

## THE DEVELOPMENT OF APPRENTICES IN THE CONSTRUCTION INDUSTRY A BOTSWANA CASE STUDY

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*The demand for adequate training of artisans and apprentices in the construction industry cannot be over emphasized in view of the rapid changes the industry is undergoing. Many of these changes are continuously taking place especially in the areas of utilization and maintainability of construction materials. The local vocational institutions should vigorously embark on reviewing the vocational education and training. This will result in the supply of cadres with acceptable quality of training in order to meet the new challenges of the building industry. In spite of ten years of involvement by the local vocational institutions in the training of artisans and apprentices there is still shortage of skilled manpower. The aim of the paper, therefore, is to assess the relevance of the vocational training programs and the trends of output of artisans and apprentices trained before and after the second construction boom from 1986 to 1990 and 1992 to 1996.*

### 1 INTRODUCTION

The rational approach to the utilization and maximization of technical cadres in any market economy is to set up adequate vocational education and training programs. Presently, the Construction Industry Trust Funds (CITF), Madirelo Testing and Training Centre (MTTC), the Brigades, the Vocational Training Centres (VTC) and Faculty of Engineering and Technology (FET) of the University of Botswana (UB) have been established to provide construction training programmes. In spite of efforts by these institutions, it appears the shortage of trained manpower at apprenticeship level still exists. The construction companies have continued to complain about the quality and the level of supply of skilled artisans [1]. Hence, the study examines the availability of artisans and apprentices between 1986 to 1990 and 1992 to 1996 as the periods before and after the second construction boom in the country. The findings of the paper are based on the literature review, construction site tours and a questionnaire which was sent to locally based employers within Gaborone where operations of most companies in the country are based.

The list of companies that responded to the questionnaire is shown in Appendix 1. Out of nineteen construction firms, parastatals and government departments that were contacted, 16 responded. The survey focused on the employers in construction sector and the trainers from the vocational institutions.

### 2 THE PATTERN OF STUDENT INTAKE

As part of educational development, the recommendations of the National Commission on Education of 1993/4 [2, 3] which allowed children from Primary school to proceed directly to Junior Certificate level paved the way for the vocational training centres to have more secondary school leavers registered for craftsmanship. It is evident from Fig. 2.1 that the student enrollment at VTCs was not

encouraging initially in that the average intake was as low as 90 students per year between 1988 and 1992 but later, the enrollment level for two-year full time course shot up to an average of 240 students per year between 1992 and 1996 respectively. This means more and more secondary school leavers can be expected to compete for the limited places at the VTCs because of the increased number of secondary schools in the country. When compared, the trends of enrollment in all local vocational institutions tend to vary drastically from one another. In some cases, the trend is on the rise due to the relaxed entry requirements or due to the availability of places. For instance, the pattern of trainee-enrollment in Brigades as shown in Fig. 2.2 indicates that there are enough spaces for enrolment. The trend has always been on the rise. While the planned expansion and enrollment capacity projected for the years ending 1993 and 1997 as shown in Fig. 2.3 for the VTCs and Brigades was found encouraging [4]. The target figures, as reflected in Fig. 2.3, warranted a good supply of semi-skilled and skilled artisans who can later go for further vocational training if they can be sponsored.

The trend of enrollment at CITF is shown in Fig. 2.4. Here the pattern of enrollment is fluctuating. This is because of the institution's dependence on the construction companies to send their workers for competency mastered training. The CITF has so far provided modules of competency based training to a total of 2666 trainees [8] and Fig. 2.4 shows the annual output of artisans.

In order to supply sufficient skilled artisans of acceptable quality for the construction industry, the training programmes should include courses which are broadly employer-based training programmes. This means that the training should reflect the employability of the trained artisans in the local job-markets. At the same time instructor training should be strengthened and the staff recruitment drive should also continue.

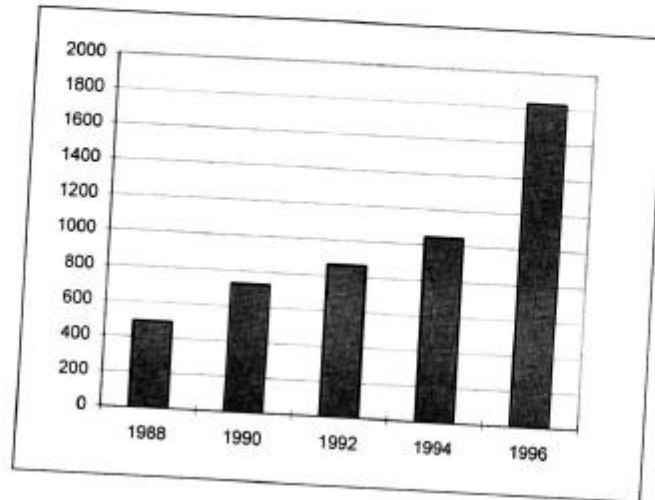


Fig. 2.1 Annual intake of two-year full time trainees in the VTCs  
(Source: Department of Technical Education)

