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CRYSTAL-GAZING THE 6-3-3-4 SYSTEM:  
IMPLICATIONS FOR RESOURCES DEVELOPMENT

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ABSTRACT

The study involving a sample of 62 educators adopted modified Delphi Technique to predict the 6-3-3-4 curriculum framework up to the year 2010. From there it projects the relevant needed curriculum resources:- Personnel and materials. Results of the  $4 \times 5$  contingency chi-square calculation show significant differences ( $<0.01, \chi^2_{\text{cal}} = 40.1963$  and  $54.6046$  respectively);  $\chi^2_{\text{crit}} = 26.217$ ) in both desirability and occurrence indices as values attached to suggested innovations and how soon expected. Based on four curriculum block areas and high percentage of responses on the indices, it becomes conclusive that higher education curriculum need major innovations to cater for the impending needs if future shock within the entire educational system must be avoided. Greater attention to productivity in areas of agriculture, science and technology must be given from the primary level. Findings also point to the need for higher education curriculum to sharpen its focus on the training of curriculum personnel, resources management and technology, and emphasize greater localization of instructional inputs for optimum performance of the 6-3-3-4 system.

"Context of the Study

Educating today's youth for an uncertain tomorrow has always been a major problem confronting great educational philosophers, curriculum experts and parents alike. From Aristotle through Alexander and Plato to the twentieth century curriculum experts this has been an unresolved problem. Perhaps that is why Bruner (1977) emphasizes structure of learning to enhance transferability within time and space.

In formal education the curriculum provides all necessary agenda for such future-oriented and planned activities. Nigeria has in recent years attempted to redesign her educational system through major curriculum changes to reflect her current and future needs. She has through the 6-3-3-4 system redesigned not just the structure but more importantly the contents of curriculum as enshrined in the National Policy of Education (1981). Science and technology have received greater emphasis from the primary through the tertiary levels. But apart from implementation problems currently being faced in these directions and the level of readiness of the schools for implementation, one may also question the validity of the programme in terms of its future and transfer values, given its shoddy planning, undowon implementation and slow response from institutions of higher education.

All successful human activities of importance start from judicious planning based on reliable information and data. Such futuristic data involving particularly envisaged image projection could be predicted with scenarios, trend extrapolation or the Delphi technique. Toffler (1970) and Til (1974), among other futurists, have successfully adopted one or more of these techniques in their educational "crystalball gazing" of the future. Delp, Thesen, et. al (1977) who appreciate the Delphi technique as being highly capable of providing forecasts by way of identification of future developments and their effects say:

... the Delphi method is superior to conventional uses of groups in problem solving or fore-casting

(p.173).

Still on the validity and superiority of delphi technique over the conventional approaches in fore-casting, Delbecq et al. (1975), after an empirical study, confirms the superiority of the characteristics and performances among the delphi-based group over the control. Their findings also provide empirical evidence for the relative accuracy of delhi estimates compared to individual or face-to-face group estimates. The implication of the above findings is that the delphi approach may be a very reliable technique for appropriate forecasting and projection as related to the curriculum image for the twenty-first century vis-a-vis the relevant demands in terms of resource recruitment, development and utilization. With newer technological developments, better working tools, and better understanding of the society, the delhi approach can produce very reliable projections which are neither too utopian nor extremely infernal for the 6-3-3-4 system.

This paper believes that apart from re-emphasizing curriculum image projections, relevant information and data can be provided to inspire both curriculum experts, educational planners, technologists and teachers to think more seriously about future of education in Nigeria, particularly as it concerns human and material resources recruitment, development and utilization and as reflected within the framework of higher education curriculum vis-a-vis the immediate and long term needs of the society. It is the desire of this paper to create the

necessary awareness about the twenty-first century curriculum demands and necessary innovations in both the curriculum structure, content and curriculum engineering so that adequate focus can be sharpened in the required direction and thereby absorb with much ease the impending "future shock" within the educational sector.

Havelock and Huerman (1977) and Ezeochia (1988) agree that adequate planning is the most important factor that facilitates progress in educational ventures. Such planning, it must be re-emphasized, has firm anchorage only on adequate and scientific projections. In that wise therefore the school will be better equipped through the curriculum to fulfil the functions for which it was designed and not just, in Illich's (1974:77) words, "to create jobs for school teachers no matter what their pupils learn". Another importance of this study lies in its ability to feel the pulse of the educators as to the desirability of some of the innovations envisaged. Seen through the lenses of different categories of personnel within the educational sector, including students who directly feel the pinch of educational practices and processes, the study stands out as an empirical evidence of what the society desires in the education of their children.

