

DEVELOPMENT OF SKILL ACQUISITION FILMS IN THE TRAINING OF CERAMICS STUDENTS IN TERTIARY INSTITUTIONS OF LEARNING

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Abstract

Teaching practical courses in tertiary institutions of learning in the third world is becoming cumbersome because of the increasing population growth and lack of complementary training materials to augment the inherent challenges population explosion poses. In this research, an experimental product design and developmental approach was adopted in the production of a series of skill acquisition (training) films to assist in teaching ceramics to design students in tertiary institutions of learning. The development of a training film in ceramics was executed in three phases, namely, the Pre-Production, Production and Post Production stages. At the end of production an *Answer Print (film)* was made and validated. Validators were made to critique the answer print. The instrument for validation was an assessment form attached to the answer print and distributed amongst expert groups that comprised Lecturers and professionals in the field of ceramics and graphics. They were to ascertain the film's appropriateness to the curriculum content. Reports of the respondents were then used to do a final editing. The final product was then produced in both an MPEG 1 and an MPEG 2 formats. This report includes three charts, a table, four photographs and some recommendations.

Introduction

The power to control and shape the surroundings that man inhabits has been continuously augmented, to the extent that it has become a truism to speak of this world as a man-made one. Heskett (1993) believes that the instrument of this transformation has been mechanized industry, brought about by creative minds and hands. Technology has also become vital in the world's advancement towards a meaningful life; making practical application and problem solving much easier for man. Hi-tech innovations have made landmark effects on communications, engineering, medicine, agriculture, defence, educational technology and design. All of the above is credited to *Man's* unending quest for knowledge. Learning, instruction and teaching have being part of the homo-sapiens's life as far back as one can remember, it has also being the major catalyst that has propelled his progression to the state of advancement we witness today. The art of teaching and learning have over the ages experienced a lot of metamorphosis, i.e. in respects of technology, learners demand and pedagogy. All of these are attributes of the human struggle for survival, enlightenment and quality delivery influenced or determined by technique, process and methodology, while always having to accommodate the ever evolving changes in *culture, materials* and population.

Learning, instruction and teaching in history have either being formal, informal or both, which later have expanded into an array of learned behaviour that include; discrimination learning, habituation, concept formation, problem solving, perceptual learning, and psychomotor learning. While association, conditioning, imitation, insight, and imprinting represent other types of learning (Encyclopaedia Britannica, 2008). "To learn" had often meant "to acquire certain personal skills and training". Skill acquisition traditionally has always been an apprenticeship training process done between the trainer and the trainee. It involved a lecture/demonstration procedure where the trainees learn by seeing the trainer demonstrating. To help deliver learning, educational vehicular materials have over the ages taken a variety of forms. These materials that have enhanced course delivery are;

- a. Human interaction (face to face in learning groups, class sessions, residential or at a distance using telephone, video, or computer internet communication or conferencing).
- b. Print based (books, study guides, workbooks, newspaper and journals, handouts etc).
- c. Practical or project work (laboratories, fieldwork, work-based projects, etc).
- d. Technology or audio-visual (chalk board, magnetic board, CD-ROMs, computer-based multimedia materials, video, audio-cassettes, radio and TV broadcasts, slides, films etc).

There is no doubt that a carefully planned instructional film can add to the efficiency and clarity of training. The eye is the quickest sense through which the student can both learn and memorize technical details, especially when the significance of what is being seen is reinforced by words and sounds (Halas and Manvell, 1969). Holzknrecht (2004), found speakers using visual aids, twice as successful in getting their message across as those who used none; 67% vs. 33%, also that an increased audience information retention is fivefold from 10% to 50%. The above findings highlight the fact that visuals are very powerful aid in training.

