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Application of Multimedia in Training Entrepreneurs in Technology Incubation Centers in Nigeria

Abubakar Usman Othman, Mohammed Babatunde Ibrahim, Ahmad Abubakar Sadeeq,
Adananu Sani Adamu and Shaibu Salihu Baba

^{1,3,4,5}National Board for Technology Incubation (NBTI), Nigeria

²Department of Computer Science, Kwara State University, Nigeria

¹othman80s@yahoo.com

Abstract– Multimedia is gaining popularity among technology incubation centers by knowledge transfer and enhancement of the quality of business communication. Technology incubation center is a place where entrepreneurs are given space for incubation. While the technology incubation centers provides opportunities to entrepreneurs with technology-based ideas and expertise to reside throughout the incubation period, lack of information, inadequate provision of networking medium among entrepreneur and exposure to the outside world are the foremost challenges that outweigh the colossal success factors of the set objectives of incubation. This paper present application area, different interactive systems of multimedia applications for educating and training entrepreneurs by instructors at technology incubation centers through multimedia technologies and tools. Such technologies are videos, online interaction, images, audios and wireless telecommunication technologies such as smartphones. This paper enhanced the use of multimedia in passing educative information to entrepreneurs to enable them grow their companies.

Index Terms– Entrepreneurs, Incubation, Multimedia, Training, Technology and Information

I. INTRODUCTION

TECHNOLOGY incubation centers where established by many developing countries all over the world including Nigeria, South Africa, India and China. Advancements in worldwide technology gave rise to rapid economic development in developed and developing nations. These advancements are evident in the field of multimedia and communication technology. The rise of multimedia communication has created a revolution in the computing industry in which newer fields are opened for the application development. One of such fields, having tremendous potential is virtual reality. Today, virtual reality is primarily used in entertainment industry applications but is a very useful tool for performing simulative and remote control applications. Virtual reality has a tremendous impact on entrepreneurship teaching and training in a way of technology incubation especially in developing countries, like Nigeria.

Multimedia is a term discussed every day in the field of computing. It is the exiting combination of hardware and software that has the capability to integrate audio, video, animation, graphics and test resources to develop effective presentations on affordable computer systems. Multimedia can be viewed as text, graphic art, sound, animation, and video organized into coherent program [1]. Knowledge transfer (teaching/training) involves information transmission through multimedia that it facilitates the retention by entrepreneurs.

Multimedia application involves the transfer or transmission of information with the maximum effect in terms of capability and ability. Most knowledge based multimedia applications are meant for academia and business both. In academics, the knowledge transfer is used as the building block whereas in business, it is the effective transfer of information, which might be essential for the survival of a business. Multimedia based teaching has gained momentum and has become a powerful teaching tool. Multimedia is one of the best ways to provide short and long-term training to entrepreneurs in technology incubation centers.

Government or private individuals provide technology incubation centers where entrepreneurs who are knowledgeable in technology are given space or unit at the center to harness natural resources for transformation into useful product. At the technology incubation centers, entrepreneurs benefited from free space (unit), electricity, water, grants from government, easy access to Bank of Industry loan, research and development results (R&D), result of analysis, search for raw materials, registration with government regulatory bodies, marketing of products, improving entrepreneur/customer relationship and training in a way of capacity building. Staff in technology incubation centers co-ordinate and monitor entrepreneur's activities. Multimedia has shown to elicit the highest rate of information retention and result in shorter learning time [2]. An entrepreneur demonstrates enterprising approaches and attributes, such as creativity, vision, responsiveness to opportunity, and ambition for business growth, which are distinct from business skills and knowledge [3].

Computerized teaching uses multimedia compact disk read-only memory (CD ROMS). In such programmes, learners listen to recordings, watch videos, speak into the microphone, record their progress, learn words by a click on pictures and hear their pronunciation. Option to CD ROMS is the World Wide Web. Learners can practice all their skills there and it is more useful for the teacher than the CD ROM because teachers can intervene with their own ideas or materials [4].

II. RELATED WORK

The author in [5], defined multimedia as the combination of different digital media types such as sound, video, images, and text into an integrated multi-sensory interactive application and or presentation to convey a message or information to an audience. These refers to individuals or group using a computer to communicate interactively with information presented in several media, repeatedly selecting what to view and what to hear next. Author in [6] supported the idea that multimedia resources influence human knowledge access anytime and anywhere in a multi-modal way.

