Quality of Instructional Technology (IT) on Implementing Home Economics Curriculum (HEC) at the Primary School Level (PSL) in Botswana

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Abstract

This study determines whether the quality of Instructional Technology (IT) significantly influence the implementation of Home Economics Curriculum (HEC) and also solicited the challenges influencing the implementation of HEC and its empowerment at the Primary School Level (PSL). A survey of 234 Upper Primary School Teachers (UPST) from 24 government primary schools in South Central Region (SCR) of Botswana was carried out using structured and unstructured questionnaire as well as interview. One research hypothesis was tested using Pearson Correlation to answer one of the three research questions while the others were answered descriptively. Result showed that the quality of IT significantly r (234) = .199**, p < .05 influenced the implementation of HEC. Problems of implementation were highlighted mainly under quality of human and material resources. Suggestions were made towards empowering HEC.

Keywords: Botswana, Home economics, Implementation, Instructional technology, Primary school, Quality

1. Introduction

The evolution of technologies of different kinds in our homes today, have given rise to the need for the implementation of HE education using IT in schools. Technology has so integrated into our lives today that most people find it difficult to use or up-date themselves with the current technologies; as

could be observed in our homes and classrooms today. Urdzina-Deruma and Selvaha (2007) contends that technology involves the application of knowledge, experience and resources to create products and processes that meet human needs. Studies have shown that the introduction of technology in the homes motivated the inclusion of technology into HE education (Mendoza & Ikezaki, 2006). Home economics being a practical intensive subject needs the application of technologies for productivity, personal development and source of wealth (Black, 2007). It has been widely accepted that technology integration and utilization prepares students for innovative and productive activity needed for living and working in an increasing technological world (Mendoza & Ikezaki, 2006; Ogwu, & Ogwu, 2008; Urdzina-Deruma & Selvaha, 2007). Researchers have also acknowledged that the inclusion of computer skills and its peripherals into HE has made learning faster and more interesting in accessing and retrieving information, interacting, word processing, supporting higher-order thinking, constructing, and designing to improve and consolidate the quality of learning (Berry, 2000; Gahala, 2007; Lau, 2004; Salle, 2006). Specifically, it has provided students with fundamental skills in clothing construction, meal planning, creating animations, exposure to various programme languages used in the industry, and has improved the understanding of information technology, its uses and applications (Salle, 2006).

The problem of inadequate technologies, lack of time and funding, poor curriculum planning, large class size and lack of human support have been identified by some researchers (Lau, 2004; Ogwu & Ogwu, 2008). Several researchers have also argued that the solution to such problems include technological support, equipment upgrading, regular maintenance, new roles for teachers, mastery of new methods and knowledge, time for ongoing professional development, appropriate teacher preparation at different skill levels, teacher incentives, reduction of class size and sustained funding (Gahala, 2007; Hitch, 2007; Lau, 2004; Lever-Duffy, Mcdonald & Mizell, 2003; Samuel & Abu baker, 2006; Staples, Pugach, & Hims, 2005; Ogwu & Ogwu, 2008). However, Bebell, Russell, and O'Dwyer, (2004) argued that measuring technology usage varies among individual teachers.

At the elementary school level, students begin developing an awareness of HEE using technology. As students get to high schools, or Junior Secondary Schools, they already have a foundation that enables

them pursue a career pathway. When students' technology standards are met and content standards adhered to, learning is greatly enhanced**.** In Botswana HE was introduced and taught under Creative and performing Arts (CAPA) at the primary school level. At the secondary school level, it was also introduced and taught from 1st to 5th year. Over the years, performance in practical oriented subjects like HE in Botswana had been reported as poor, at the Secondary School levels (Lauglo, 2004, Ogwu, 2005). Schools in Botswana according to Lauglo (2004) have difficulty replacing antiquated hardware. Findings have also shown that 77% of primary school teachers in South Central Region of Botswana had never used Instructional Technologies to teach Creative and Performing Art (CAPA) Subjects (Ogwu, & Ogwu, 2008). Low performance cannot be held accountable by secondary school teachers and the government alone but also by Primary school teachers as well. The National Policy on Education emphasizes the need for pre-vocational preparation through comprehensive selected practical subjects in all schools (Republic of Botswana, 2006) for this reason; the study therefore, explored the quality of instructional technology on implementation of HE at the Primary School Level (PSL) in Botswana.