Teaching practical courses in tertiary institutions of learning is becoming cumbersome because of the increasing population growth and lack of complementary training materials; example; training films. The number of tertiary institutions in Nigeria have increased over the years, both private and government owned, but the population of candidates struggling to find a place in any of these institutions of higher learning far surpasses the schools on ground. This is not unconnected to the lack of adequate governmental planning for population control and education. An examination of figures 1 and 2 highlight examples of the admission growth rate in Nigerian universities, and these charts show the ever increasing growth in student intake in the stipulated years;

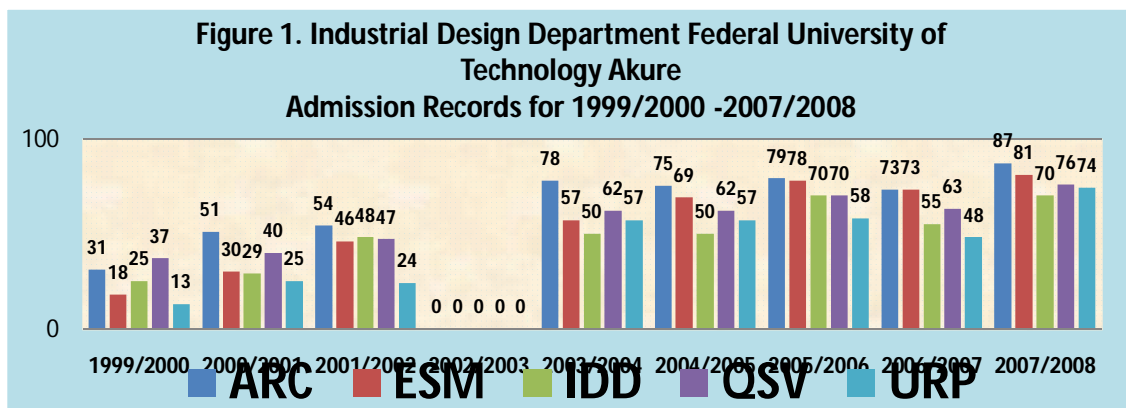


Figure 1: SET Admission Records 1999/2000-2007/2008
Source: The Federal University of Technology Akure, Examination and Records office.

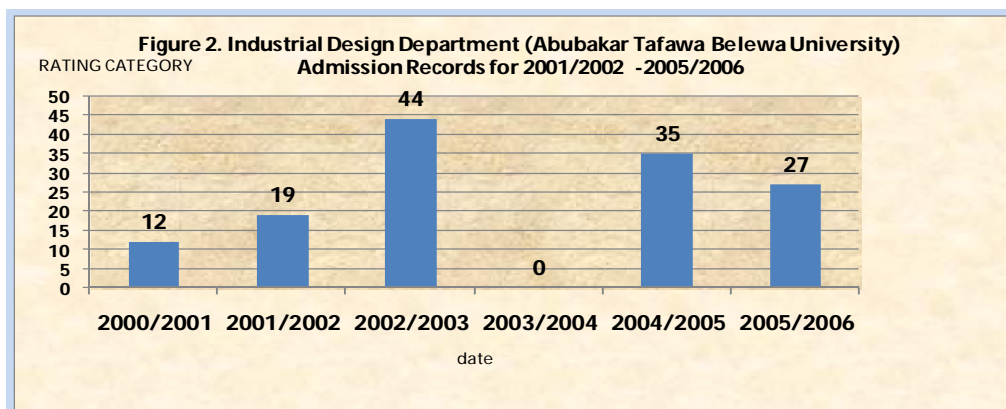


Figure 2: IDD ATBU Admissions Records 2000/2001-2005/2006
Source: Files and Records Office, Industrial Design Department, Abubakar Tafawa Balewa University Bauchi January, 2006.

Records show that while there is a continuous increment of admission figures for higher education there is also a steady decrease in the population of staff in the same schools to train them; (Punch, 2006 and 2007, The statistical digest on teachers and lecturers in Nigeria 2007, volume 1, number 3,)

With the above state of affairs; that is over populated schools, the ever dwindling number of lecturers in the system and a shortage of training materials like films; there now exist an urgent need to support the system using skill acquisition training films in all tertiary institutions of learning and especially the Open University.