Author in [7] explained that multimedia technology adds new dimension to learning experiences because concepts were easier to present and understand when words are combined with images and animations. They further stressed that learners retain more when different senses are used to impact knowledge. Author in [8] addressed five interlocking frameworks for change for a successful implementation of information and communication. These frameworks for change are staff, infrastructure, attitude, technical, administrative and development to sustain sustainability and transferability. This paper presented different techniques through which multimedia technology can be used in training entrepreneurs in technology incubation centers for easy understanding of processes involved and high retention.

An approach for teaching in Nigerian universities through multimedia was presented by [9], where university of Ibadan, Nigeria was used as a case study. Author in [10] presented a work that finds out the benefits of ICT in teaching of languages and investigate the challenges pose by the online teaching of languages. Author in [11] described masters of administration elective course where second life was used to teach strategic and managerial issues relating to e-commerce. Second life is a three-dimensional multi-user virtual environment with a vibrant economy, where avatars (virtual representations of users) can engage in innovative and unique business and collaborative activities. The immersive nature of this application creates ample authentic opportunities for teaching entrepreneurship, technology and ecommerce.

In [12], the author presented an environment for sharing entrepreneurial knowledge by high quality videotaped interview sequences from well-known high-tech entrepreneurs.

III. APPLICATION AREAS IN TECHNOLOGY INCUBATION CENTERS

Multimedia resources such as interactive online games, video clips, podcasts and data sets allow instructors to transfer

knowledge to meet the needs of every entrepreneur. Multimedia resources can provide an opening door to a completely new level of learning to entrepreneurs through video showing, online interaction, power point slide presentations, and instructive audio and organized images. List of technology incubation centers in Nigeria are given in Table 1.

Table 1: List of Government Owned Technology Incubation Centers in Nigeria as at 2016

S/No	State	Number of Incubation Centers
1	Abia	
2	Bayelsa	1
3	Baue	1
4	Borno	1
5	Bauchi	1
6	Enugu	1
7	Anambra	1
8	Imo	1
9	Edo	1
10	Delta	1
11	Akwa-Ibom	1
12	Cross River	1
13	Kwara	2
14	Plateau	1
15	Sokoto	1
16	Kebbi	1
17	Kaduna	2
18	Kano	1
19	Zamfara	1
20	Niger	1
21	Lagos	1
22	Akure	1
23	Ogun	3
24	Ekiti	1
25	Taraba	1
26	Adamawa	1
27	Oyo	2
28	Katsina	1
29	Gombe	1

A) Product Design

Entrepreneurs can benefit in learning how to improve on the design of their products. The design of working machines, product packaging, working tools, and fabrications can be presented to entrepreneurs through multimedia applications such as videos and power point slide presentation.

B) Research

Conducted research in various field of studies can be presented to entrepreneurs in technology incubation centers to enable them learn new processes being followed in

conducting current research. Such results can be presented to entrepreneurs as research and development results. These results could be innovations or inventions. Innovations are improvements on previous works while inventions are new discoveries in science and technology.

C) Marketing of Product

This focused on facilities that might change the outlook of the whole marketing strategies. This is greatly achieved through formation of global team and advertisement using the internet, music, and showing of animations in public places.

D) Sensitization

Entrepreneurs are sensitized in areas of safety, health, the need for Information Communication Technology (ICT) and management of their space (units) in technology incubation centers.

IV. INTERACTIVE SYSTEM FOR TRAINING, TEACHING AND LEARNING ENTREPRENEURSHIP

These are computer systems designed for teaching, training and learning to aid entrepreneurs in technology incubations for easy understanding and durable retention.

A) Multimedia Pedagogues

Multimedia pedagogues are interactive systems for teaching, training and learning. They are very useful teaching tools as they could stimulate and motivate the entrepreneurs, aided by audio-visual support. A multimedia tutor can provide multiple numbers of challenges to the entrepreneurs to stimulate his interest in learning about a particular research, product packaging or product design. The instruction and knowledge transmission provided by pedagogue have moved beyond providing only button level control to simulations of intelligent systems, dynamic creation of links, composition and collaboration and system testing of the entrepreneurs' interactions. An example of pedagogues is simulations.

1) Simulations

Simulation is an area of pedagogy that deals with problem solving situation. The entrepreneur is engaged in a situation of problem solving approach. In technology incubation, problem solving are in the area of measurement and calculation of length of material in producing a furnace, area of a cone in producing warmer for groundnut oil production, voltage needed in inverters. This is greatly achieved owing to the multimedia power of being multi-sensory, stimulating the many senses of entrepreneurs.

Scenarios Based Simulations

Scenarios based simulations, which are multimedia-based use audios, graphics and videos to engage entrepreneurs in a particular problem situation. The scenario-based tutors provide limited answers and suggestions but a multimedia based simulation that has direct bearing or same methodology with the area of entrepreneurs may offer much answers and suggestions.