#### The Study Problem

Whether related to only the higher education curriculum or the 6-3-3-4 system as a whole, both the Nigerian conservatives and their radical youths agree that the educational system needs major overhauling. They agree that Nigerian schools

less effective than they should be. Although disagreement exists in terms of declining standard of education, everyone agrees that schools should respond better to the needs, demands and aspirations of the future. That means the Nigerian educational system must in future produce sufficiently functional, practical, creative and more committed citizenry. In order for the system to achieve this up-hill task, the following questions become pertinent for the study.

Given Nigeria's current socio-political, economic and educational situation vis-a-vis Nigeria's expressed desire and need for scientific and technological development:

- (a) What aspects of the 6-3-3-4 system require changes and innovations between 1989 and 2010?
- (b) What target dates can such desired changes and innovations materialize?
- (c) What are the implications of such innovations on higher education curriculum vis-a-vis resources development and utilization?

#### The Research Hypotheses:

Based on the operationalization of the study problems specified above, it is hypothesized as follows:

- (a) There is no significant difference in the desirability index of respondents on the different aspects of the 6-3-3-4 system which require changes and innovations between 1989 and 2010.
- (b) There is no significant difference in the opinion of respondents on the target dates accepted for major curriculum changes and educational innovations.

Subject

The sixty-two randomly selected participants in the study were drawn across the 6-3-3-4 system and beyond. They include 30 males and 32 females with age ranging between twenty-five and fifty years. Forty respondents (64.52%) were between 26 and 35 years. Their occupation was limited to the educational sector. Education students (14 = 22.5%), primary and secondary school teachers and university lecturers (35 = 56.45%), education administrators including principals and ministry officials (8 = 12.91%), and other educational personnel (5 = 8.06%). The qualifications ranged from doctorate degree to associateship certificate in education as shown on table one.

Table 1

Distribution of Respondents by Qualification

Qualification	N.	%
Doctorate degree	5	8.06
Masters degree	5	8.06
Bachelors degree	20	32.26
PGDE	5	8.06
HND/NCE	18	29.04
OND/ACE	9	14.52
TOTAL	62	100.00

The sample was drawn from Cross River and Akwa Ibom States through the co-operation of some teachers and students, be-

Sandwich and regular. Wide sample distribution was necessary for a generalised applicability of the findings.

### The Instrument

Three sets of instruments were developed for the study. The first consisted of a simple listing of eighteen items related to curriculum resources, curriculum design, implementation and evaluation areas for ranking in their order of priority. This instrument was limited to only twenty students randomly sampled from both the third and final year education undergraduates. The items were designed to provide adequate evidence to guide the development of the second and final Delphi questionnaires for the study.

Based on the ranking results, a thirty-nine-item Delphi questionnaire was developed. It was validated by two experts independently and their suggestions integrated to improve the validity and reliability of the instrument. Twenty-three of the items were based strictly on curriculum resources while sixteen focused on the general field of education and educational policies and practices. These were later categorized into four curriculum block areas for analytical purposes. The instrument at their second and third phases concentrated on desirability and occurrence indices. It was pertinent to combine the two focuses to avoid the inconvenience of repeated instrument administration inherent in the Delphi technique. It also enabled the respondents to have a simultaneous concept of both desirability and probable date of occurrence to facilitate candid responses. The degree of

desirability of the items ranged from zero desirability to four the highest desirability. The projected years of occurrence progressively shrunk from six to five for twenty-one years so that the targets extrapolated are years 1995, 2000, 2005 and 2010. This was based on the conviction that period of twenty-one years was long enough for major educational changes and innovations to materialize through the curriculum in spite of economic and social system breaks which may occur in-between.

### Procedure

Some of the instruments were personally administered to accidentally sampled senior ministry officials and graduate education students and to randomly sampled lecturers in the faculty of education. A set of final year educational undergraduates was also randomly sampled through one of them. Two primary school teachers also assisted, using the stratified random sampling technique, to select their colleagues in schools in Calabar. One sandwich student sampled her colleagues at Ogoja, one at Calabar and another at Uyo. Out of the seven copies of the instruments sent out, sixty-four were retrieved indicating a response rate (RR) of 91.43. Two of the questionnaires returned were however rejected for partially seriously inadequate responses.