To address the above problem, an attempt was made to design, develop and produce a training film for ceramic students in tertiary institutions of learning, with the aim to promote skill acquisition in ceramics, using indigenous demonstrators and materials, document the process of production and validate the film package.

Nigerian movies just like the theatre has been heavily influenced by the British culture, (Oyewo, 2003; 81). The first film in Nigeria financed by an American grant was *Kongi's Harvest*. This film written by Wole Soyinka, produced by Calpenny films and directed by Ossie Davies was said to have been seriously edited and made to have an American slant so as to enable it get appreciated by an international audience (Okome, 1995).

The need to produce indigenous training materials at this time becomes imperative as the few training films in the market are foreign with alien contents. The film policy for Nigeria is quite explicit in its provisions on education, stating among others that the state shall through appropriate legislation;

(f) Encourage the deliberate exploitation of film potentials for the advancement of national unity, social co-existence, education, science and technology and the peaceful resolution of social problems and conflicts in our society. (Film policy, n.d; 6 in Anyanwu 2000)

This study covered the design, development and production of a training film package for teaching, titled; *Introduction to Wheel Throwing*. It delineated specific areas like; types of throwing wheels, preparing clay for throwing, throwing cylinders and simple open bowls, turning, decorations (engraving, sprigging and burnishing) and sticking up of handles on table wares

The study has also evolved the development of a guide for testing the package to authenticate its viability.

Method

The most important consideration when designing and developing a product is that it should perform its intended job correctly, and so a careful breakdown of how the product was created is vital in the process of production. The aim of this training film is not only to help teach practical courses conveniently in classroom and serve as back-up after class, but to help students who do independent study of practical courses.

In consequence Kneser (2001) and Mikis (2005) maintain that the exploitation of Information Communication Technology (ICT) and its paraphernalia to allow students study partly or completely at home is a welcome initiative.

This research adapted an experimental product design and development approach, using Caborn, Mould and Cave (1989) procedure for the production of design technology products. In the study a validity test in the form of a critique replaced the test stage. All tertiary institutions that teach their students *Wheel Throwing in ceramics* at three hundred levels or its equivalent; form the population for the study. The discrete groups comprise students of ceramic option who are in three hundred levels at the Industrial Design Departments, of the Federal University of Technology, Akure Nigeria and the Abubakar Tafawa Balewa University Bauchi Nigeria respectively offering *Wheel Throwing in Ceramics* (IDD 331 &332).

The development of this training film was executed in three phases that is; (I) The Pre-Production, (II) the production. (III) Post Production.

Pre-Production Phase; Materials concerning all aspects of the production were gathered at this stage which involved the tasks outlined as follows:

1. Development of a story line: an outline, a treatment and a storyboard based on the course IDD 33; *Introduction to Wheel Throwing in Ceramics* (The FUTA Calendar 2005). The syllabus was broken down into four segments and recorded as lessons / instructions.
2. Research Materials: materials were gathered from the library, internet, interviews of past students of the course, and also sourced for equipment.

3. Shooting Plan: The researcher prepared a list of video shots (CUE Sheets) that was used as a template for the shooting.
4. Estimated Budget: The researcher prepared a budget to cover the cost of production. i.e.; The Production Crew, Camera man, Studio, Editing and all other Expenses

Production Phase: This type of production was mirrored towards *The Grierson prototype*; which mandates that film productions should be factual and realistic in presentation (Ekwuazi, 1996). To start production, video recording sessions was done of the different areas of Wheel Throwing in ceramics, notably areas bothering on the different types of wheels they use in throwing, the process of clay preparation, throwing basic wares like cylinders and flat bowls and the various techniques for finishing thrown wares at green ware level. For recording, camera settings were fixed at; automatic exposure (AE Easy), this rendered the focus meter, spot meter, white balancing for both in-door and out-door automatic, and programmed to record at 4:3 format. The footages were recorded on Digital Video tapes and brought into the studio for capture. Audio recording sessions for the narrative as voice-over for later insertion on the film were produced at this juncture. This was facilitated by the use of a headphone rigged with an external microphone plugged on to the computer's central processing unit. To capture both audio and video files for this project, *Ulead Studio 6* software was used, while the editing was done with *Adobe Premiere 6.5*.

