 5 | 100 |
| Build of better school/academic environment | 4 | 80.0 | 1 | 20.0 | - | - | - | - | - | - | 5 | 100 |
| Cost of professional development programmes | - | - | - | - | - | - | 1 | 20.0 | 4 | 80.0 | 5 | 100 |
| Recognition of professional development attained | 1 | 20.0 | 2 | 40.0 | - | - | 1 | 20.0 | 1 | 20.0 | 5 | 100 |

However, there was no statistical significance (p>0.05) on quality assurance and standards officers' responses on factors that influence professional development of teachers of agriculture as shown in Table 6.

**Table 6:** Statistical analysis on quality assurance and standards officers' responses on the factors that influence professional development of teachers of agriculture

| Statements | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 7.800 | 5 | 1.560 | .727 | .609 |
| Within Groups | 62.200 | 29 | 2.145 | - | - |
| Total | 70.000 | 34 | - | - | - |

## 4. Discussion, conclusion and recommendations

### Factors influencing professional development of teachers of agriculture

It is a common understanding that professional development of teachers of Agriculture has moral purposes through which knowledge and experience acquisition takes place. Participation in professional development activities by teachers of Agriculture will enhance the quality of teacher education and also maintain their professional passion and interest. However, once some factors set in, they can influence professional development of teachers of Agriculture. Literature reviewed indicated that teachers of Agriculture experience financial barriers and they discuss aspects of the existing structures as inhibiting their efforts to develop, which suggests the setting of barriers to their expected profiles and competencies.

Consequently, most teachers complained that they did not have sufficient time for their professional development since they

worked for long hours with heavy teaching burdens and the time for professional development is thus reduced. Results from this study pointed out that factors such as making efficient government policies, availability of professional development opportunities, improvement of school leadership system, provision of sufficient resources/funds, build of better school/academic environment, cost of professional development programmes and recognition of professional development attained influenced professional development of teachers of Agriculture.

In support of these findings, Maria & García, (2016) [8] carried out a related study and observed that availability of professional development opportunities, recognition of professional development attained and also availability of adequate resources can influence professional development of instructors and consequently, the availability of collaboration, time, long-term commitment and resources are important for the successful implementation of professional development programme. In a related study, Mahmoudia, & Özkana, (2015) [7] affirmed that the type of leadership in a school, school environment and nature of staffing also play a crucial role in influencing professional development of teachers.

## 5. Conclusion

There were factors that influenced professional development of teachers of Agriculture and adhering to the approved curriculum. These factors include; making efficient government policies, availability of professional development opportunities, improvement of school leadership system, provision of sufficient resources/funds, build of better school/academic environment, cost of professional development programmes and recognition of professional development attained.

## Recommendation(s)

There should be regular identification of factors that influence professional development of teachers of Agriculture in order to have them addressed appropriately.

## Conflict of interest

"The author(s) declare(s) that there is no conflict of interest." There was no role of the funding sponsors in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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