

## **A MODEL FOR THE DELIVERY OF PROFESSIONAL DEVELOPMENT PROGRAMME FOR TEACHERS OF TECHNICAL VOCATIONAL EDUCATION AND TRAININGS IN NORTH WEST NIGERIA**

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### **ABSTRACT**

The objective of the study was to determine a model for use in designing ICT driven Open and Distance Learning (ODL) program in North West Nigeria. Specifically the study determined the demographic characteristics of the Technical Vocational Education and Training (TVET) teachers, the most preferred method of ODL delivery, technology to drive it, availability of such technology at home and work place as well as support services. Five research questions and two hypotheses were formulated based on these objectives. The study was carried out in the Department of Education Technical, Kaduna Polytechnic using 300 teachers on in-service training from Kaduna, Jigawa and Zamfara States as population sample. The sample was chosen using simple stage cluster sampling technique. Data was collected using a 34-item structured questionnaire and the return rate was 100%. The data generated was analysed using mean, standard deviation, and percentage to answer the five research questions; while one way Analysis of Variance was used to test the two hypotheses. The study found out that the teachers' most preferred ODL methodis Synchronous driven by internet video conferencing, the technologies are readily available at home and work place of the teachers and internet website is the most preferred support service required. Based on these findings five recommendations were offered ODL institutions which among others is that, the management of such institutions should use the generated base line data for designing ODL delivery of their Continuous Professional Development programmes

**KEYWORDS:** Professional Development Programme, Continuous Development Programme, Technical Vocational Education and Training

### **INTRODUCTION**

There is a growing recognition that Continuous Professional Development (CPD) of teachers is an important determinant of efficiency and effectiveness in teaching and learning (Clarke and Robson, 2005; Clot felter and Ladd, 2004; Warner, 2013). According to the National Teachers Institute, Kaduna (2004),Continuous Professional Development consists of any educational activity which helps to maintain, develop or increase knowledge, problem solving skills or professional competence, all with the goal that the particular professional can provide better service to his/her clients. Continuous Professional Development therefore provides opportunity for teachers to upgrade/update their qualifications and professional competence without necessarily leaving their jobs for the purpose of improving service delivery. More so that in developing countries, this challenge is amplified by the significant numbers of un-qualified and under-qualified teachers who urgently need access to professional development opportunities (Banji, 2013).

It is in recognition of this important benefit of Continuous Professional Development that the Federal Republic of Nigeria established the NTI in Kaduna, Nigeria and made it one of its mandates in order to upgrade skills of teachers including those of Technical Vocational Education and Training (TVET) especially at the primary and secondary school levels towards enhancing service delivery. In pursuance of this mandate, the NTI has since 2006 developed and consistently carried out Continuous Professional Development programmes for servicing teachers which she is implementing through one-week face-to-face (f2f) capacity building workshops under the Millennium Development Goals project. From that 2006 to date, the sum of ₦113.75 Billion of the debt relief grant has been given to the Federal Ministry of Education to implement various programmes and projects including the one-week NTI annual capacity building workshop for teachers (Gbenemol 2013).

The NTI uses face-to-face method of distance learning supported with printed materials to implement the programme. However, in recent times, due to high cost and inefficiencies associated with the face-to-face method of training teachers, many nations and organizations are adopting Information and Communication Technology (ICT) driven Open and Distance Learning (ODL) methods of delivery. ODL is the whole range of related forms of teaching and learning that stresses openness concerning access, organization and methods, flexibility in delivery and communication patterns and the use of various technologies in support of learning (UNESCO 1997).

Three models of delivery of ODL are available from literature, namely: Synchronous, Asynchronous and Blended online with face-to-face delivery (Tayebinik & Morie (n.d); Grayharrimd.com 2014; Foreman, 2003). The synchronous model consists of online delivery of instruction in which all the trainees are available at the same time to interact with the instructor. This method according to Foreman (2003) provides speed and immediacy in interaction and feedback, however lacks face-to-face classroom interaction. While the Asynchronous, according to Grayhormne.com (2014) involves online delivery of instruction in which interaction between the instructor and trainee is individualized, and intermittent. It provides flexibility in terms of choice of location and time to the instructor and trainees; however, it limits interaction and collaborative learning. Yet the Blended consists of online, face-to-face and classroom interaction delivery of instruction. It offers active learning with flexibility in using resources for the students and provides more time to the teachers to interact with their students. However, the major disadvantage is that it is cost intensive. In all the three methods, the use of Information and Communication Technologies (ICT) is inevitable.