To begin the package was opened on the computer by clicking on *Start, - My Programmes - Ulead Video 6*, the package is allowed to boot, then clicked on *Capture-* and adjust the capture settings. For the *Audio Capture Settings*, the following parameters were used; for Mode, *Stereo*, for Audio Bit rate (kbps); *224*, while for Sample Rate; *44100*, now click on *Audio*, put on the microphone and click on *Record*, an *Audio Mixer* pops up, click then on *Record* to start recording, while you start reading the script. To *Stop* click on the *Record* button again, and finally to *save* click on *Finish*, and *Create Sound File*, then type in a file name and click *Save*.

The story board earlier made was strictly followed, and the demonstrations were conducted by experts in the subject area. The shots comprised of;

- i. Various types of throwing wheels.
- ii. The various stages in the process of preparing clay for throwing.
- iii. Throwing; starting with cylinders and simple open bowls.
- iv. The various ways of finishing at green ware level i.e. Turning, Decorations (engraving, sprigging and burnishing) and sticking up of handles on table wares.

Post Production Phase: At the end of the shooting sessions, the *rushes / dailies* were taken to the studio; where they were captured. The process of capturing was done using two techniques; 1. Direct adaptor assisted capture by means of a capture card using an Audio Visual (AVi) cable as the connecting port and 2. Direct Capture using a Universal Serial Bus (USB) cable directly into the editing environment.

It is worthy to note here that there are more convenient methods e.g. the use of an IEEE1394 *Firewire* cable for direct DV transfer; but such facilities were not available to the editor at the time of this production.

Editing at this stage involved the cutting-off of unwanted footage, the introduction of scenic transitions, effects, and adjustments of some clip speeds. Audio narratives earlier recorded were now inserted as voice-over; these were inserted onto the *Adobe Premiere 6.5* editing time line and properly synchronized with the visual time line. At this juncture a background sound track was inserted to serve as filler. The editor adjusted the *audio wave string elastic bands* to make the background sound track undulate in synchrony with the narrators' voice over.

After this, an *Answer Print* (film produced for critique) was produced, which was then reviewed by the production editorial team. Observations made by the review team were corrected by a final editing. The final product (a set of four films with the following durations; Part I: 17 min.14 sec. Part II: 15 min.56 sec Part III: 20 min.35 sec Part IV: 22 min.57 sec) was produced in two formats, one as a *Motion Picture Expert Group Two* (MPEG 2) and the other as a *Video Compact Disk* (VCD).

Final Film Print

After the validation exercise, the editor went back to the timeline and amended the *post-mortem* recommendations. The new film was re-encoded using the MPEG 1 and MPEG 2 formats. When encoding was through, the new film file was now prepared and transferred into a master disk. To

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do that, authoring and burning software like NERO, was used to package the film into the two formats where they had been encoded; MPEG 2 and MPEG 1 (VCD). The film in MPEG 1 was burnt into a *Video Compact Disk* (VCD) format because this genre of films has a lower resolution but has the advantage of a manageable size for compact disks and its compatibility with almost all media players makes it more accessible and easy to use and this is why it was recommended for the targeted users.

Results and Discussion

Validation Results

At the completion of the film’s production, it became necessary to run a validity test involving stake holders that are likely going to use the film when it is released. This was to ascertain its appropriateness to the curriculum content. To realize this, an assessment form (*Answer Print Evaluation Form*) was drawn up and the form attached with the film was then distributed amongst members of the editorial team and other expert groups; that include; lecturers, professionals in the field of graphics and ceramics and also Students.