### DATA ANALYSIS AND DISCUSSION

The relevant items were grouped into the following curriculum component blocks to ease computation:

- (a) Training, Technology and Resources

- (b) Content-related areas
- (c) Methods, Objectives and Evaluation
- (d) Miscellaneous area.

The  $4 \times 5$  contingency chi squares statistics was designed on the basis of the Delphi questionnaire responses to test the hypotheses earlier proposed. Thereafter, the simple percentages were computed for reporting the findings as related to each of the delphi questions and based on desirability and occurrence indices. These are illustrated on the relevant tables and discussed below.

From the total responses on the delphi questionnaire, the data for testing the two hypotheses were generated for the relevant chi square computation. The results (see tables 2 and 3) show that at degrees of freedom of twelve ( $df = 12$ ), the calculated value of the chi squares ( $\chi^2 = 40.1963$  and  $54.6046$  respectively) were greater than the critical value of 26.217 indicating significant difference at an alpha level of 0.01 for both desirability and occurrence indices. That means the responses made were very discriminatory. This therefore helps to increase the confidence level of the researcher in terms of the two indices of interest.

TABLE 2

Contingency Chi Square table of Desirability Index

Desirability Index of selected specific items	Curriculum Block Involved				
	Training Technology & Resources	Content Areas	Objectives & Evaluation	Miscell Areas	Total
No idea	31	14	13	33	97
Very undesirable	65	19	34	42	160
Undesirable	101	38	59	45	243
Desirable	172	108	133	93	506
Very desirable	267	207	299	231	994
Total	636	386	448	444	1994

$$\chi^2 \text{ cal.} = 40.1963$$

$$df = (5 - 1) (4 - 1) = 4 \times 3 = 12$$

$$\chi^2 \text{ crit. } 0.01 = 26.217$$

P < 0.01: Significant difference

The results are sufficient indicant of the values the respondents attach to such changes and innovations along with when they expect such educational innovations to occur.

Tables 3 and 4 show the occurrence and desirability index at a glance. From these tables it is evident that a total of 69.03, 81.61%, 76.34% and 72.97% of the

TABLE 3

Contingency Chi Square Table of Opinions  
on Index of Probable Dates of Occurrence

Occurrence of Index of selected specific items	Curriculum Block Involved					Total
	Training Technology & Resources	Content Areas	Methods Objectives & Lives & Evaluation	Miscel Areas	Total	
Year 1995	218	153	164	205	740	
2000	113	69	105	81	368	
2005	125	79	73	68	345	
2010	160	68	101	60	389	
Indefinite	36	18	13	40	107	
Total	652	387	456	454	1949	

$\chi^2$  cal = 54.6046

df = 12

$\chi^2$  crit = 26.217

P < 0.01: Significant difference

respondents highly desire positive innovations in each of the curriculum component blocks as specified earlier. Such desires, according to available data on table 3 are likely to be fulfilled between now and the year 2010.

A further analysis of the available tables point

TABLE 4

Desirability Index of Selected Component Blocks

Desirability Index of selected specific items	Curriculum Block Involved						Miscellaneous Areas
	Training Technology & Resources		Content Areas		Methods Objectives & Evaluation		
	N	%	N	%	N	%	N
No idea	31	4.87	14	3.63	13	2.90	33
Very undesirable	65	10.22	19	4.92	34	7.59	42
Undesirable	101	15.88	38	9.84	59	13.17	45
Desirable	172	27.05	108	27.98	133	29.69	93
Very desirable	267	41.98	207	53.63	209	46.65	231
Total	636	100	386	100	448	100	444

a glaring picture of Nigeria's 21st century education scenario discussed under the relevant sub-areas below.

Skills Development

Ninety-six (96%) percent of the respondents accept desirability for more practical and marketable skills to focus of the curriculum. Over 83% of them agree that such is likely to materialize within the next twelve years. Over 91% (91.84%) of them want skills related to agriculture, science and technology to be better emphasized in the curriculum and educational policies, while 87.79% want the curriculum focus more on productivity rather than certification. 1995.

Over 85% of them agree that problem solving skills should be a major desirable emphasis in the educational system through the curriculum. This, to 76.6%, should take place before 2010.

### Sex Education

That sex education should be introduced into the primary school curriculum is not popular with the respondents. Only 40% of them saw it as very desirable or likely to occur by the year 2000.

### Curriculum Methods and Materials

Over 77% emphasize the desirability of the curriculum to be more personalized and individualized. Only 21.27% agree that it is likely to occur by year 1995, and 23.4% say 2000 while 19.15% put it at year 2005. However 2.13% say it will never occur in Nigeria.