ICT is a diverse set of technology tools and resources used to communicate, create, disseminate store, and manage information (Wiki 2014). ICT includes computers, internet, radio processing, telephone, video tape, web-based education, online chat, e-mail, social media, and audio file/CD among several others. These tools are used in ODL for the purpose of establishing interaction between the instructor and the trainees. In addition to using ICT tools, trainees in Open and Distance Learning also require support systems which include study centres, postal system, participants appointed group, virtual library to enhance their learning.

With the MDGs intervention fund for organizing the CPD coming to an end in 2015 and considering the various competing financial demands on the Federal Government of Nigeria, it is necessary for the ODL institutions such as the National Teachers Institute (NTI) to plan to use ICT driven ODL in order to reduce cost of training and ensure sustainability of the program.

Against this backdrop, the Common Wealth of Learning (CWL, 2004) suggested that planning ICT driven ODL starts with knowing the demographic characteristics of students/trainees and their needs. These demographic characteristics include age, gender, places of work and their location; while the needs of the teachers include the delivery methods most preferred, technologies to be used, access to such technologies at home or workplace and support services required (Daniel 2010). These base line data are necessary for designing any ODL program; however, as at the moment they are lacking in Nigeria. The absence of such data makes it difficult for the NTI and other ODL institutions to design a program for CPD which may replace the present delivery method which is cost intensive. Therefore the problem tackled by this study raised as a question is what are the information to be included in a model for delivery of CDP using ICT as baseline data for the purpose of designing alternative delivery method towards sustaining the Continuous Professional Development of teachers?

### **OBJECTIVE OF THE STUDY**

The objective of the study was to determine the perception of the secondary school teachers about a model for the delivery of the Continuous Professional development programme of the NTI. Specifically the study determined the:

- Demographic characteristics of the teachers
- ODL delivery method most preferred by the teachers
- Technologies most preferred
- Availability of the technologies at home or workplace of the teacher
- Support services most preferred by the teachers
- Whether there is any statistically significant difference in the mean preference of teachers about the ODL delivery methods on the basis of location
- Whether there is any statistically significant difference in the mean preference of the teachers about ODL delivery methods on the basis of State.

### **RESEARCH QUESTIONS**

The following questions were answered by the study.

- What are the demographic characteristics of the teachers?
- What is the most preferred method of ODL delivery?
- What is the most preferred technology for the delivery of ODL?
- What are the available technologies to teachers at home or workplace?
- What are the support services preferred by the teachers?

### **HYPOTHESES**

The following hypotheses were tested at 0.01 level of significance.

**H<sub>01</sub>:** There is statistically nosignificant difference in the mean responses of the teachers about the most preferred ODL methods of delivery on the basis of location of place of work.

**H<sub>02</sub>:** Statistically significant difference does not exist in the mean responses of the teachers about the most preferred ODL method of delivery on the basis of State.

## METHODOLOGY

The study adopted cross sectional survey research design to seek the views of a sample of 300 secondary school TVET teachers from Kaduna, Jigawa and Zamfara States in North West Nigeria who are on in-service education in the Department of Education Technical Kaduna Polytechnic. The reason for the choice of the Department of Education for the study was that the department was the first TVET Teacher Training institution established in Northern Nigeria in Nigeria to cater for the needs of the 19 states of the region. The department trains teachers in Woodwork, Metalwork Electrical/Electronics, Automobile, Drafting, Building trades. The teachers are on in-service training from all the 19 states of northern Nigeria. The teachers represent a very good sample of their colleagues at their work place and they are knowledgeable enough about the issues of the study. Consequently samples of 300 teachers were chosen using single stage cluster sampling method. Three States namely Kaduna, Jigawa and Zamfara were randomly chosen by balloting from the seven States in North West Nigeria. Thereafter all the teachers from the three States on in-service training in the Department of Education Technical as at June 2014 were used. Their distribution by states is given in Table 1.

**Table 1: Percentage Distribution of the Sampled Teachers by States**

S/n	State	No. of Teachers	%
1	Kaduna	153	51%
2	Jigawa	78	26%
3	Zamafara	69	23%
		<b>300</b>	<b>100%</b>

A 34 item structured questionnaire was developed by the researchers using data obtained from the review of related literature. The questionnaire was face and content validated by three lecturers in the Department of Education Technical, and its reliability coefficient of 0.81 was obtained by carrying out a pilot test on 15 teachers from Kaduna State secondary schools and analyzing the data generated using Cronbach Alpha. Thereafter, the 300 copies of the questionnaire were personally administered and retrieved by the researchers. The percentage return rate was 100%.