Below is a summary of the twenty (20) respondents’ grades;

Answer Print Evaluation Result for Wheel Throwing Film

Category and number of respondents;

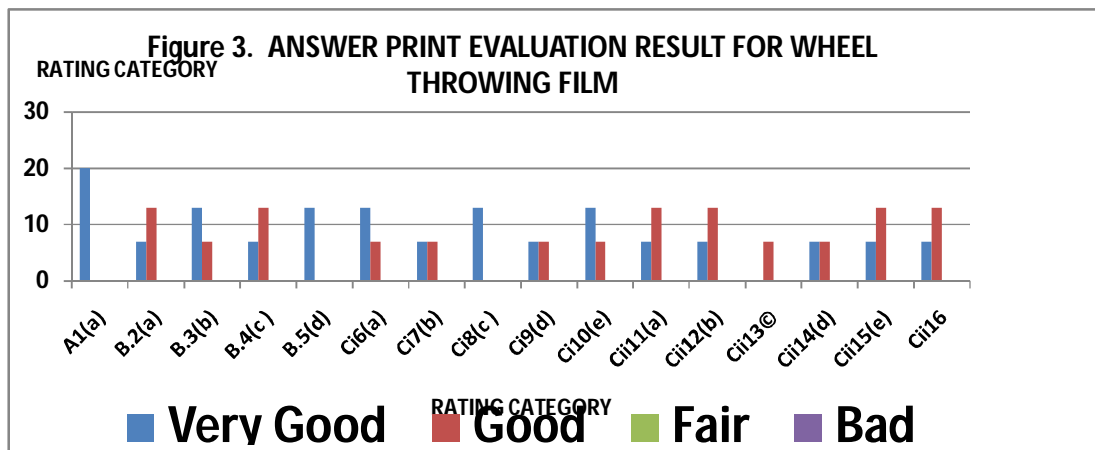
1. The film’s editorial team; (5)
2. Expert group; (ceramics) Lecturers (3) and practicing ceramists(2); to ascertain the films content validity, in the area of ceramics as it relates with the course curriculum content;
3. Expert group; (graphics) Lecturers (4) to ascertain the films content validity in terms of visual appreciation and graphic design standards.
4. Students (3) who have attempted the course before going for industrial attachment.
5. Production staff of a local television station(3)

Evaluation Criteria (Rating/Scale)	VG	G	F	B
A. Objectives:				
1 (a) Clearly Stated	20 (100%)	0	0	0
B. Content:				
2 (a) Coverage of Subject matter	7 (35%)	13 (65%)	0	0
3 (b) Mastery of subject matter	13 (65%)	7 – (35%)	0	0
4 (c) Organization of content for effective skill acquisition	7 (35%)	13 (65%)	0	0
5 (d) The design format of the package	13 (65%)	0	0	0
C. Skill Acquisition Package Attributes				
i. Video				
6 (a) Clarity	13 (65%)	7 (35%)	0	0
7 (b) Hue, Chroma & Saturation	7 (35%)	7 (35%)	0	0
8 (c) Transitions & Effects	13 (65%)		0	0
9 (d) Bit rate	7 (35%)	7 (35%)	0	0
10 (e) Overall quality of Video	13 (65%)	7 (35%)	0	0
ii. Audio				
11 (a) Clarity	7 (35%)	13 (65%)	0	0
12 (b) Surround Value	7 (35%)	13 (65%)	0	0
13 (c) Bit rate		7 (35%)	0	0
14 (d) Overall quality of Audio	7 (35%)	7 (35%)	0	0
15 (e) Quality of Title Graphics - Colour	7 (35%)	13 (65%)	0	0
16 -Lettering	7 (35%)	13 (65%)	0	0

KEY:
VG: Very Good
G: Good
F: Fair
B: Bad

The following is an analysis of the validation report; which is here delineated with the aid of a column chart figure 3. Twenty forms each attached with a sample video compact disk were distributed. Twenty forms were filled and returned which amounted to a 100% response.

Figure 3. A column chart answer print evaluation result for wheel throwing film



Discussion

The evaluation form had 16 items grouped into three main categories and two sub-headings. On the first category which asked the respondents of the clarity of the film’s objectives, the respondents were unanimous in their response of very good which was 100%.