Three research questions answered in the study were:
1. To what extent does the quality of instructional technology significantly influence HEI at the PSL in Botswana?
2. What are the problems teachers face using IT in teaching HE at the PSL in Botswana?
3. How can HEE be empowered using IT to realize Vision 2016 and beyond in Botswana?

responses were also analyzed qualitatively into the text.

4. Results and Discussions

Result on the quality of Instructional Technology (IT) influence on HEI (Table 1) showed that the two variables were significantly correlated r (234) = .199**, p < .05 at the PSL. Since the absolute r value was higher than the critical r value .113 given significant level of .05, the null hypothesis that quality of IT does not significantly influence HEI was rejected.

The result therefore, indicates that quality of IT significantly influenced the teaching of HE at the PSL in SCR of Botswana. It showed that non-functional IT, inappropriate laboratories, poor equipment maintenance, obsolete equipment, is responsible for ineffective teaching, skipping teaching certain topics, non-achieving teaching objectives, poor coverage of contents, and popularity

Generalization to the study was made using a research hypothesis such as: The quality of Instructional Technologies (IT) significantly influenced the teaching of HEE.

2. Methodology

This was a survey study carried out using a random sampling of 24 Schools selected from a list of 163 urban, semi-urban and rural primary schools in South Central Region of Botswana; targeting Upper Primary School teachers (UPSTs) only. Out of 288 questionnaires administered to UPSTs, 234 (81%) were returned. Questionnaire was face validated with 42 closed and open-ended response question items designed to measure the quality and impact of instructional technology (IT) towards HE Implementation (HEI). Instrument was tested for reliability using an average item measure which gave a Crombach alpha value of .822 for quality of IT and .812 for HEI. Questionnaire consisted of two sections (A&B), section A consisted of respondents' demographic information such as age, gender, qualifications, experience and area of specializations while section B consisted of teachers perceptions on HEI, quality of IT, barriers to utilization as well as suggested solution to empowerment of HE. Four options scale type of measurement was used; such as: strongly disagree, disagree, agree, and strongly agree to elicit information from the teachers. Interview was also used to solicit respondents' views on empowerment of HE. Results were analyzed quantitatively, using SPSS version 16 package, comprising of Pearson correlations to test the hypothesis in the null form, while open-ended responses were analyzed descriptively using frequencies and percentages. Interview

Table 1
Pearson correlations of IT influencing HEI at the PSL in the SCR of Botswana (n = 234).

Factors	r	p-value
Quality of instructional technology (IT) and HEI	.199**	.002

**. Correlation is significant at the 0.01 level (2-tailed); critical r =.113; df = 232

of teaching HE using IT at the PSL in Botswana. This was contrary with Mendoza and Ikezaki (2006), findings where IT was effectively utilized in the teaching of HE at the elementary level. This indicates the invisibility of teaching HE at the PSL which could be the root cause of poor performance at higher level especially in practical oriented areas where instructional technology was highly needed.

Result in Table 2 as highlighted under degree of agreement revealed barriers to teaching HE as Poor Laboratories (97%), integrated curriculum (94%), lack of IT, poor access to IT (94%), lack of specialist teachers (93%), lack of funding (90%), poor maintenance (89%), overloaded curriculum (89%), insufficient time (89%), and non- functional equipment (78%) as major factors teachers face using IT at the PSL. Other minor factors were also mentioned as seen in Table 2.

Table 2

Perceived problems teachers face using IT at the primary school level.