The data generated was analysed using percentage, mean, and standard deviation to answer the five Research Questions, while One Way Analysis of Variance was used to test the two hypotheses at 0.01 level of significance. For the purpose of decision making, a mean cut-off of 3.45 was used, thus any item with mean equal to or above this value was considered preferred while any item with mean below this value was considered not preferred. Furthermore, for the purpose of identifying the most preferred item, any item with the smallest standard deviation was considered. For the two hypotheses, if the calculated F value was greater than the table value at 0.01 level of significance the null hypothesis was rejected, if less than the null hypothesis it was retained.

**RESULTS**

**Research Question 1**

What are the demographic characteristics of the teachers?

**Table 2: Age, Sex, Location and State of the Sampled Teachers**

Age			
18	30	35	88.74%
30	40	4	10.26%
40	50		0%
50	60	-	0%

Sex		
Male	Female	Total
168	132	300
56%	44%	100%

Location		
Urban	168	41%
Semi urban	85	21%
Rural	46	38%
	<b>300</b>	<b>100%</b>

State		
Jigawa	78	26%
Kaduna	153	51%
Zamfara	69	23%
	<b>300</b>	<b>100%</b>

**Research Question 2**

What is the most preferred ODL method of delivery?

**Table 3: Mean and Standard Deviation of Opinions of the Teachers on Preferred ODL Method of Delivery N = 300**

S/N	Items	MP	P	UC	LP	NP	$\bar{X}$	SD	Remark
1	<b>Synchronous Model:</b> online delivery of teaching in which all participants are available at the same time.	53.9%	41%	2.5%	2.5%	0	4.46	0.682	Most Preferred
2	<b>Asynchronous Model:</b> online delivery of teaching in which interaction between instructor and participants is intermittent.	25.6%	53.5%	12.8%	7.7%	0	3.97	0.92	Preferred
3	<b>Blended:</b> online delivery and face-to-face classroom time.	46.2%	43.6%	2.5%	5.1%	2.5%	4.26	0.86	Preferred
							<b>4.23</b>	<b>0.82</b>	

**Research Question 3**

What is the most preferred technology?

**Table 4: Mean and Standard Deviation of the Teachers about Preferred Technology N = 300**

S/N	Items	MP	P	UC	LP	NP	$\bar{X}$	SD	Remark
1	Broadcast Television	56.4%	33%	2.5%	7.7%	2.5%	4.41	0.90	Preferred
2	Internet video conferencing	56.4%	41%	7.7%	-	-	4.49	0.76	Most Preferred
3	Video Tape or DVD	41%	46.2%	7.7%	5.1%	2.5%	4.23	0.81	Preferred
4	Web-based education	38.5%	28.8%	15.4%	5.1%	5.1%	3.87	1.13	Preferred
5	Online chat on Skype	28.2%	48.7%	15.4%	5.1%	5.1%	3.97	1.06	Preferred
6	e-mail	33.3%	35.9%	20.5%	7.7%	2.5%	3.90	1.05	Preferred
7	Audio files or CD	23.1%	43.6%	10.3%	20.5%	2.5%	3.64	1.11	Preferred
8	Voice mail	25.6%	20.5%	30.8%	18%	2.5%	3.56	1.22	Preferred
9	Print	18%	56.4%	18%	5.1%	2.5%	3.82	0.88	Preferred
10	Blogging	20.5%	28.2%	33%	15.4%	2.5%	3.49	1.07	Preferred
					Grand	mean	3.95	0.999	

**Research Question 4**

What are the available Technologies to the teachers at home and work place?