The category on content has four items identified as; coverage of subject matter, mastery of subject matter, organization of content for effective skill acquisition and the design format of the package. Sixty five percent (65%) of the respondents rated the subject matter coverage of the film as good, while 35% of the respondents rated it as very good. The rating on mastery of subject matter, 65% respondents rated the package very good while 35% of the respondents rated it good. In the organization of content for effective skill acquisition, 35% of the respondents rated it very good while 65% of the respondents rated it as good. On the rating of the package design format, 65% respondents rated it very good, while 35% of the respondents did not respond due to lack of knowledge or incompetence in the subject matter.

The category on skill acquisition package attributes has two sub-headings; Video and Audio, under which you have five and six items respectively.

The category on video rating are; clarity; hue, chroma and saturation; transitions and effects; bit rate and overall quality of video. Sixty five percent (65%) of the respondents rated the film’s video clarity as very good, while 35% of the respondents rated it as good. On the rating on hue, chroma and saturation, 35% respondents rated the package very good while 35% rated it good.30% did not respond which could be attributed to the respondents lack of knowledge or incompetence in the subject matter. On video transitions and effects, 65% respondents rated the film very good, while 35% of the respondents did not respond due to lack of knowledge or incompetence in the subject matter. The rating on video bit rate, 35% respondents rated the package very good while 35% rated it good.30% did not respond which could be attributed to the respondents lack of knowledge or incompetence in the subject matter. On overall quality of video, 65% of the respondents rated the film as very good, while 35% of the respondents rated it as good.

The category on audio rating are; clarity; surround value; bit rate and overall quality of audio; On clarity of film’s audio, 35% of the respondents rated the film as very good, while 65% of the respondents rated it as good. Audio surround value was rated by 35% of the respondents as very good, while 65% of the respondents rated it as good. Audio in respect of bit rate; 35% respondents rated the package good while 65% did not respond which could be attributed to the respondents lack of knowledge or incompetence in the subject matter. On overall quality of audio, 35% respondents rated the package very good while 35% rated it good.30% did not respond. Finally on quality of title graphics in respect of colour and lettering, 35% of the respondents rated the film as very good, while 65% of the respondents rated it as good respectively.

Findings

After the development and production of this training film for ceramics students, titled *Wheel Throwing in Ceramics*; the following findings were realised: that is; that it is possible to produce and document the process of producing training films for skill acquisition using indigenous demonstrators and materials; and after validation and testing affirm, that such films can be used to ease the strain of training high population practical classes in the third world.

Conclusion

The study has identified the pressure of teaching practical courses in tertiary institutions in the third world especially in Nigeria. It noted the major causes as that of over population of student intake into the tertiary institutions and the lack of adequate support materials towards making teaching convenient, especially where it relates to practical oriented subjects. The study therefore designed and developed a skill acquisition film package for students of ceramic option who are in three hundred levels or its equivalent from tertiary institutions that offer Industrial Design (IDD 331 &332) Wheel Throwing in ceramics. This is expected to serve as a teaching aid; for the teachers of the course, as support material to students for back-up after class and also for people who do independent study. This study hopes to serve as a catalyst for further development and generation of more learning support materials in the third world and Nigeria specifically.

Recommendations

Now that it is possible using indigenous demonstrators and materials to develop and produce training films for skill acquisition in ceramics; the following recommendations are hereby suggested, that;

- a. effort should be made to see how other related practical courses can benefit from this initiative;
- b. train the trainer programmes should be introduced and encouraged to enable teachers, lecturers and technologists who are expected to use these packages learn and optimize their usage;
- c. proper policy initiatives be put in place to build the use of electronic learning materials into Nigerian educational curriculum;
- d. necessary infrastructure (e.g. LCD projectors, display screens, public address system, energy etc) be put in place to enable convenient use of these packages;

Picture Highlights of the Training Film: Introduction to Wheel Throwing in Ceramics



Part. 1. Film; Types of wheels



Part.2. Film; Clay preparation



Part. 3. Film; Throwing



Part.4. Film; Finishing

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