Problems of IT in HE Implementation	SD	D	A	SA	Total (%)
Poor laboratories for teaching HE	3(1)*	5(2)	25(11)	201(86)	234 (100)
Integrated curriculum	7(3)	8(3)	30(13)	189(81)	234 (100)
Lack of IT for teaching HE	7(3)	8(3)	54(23)	165(71)	234 (100)
Lack of specialist teachers	6(3)	11(5)	67(29)	150(64)	234 (100)
Poor access to usage of HE IT	4(2)	17(7)	42(18)	171(73)	234 (100)
Lack of funding in my school	7(3)	17(7)	69(30)	141(60)	234 (100)
Overloaded curriculum	8(3)	19(8)	70(30)	137(59)	234 (100)
Poor IT maintenance in my school	7(3)	20(9)	76(33)	131(56)	234 (100)
Not trained to teach HE using IT	17 (7)	24(10)	77(33)	116(50)	234 (100)
Insufficient time impedes my IT usage	6(3)	22(9)	130(56)	76(33)	234(100)
Non-functional IT limit my teaching HE	65(28)	38(16)	59(25)	77(33)	234 (100)
Technical assistance are available	164 (70)	65(28)	1(.4)	4(2)	234 (100)

KEY: SD-Strongly Disagree; D-Disagree; A-Agree; SA-Strongly Agree.

*in parenthesis indicates the percentages.

Findings agrees with Staples, Pugach, and Hims, (2005) that among every other barrier to IT utilization, lack of teacher preparation, non-functional equipment and maintenance were counted on as the most influential. This emphasis had been limited to higher academic levels only while the foundational levels had been neglected. Apart from these, it was also found out that quality of curriculum such as overloaded and integrated curriculum also influenced the effective implementation of HE using IT. Since teaching HE was integrated into Creative and Performing Arts (CAPA) subjects, it then seems that the subject is hidden under other subjects in the school curriculum making it impossible to teach along with other school subjects.

Result in Table 3 showed the different perceived suggested solutions at various degree of agreement by upper primary school teachers on empowerment of HEE in Botswana. From suggestions made, 97% generally agreed to the provision of specialist

teachers to teach HE as well as funding of HE by the government. However, 92% suggested that more boys should be encouraged to take HE. About 90% felt that more time should be allocated for more practical workload, since this could have an impact on technology utilization and students performance; while 87% advocated for the integration of HE curriculum with computer technology to attract both boys and girls into the subject. Nevertheless, 85% agreed that HE should be taught as an independent subject in schools in order to give more attention to the subject. Quite a large number (80%) suggested that HE should be made a compulsory subject at the primary school level; and 79% of teachers felt HE should be examined to motivate learning and teaching. Some (61%) of the respondents agreed that HE department should raise fund through sales of products for upgrading the subject in order to activate the subject; while 88% felt that money should not be taken from home to support the subject.

Table 3

Perceived suggested solutions to empowerment of HEE by UPST in Botswana (n= 234).

Perceived suggested solutions (PSS)	*SD*		*D*		*A*		*SA*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Government to support/funding HE	6	2.6	2	.9	57	24.4	169	72.2
Needs specialist teachers to teach	3	1.3	5	2.1	53	22.6	173	73.9
Encourage more boys to take HE.	3	1.3	15	6.4	117	50.0	99	42.3
More time needed for workload.	5	2.1	19	8.1	112	47.9	98	41.9
Integrate technology into HE	10	4.3	20	8.5	100	42.7	104	44.4
Teach HE as an independent subject	13	5.6	23	9.8	80	34.2	118	50.4
Make HE a compulsory subject	13	5.6	35	15.0	97	41.5	89	38.0
HE be examined at primary school	23	9.8	27	11.5	100	42.7	84	35.9
HE department should raise fund.	42	17.9	49	20.9	103	44.0	40	17.1
Material support should come from homes.	154	65.8	53	22.6	19	8.1	8	3.4

KEY: SD-Strongly Disagree; D-Disagree; A-Agree; SA-Strongly Agree.