In relation to basing methods and materials more on clearly defined objectives and specified learner characteristics 89.58% agree to its desirability; 68.63% of them call for this before 1995. so also the increasing use of self-instructional materials is highly desired by 80.70% of the respondents; 61.82% of them call for it before 1995. Only 20% say it will be possible in Nigeria only by 2010.

### Continuous Assessment

According to available data 79.59% of the respondents highly desire that continuous assessment should be increased to 75% while the end of course examination should take only 25%. Thus, 69.39% agree should occur before 1995.

large pools of sharper criterion-referenced evaluation instruments and computerized student evaluation results are also desired by 75.51% and 82% of them respectively. Over 82% of them want this before 2005.

#### Objectives

The need for clearly defined programme objectives is highly desirable in Nigeria. For example, over 63% of the sample want curriculum programme evaluation instrument to be based on such objective as:

75% of primary three pupils in public schools should read newspapers with 80% accuracy.

This according to 61.54% of them, should be possible by the year 1995.

#### Early Childhood Education (6 weeks to 6 years)

The available data show that 78.8% want early childhood education (6 weeks to 6 years) to be instituted in Nigeria at least with 50% Federal Government sponsorship because it is desirable. This should be adequately emphasized and systematized by the state and local governments before the year 2000 as speculated by 75.57% of the respondents.

#### Distant and continuing Education

Over 54% of them see this as being a very desirable programme which the Nigerian education should emphasize. It should incorporate the radio, television, video and prints which are distributed through zonal centres all over Nigeria. Over 80% of them want this to happen before 2000. More than 86% of them

respondents agree that adult education should better emphasize adaptation to innovative demands in the society. Over 50% of them agree that this type of emphasis should occur by year 1995.

### Instructional Gadgets

To 70% of the respondents, it is not utopian but real burning desire to introduce more tape recorders, television sets, films and other electronic gadgets into every Nigerian classroom. This will be possible by the year 2010 according to 93.88% of them.

### Computer and Programmed Instruction

According to 67.08% of the respondents the computer and programmed instruction are highly desirable all over Nigeria. But this cannot occur until about the year 2005 according to 74% of them. As much as 30% of them agree it is possible by the year 2010.

### School Media Centre

All respondents (100%) agree to high desirability of this. But while 60% agree that it will occur by year 1995, 18% agree to 2000. Only 2% say it will never take place in Nigeria although it is highly desirable.

### Reduction in contact hours

As a result of increasing influence of educational technology, it is desirable, according to 55% of the respondents to reduce teacher-student contact hours and thereby attend to the likely increasing school enrolment. According to UNESCO data in Pandit (1988) about 92.2% of Nigerian children aged 6-11 years

will be at primary school by year 2000. This can be a well development but reduction in contact hours cannot occur Nigeria until after 2010, according to 63.8% of the respondents.

#### Renewal of Teaching Licence and Microteaching-based Training Programmes

This is agreed by 63% and 54% respectively as being desirable. Their possibility of occurrence is however remote. According to 63.40% and 60% of them respectively, they are likely to occur until the year 2010. They agree that it is desirable that up to bachelors degree in education, all teacher training programmes should be based purely on micro-teaching other laboratory-based techniques.

They agree that teachers should renew their teaching licence periodically. This, to 62% of the respondents is very desirable but it may not occur until 2010 according to 71.15% of respondents.

#### Graduate Teachers for Primary School Teaching

Over 83% agreed that this is highly desirable. Its urgency is expressed by 51.02% who say that it should occur by year 2000. Specialized Classroom at all educational levels

This is a very desirable component as expressed by 89.02% of them. If it is seriously needed by the people it could start to materialize by year 2000 as expressed by 61.1% of them.

#### Federal Government Sponsorship for ages 6 - 11

This seems to be one of the most desirable educational policies as agreed upon by 98.15% of the respondents. Over 90% agree that the Federal government will make it mandatory.

every Nigerian child aged 6 - 11 years to attend primary school free of charge by the year 1995.

#### b. Greater Autonomy and Eradication of Boarding Facilities at Secondary Schools

This is very unpopular with the respondents. Only 12% agree that such policies are desirable. About 20% agree it will occur by year 2010 but 18% say it will never occur in Nigeria even after that year.

#### c. Educational Personnel and Services

It is desirable to have such educational personnel as the guidance counsellors, special educators, health attendants, school psychologists and the media personnel. Over 86%, 64% and 69.39% agree to the high desirability of having at least one of these educational personnel and special services in each school. About 70% of them agree this could occur before 2000.