Knowledge Based Simulations

Knowledge based simulations are multimedia-based use designed and formulated knowledge base that provide clues to entrepreneurs.

2) Multimedia Composition

Composition created on multimedia platforms may include text creation, drawings or digitized pictures. These are used in the teaching of entrepreneurs. The activities may be research result from institutions, needed by an entrepreneur, or analysis of his product to meet set standards.

3) Multimedia and Explanatory Systems

Multimedia are used to provide explanatory aid to entrepreneurs in technology incubation centers to existing problems that scenario based situations and knowledge based situation could not provide. The tutors undergo a thorough study of the area of a particular entrepreneur, the explanation of such studies are organized into a multimedia format for onward transmission to respective entrepreneurs. This helps the entrepreneurs in gaining additional knowledge in technology incubation.

B) Multimedia in Marketing

Technology is being incubated in a technology incubation center, the product or finished product incubated is made available to end users and consumers. This section focus on facilities which if employed might change the outlook of the entire marketing strategy.

1) The Global Network

Multimedia technology together with communication technology has opened the door for global network group in-line with their respective technology incubation. The group members may be resided in the same or different locations. This is possible with multimedia-based fax containing detailed information, graphic information and printed copy of information. The teacher and the entrepreneur interact through multimedia-based fax. The entrepreneur send request on how to solve certain problem and the teacher provide lasting solutions to the entrepreneur through multimedia-based fax. Communication between teacher and entrepreneur could be by multimedia-based e-mail. The teacher presents the business communications such as employee related communications, product advertisement, customer information to entrepreneurs in multimedia form. All these business communications need to be structured such that a formal level of content structure exists in the communication.

2) Windows Media Audio

Windows Media Audio File (WMA) is multimedia windows application that is used to play audio media through computing devices. A WMA could be a voice recording of a prepared lecture material. Entrepreneurs can listen to this audio file that contained lectures that concerns his technology incubation through communication devices. A WMA is a well-tutored voice prepared by an expert in a certain field of technology that explained in detailed, how a certain product is produced and packaged. It helps an entrepreneur who is not

well skilled in his production to gained quality training by listening to the prepared windows media audio file. It could also help to improve in his acquired knowledge in his field.

V. PROVISIONING MULTIMEDIA RESOURCES

Multimedia resources have many features it offered. The offer includes portability and flexibility.

A) Portability

Learning can take place at anytime, anywhere, with multimedia. Entrepreneurs are being able to listen to a podcast, watch a vodcast at home, the technology incubation center, and on a fieldtrip. These tools are great ways for concept reinforcement and enable entrepreneurs to learn in context.

B) Flexibility

Present day multimedia resources allow tutors in technology incubation centers to demonstrate concept and lessons to entrepreneur ways that textbooks alone cannot provide. Teaching about scientific research, with multimedia, a tutor or instructor can bring world-renowned scientists into the lecture room with podcast lectures.

1) Multimedia Data Types

Three common multimedia data are digital audio, video, and image. The video is the combination of image and audio. When an image is moving at 50 frame per second (50fps) becomes a video. The combination of audio and images as a tool for transferring knowledge makes learning very easy. The teacher provides lecture material in video format. All the entrepreneur need do is to sit down, listen and watch the video clip. The entrepreneur can ask questions in particular areas that are not clear to him and the teacher provides the answers. Entrepreneurs can go with copies of this video clips to their units, homes and watch at their convenience for wider understanding of the technicality involved.

Audio and Video Files

Video and audio play powerful roles in the training of entrepreneurs in technology incubation centers. However, the media should not be allowed to overwhelm the rest of time meant for doing the actual work that entrepreneurs are supposed to do. PowerPoint handles many graphic files format and makes it easier to insert file formats without using separate filter. Such file formats includes graphics interchange format (.gif), Microsoft windows bitmap (.bmp, .rle, .dib), tagged image file format (.TIFF), enhanced metafile (.emf), joint photographic experts group (.jpg), portable network graphics (.png), and windows metafile (.wmf).

VI. CONCLUSION

This paper has presented application areas in technology incubation centers and interactive systems for teaching, training and learning. For effective teaching of entrepreneurs, the various application used in teaching entrepreneurs where stressed such as images, video, audio, and slide presentation.

The presentation also provides the use of multimedia in marketing the products of entrepreneurs and outlined the interactive systems used for training and or teaching entrepreneurs. We conclude the paper by outlining the benefits that multimedia resources offers to entrepreneurs.

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