**Table 5: Mean and Standard Deviation of the Opinion of the Teachers about Available Technologies N = 300**

S/N	Items	Frequency of Available	Frequency of Not Available	% A	% NA	Remark
1	Telephone	285	15	95	5	Available
2	Computer	192	108	64	36	Available
3	Internet	177	63	59	21	Available
4	Cable TV	132	167	44	56	Not available
5	VCD	207	93	69	31	Available
6	Audio Cassette	192	108	64	36	Available

**Research Question 5**

What are the support services preferred by the Teachers

**Table 6: Mean and Standard Deviation of the Opinions of Teachers about Support Services Preferred N=300**

S/N	Items	MP	P	UC	LP	NP	$\bar{X}$	SD	Remark
1	Electronic library	66.7%	25.6%	2.6%	2.6%	2.6%	4.51	0.74	Most preferred
2	Student association or group	46.2%	43.6%	7.7%	2.6%		4.33	0.74	Preferred
3	Study centres (state)	33.3%	56.4%	7.7%	2.6%		4.18	0.70	Preferred
4	NTI website	33.3%	43.6%	12.8%	10.3%		4.00	0.68	Preferred
5	Multimedia learning materials	35.9%	2.65%	12.8%		2.6%	4.15	0.69	Preferred
6	Main library at NTI	35.9%	33.3%	15.4%	15.4%		3.90	1.07	Preferred
7	Printed materials	41%	46.7%	10.3%	2.6%		4.23	0.75	Preferred
8	Guidance and Counselling	38.5%	41%	18%	2.6%		4.15	0.98	Preferred
9	Study habit	35.9%	43.6%	15.4%	5.1%		4.10	0.85	Preferred
10	Orientation	38.5%	25.6%	28.2%	5.1%		13.92	1.06	Preferred
							4.15	0.82	

**KEY**

MS = Most Preferred

P = Preferred

UC = Uncertain

LP = Less Preferred

NP = Not Preferred

**H<sub>01</sub>:** There is statistically nosignificant difference in the mean responses of the teachers about the most preferred ODL method of delivery on the basis of location (urban, semi-urban and rural).

**Table 7: F-Test of the Mean Responses of Teachers about the Most Preferred ODL Delivery Method on the Basis of Location**

S/N	Location	$\bar{X}$	SD	df	F <sub>cal</sub>	F <sub>t</sub>	Remark
1	Urban	4.41	0.89	2	0.374	5.25	Not significant
2	Semi urban	4.23	0.80				
3	Rural	3.56	0.99	288			

Since the calculated F value which is 0.374 is less than the table value of 5.25 at 0.01 level of significance at df of 288, the null hypothesis was upheld.

**H<sub>02</sub>:** Statistically significant difference does not exist in the mean responses of the teachers about the most preferred method of ODL delivery on the basis of State.

**Table 8: F-Test of the Mean Responses of the Teachers about the Most Preferred Method of ODL Delivery on the Basis of States**

S/N	States	$\bar{X}$	SD	df	F <sub>cal</sub>	F <sub>t</sub>	Remark
1	Kaduna	4.46	0.682	2	1.265	5.25	Not significant
2	Jigawa	4.30	0.820				
3	Zamfara	3.92	0.999	288			

Since the calculated F value which is 1.265 is less than the table value of 5.25 at 0.01 level of significance at df of 288, the null hypothesis was upheld

**FINDINGS**

The study found out the following:

- Majority of the teachers are between 18 – 30 years, are males; located in urban schools.
- Their most preferred method of ODL delivery isthe Synchronous model
- Their most preferred technology for the delivery of ODL is internet video conferencing
- The following technologies are available at home or work place.
  - Telephone
  - Computer

- Internet
- VCD
- Audio Cassette player.
- The most preferred support services required by the teachers is internet based website
- There was no significant difference in the mean responses of the teachers about the most preferred ODL method of delivery on the basis of location of their place of work.
- There was no significant difference in the mean responses of the teachers about the most preferred method of delivery of ODL on the basis of their States.

## RECOMMENDATIONS

- The NTI and the management of other ODL institutions are advised to use ICT driven ODL as a strategy for sustaining the CPD when the intervention funds from MDGs ends by 2015.
- The management of the NTI and other ODL institutions are also advised to use the demographic characteristics of the teachers, the preferred delivery method, technology, and support services identified in designing CPD using ICT driven ODL for TVET teachers in the North-West Nigeria.
- The **management of NTI** and other ODL institutions should also organize capacity building workshop for the facilitators before the ODL program is implemented.
- The management of **NTI** and other ODL institutions should procure and install the facilities for internet video conferencing.
- NTI should replicate this study in other zones for the purpose of generating base line data.

## CONCLUSIONS

Based on the findings of the study the following conclusions were drawn.

- Majority of the teachers are in their active period of service
- They preferred online delivery of instruction in which all participants are present at a time using internet, video conferencing and the technologies required are available.
- They require multimedia learning materials as the most preferred support services for ODL delivery and the technology for receiving instruction are readily available with the teachers.

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