Based on suggestions made to open ended questions, result as illustrated in Table 4, showed that 61% of UPS teachers want the government to provide facilities like laboratories and equipments for HE in primary schools to encourage the teaching of HE. About 13% felt that HE curriculum is too broad for primary schools; while 8% felt HE should be taught at an early stage of education, so that students could develop interest. About 7% believed that students should be allowed to sell their products in order to motivate them to take HE seriously for future benefits. About 5% felt, that parents need to be sensitized about HE to avoid gender bias especially in household chores. While 3% believed that workshop should be provided to encourage students, the same percentage also suggested that principal education officers should monitor the effectiveness of HE teaching in primary schools.

Table 4

Open suggestions made by UPST on empowerment of HEE.

Personal suggestions from UPS teachers	n	%
Government to provide laboratories/and equipments for teaching HE	38	61.3
HE curriculum too broad for primary schools.	8	12.9
HE should be taught at an early stage to develop interest	5	8.1
Students be allowed to sell their products in order to motivate students	4	6.5
Sensitize parents about HE to avoid gender bias in household chores	3	4.8
HE fairs like workshop be provided to encourage students	2	3.2
Principal education officers should monitor the effectiveness of HEE	2	3.2
Total	62	100

Based on interview discussions in support of the perceived suggested solutions to empowerment of HEE at the primary school level, findings revealed that: "Teachers need to be trained in specialized areas of HE for quality"; "the local government should provide fund, more facilities like laboratories, equipment and materials for effective teaching towards the realization of the objectives of HE under CAPA"; "Obsolete equipment should be replaced for efficiency"; "HE curriculum should be revisited and made independent because it is too broad for primary schools"; "more time should be allocated since there are a lot to cover under the syllabus". "Computer technology should be introduced to motivate and attract boys into HE"; " HE Should be made compulsory and examined at the primary school level to motivate teachers and learners"; " HE should be taught at an early stage around standard 6 so that students can develop interest"; " principal education officers should monitor the effectiveness of HE teaching in primary schools"; "parents need to be sensitized about HE to avoid gender bias especially in household chores"; "occasional workshop should be organized to teach and sensitize teachers' towards current innovations". Most of the suggestions were in line with some researchers view; on empowerment of HE but at the higher levels (Lau, 2004; Street, 2006). Hence a gap was established at the lower academic level believed to be neglected.

5. Conclusions

HE as a subject could face extinction in near future if the foundational levels remained neglected, invisible and marginalized in the curriculum. The study indicates that the subject seemed invisible since it was not well funded by the local government, not allocated with sufficient time and not examined. So by the time students proceed to JSS where the subject is examined, invisibility and negligence continues to surface, which invariably influence students' performance. Home economics education from a technical and practical point of view has to do with design, innovations and productivity which need to be introduced at an early stage of children's career life. Effective curriculum implementation is geared towards productivity which can only be realized with the use of quality ITs at the foundational levels of education. From all indications, the subject was not taken serious since teachers were not prepared and monitored to teach it using IT.

6. Implications and Recommendations

This study has implications for teacher preparations, and realizations of Vision 2016 and beyond in Botswana. Since utilizing modern and current technologies in the teaching-learning situation, promotes the discipline with new innovations which Botswana Vision 2016 aspires for (Republic of Botswana, 2006). Since HEE has been proved to be invisible at the primary school level, automatically the upper levels would also be affected.

Based on the generalized fact, therefore, the government needs to assist in funding HE right from the foundational level. Institutions of teacher educators need to prepare teachers towards IT utilization. Teachers should be dedicated and willing to do their best for quality. Curriculum planners need to plan a curriculum that would integrate computer technology into HE for effective information retrieving, designing and reproducing new products. Policy makers should make sure that HE be examined at primary level to motivate teaching. Monitoring team should also make sure the innovation in place is under operation.

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