#### Performance-Based Salaries/Promotions

Nearly 88% agree that performance-based salary is highly desirable for teachers and 53.8% of them agree it should occur by the year 2005. Nearly 10% agree it will never occur in Nigeria.

#### d. Proposals for Higher Education Curriculum and Resources Development

Based on the projected image of the Nigerian education the following agenda are proposed:

##### (a) Skills Development

Higher education curriculum must re-emphasize the development of marketable skills particularly those related to agriculture, science and technology. In this way increased national productivity can be achieved within minimum time. The obvious needs for pre-service, in-service and post-service training and

retraining programmes for the continued all-round development of human resources and to meet the changing needs of the future are re-emphasized. Maximum utilization of such developed marketable skills should also be encouraged through adequate reward system. The role of individual commitment is however not unrelated to maximum utilization.

(b) Teacher Training Programmes and Instructional Effectiveness

The teaching profession must focus more on improving instructional effectiveness. It is proposed that in future teachers at the secondary school level should have a first degree in subject area thereafter a diploma in education to qualify for registration and a teaching licence renewable by passing prescribed professional examination on a five to ten yearly basis. This agenda is necessitated by the rapid changes within the educational sector and subject fields as opposed to teachers conservative nature.

Added to the above, the National Universities Commission should make it mandatory for all University Academic Staff to have a teaching qualification (Postgraduate Diploma in Education at least). The course design should emphasize curriculum development and educational psychotechnology. The target date for this should not exceed the year 2000.

Moreover, all teacher training programmes should be based on laboratory approaches where mini and micro teaching techniques are mandatory. The Federal Government along with various educational institutions are therefore called upon to improve the equipment of teacher training institutions ~~and their respective~~ particularly as related to modern teaching techniques.

(c) Retraining Graduate and NCE Teachers for Primary Schools

Currently, most holders of Nigerian Certificate of Education (NCE) and bachelor degrees in education have no preparation for primary school teaching. The policy wants the minimum teaching qualification at level to be the NCE. They all need a re-orientation. Faculties and Institutes of Education ~~should~~ take up the leadership rôle in this challenge of training and re-orientation so that the purpose

redeploying the NCR teachers to the primary schools will not be defeated. There is also an immediate need for developing courses in junior primary methodology for the pre-service, in-service and post-service training of teachers.

#### (d) Improved Instructional Programme Objectives

Among the weakest links within the instructional sector in this country are the programme objectives, usually too amorphous for any appreciable fulfilment. Higher education curriculum must emphasize more researches into programme objective specification. Why can the objectives of primary education not state definable targets? For example, it may be more beneficial to state the objective like:

... 80% of Primary Three Pupils in public schools should be able to read any Nigerian English newspaper with 90% accuracy and 80% comprehension.

Such an objective has national norm in view apart from being quantifiable and equally meaningful, observable and culturally related. Such an objective can be a more reliable basis for selecting the matter, materials, methods, learning experiences and evaluation instruments and techniques than the global ones such as stated in the National Policy or the national subject curriculum.

#### (e) Open Learning and Distance Education

This approach is increasingly being used worldwide against problems of shortage of human resources, professional incompetence and for updating professional knowledge and proficiency.

The Open University of United Kingdom, Everyman's University of Israel and the Philippine University of Life are some examples. Kenya, between 1969 and 1979, used the Radio and the prints to train over 10,000 teachers for improved competence and job credentials for her schools.

Higher education curriculum can operate various flexible curriculum options to allow for people who, for various economic,

social and physical reasons cannot take up the full-time study but still benefit from their programmes. Evening and week-end courses, occasional studentship, contract schedules, mature peoples programmes along with the "summer" and correspondence courses which combine prints and electronics with minimum face-to-face interaction can be best options for Nigerian adult workers if adequate accreditation and credibility can be established and maintained for such programme. Higher education curriculum must incorporate most of such options for human resources development particularly as it relates to agriculture, science and technology. Development of human resources is fundamental to development of material resources of all types description, so it must be given the priority.

#### CONCLUSION

From the above projections two possible camps are likely to emerge: the Technologists and the socials. If this occurs the likely conflict between their view points is inevitable. Technologists may be more accused of stressing things ignoring people.

In Nigeria both socials and technologists need to work closer co-operation because we need technology, other people educational system for Nigerians of the 21st century and higher education curriculum change and innovations are no ingredients for national economic, social and political developments.

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