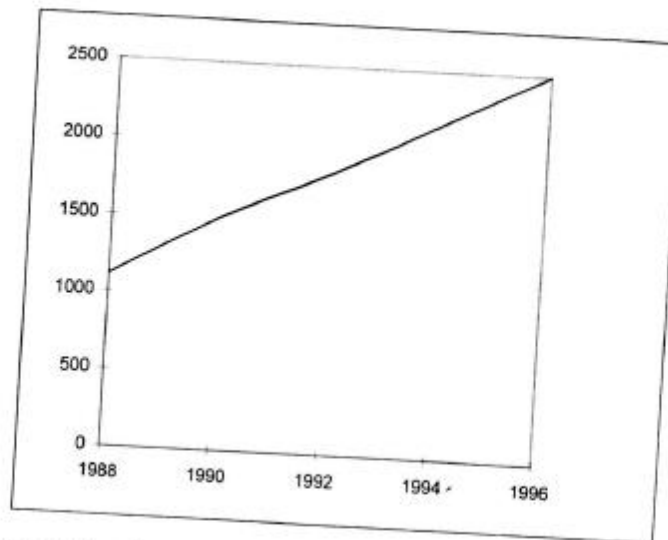


Fig. 2.2 :Total Enrollment of trainees in the Brigades, 1978-1992 (Source: BRIDEC)

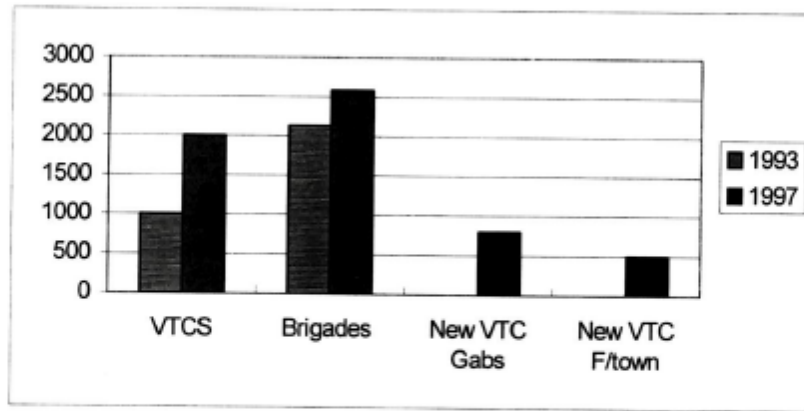


Fig. 2.3: Planned Expansion and Enrollment capacity ( Source: Depart Technical Education & BRIDEC)

The vocational training should aim at producing apprentices of such quality that would reduce employers' labour turnover. The trainees, upon the completion of their trades, should be expected to compete favourably for employment in the construction industry or create their own employment.

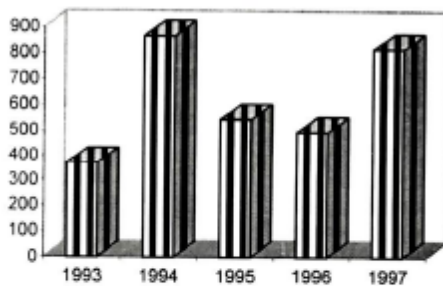


Fig. 2.4: CETF Number of trainees (Source CETF)

### 3 LEVEL OF TRAINING OF ARTISANS AND APPRENTICES

At the moment there are six VTCs in the country. They include two in Gaborone and one each at Jwaneng, Palapye, Selebi /Phikwe and Maun. However, two VTCs are planned for Francistown and Gaborone (relocation of an old VTC). Most of the courses shown in Fig. 3.2 consist of a wide range of disciplines that are being administered according to the Apprenticeship and Industrial Training Act [12] by the Department of Labour in the Ministry of Home Affairs (MTTC) [1, 2].

The training duration, for each of the is illustrated in Fig.3.1. As part of continuous assessment, each institution block ends with an assessment test conducted in practice and theory.

The duration of apprenticeship training scheme was originally four years leading to a National Craft Certificate, (NCC). This was apportioned in such a way that for one year the trainee was required to spend nine months on practical training and three months on theory. This arrangement did not meet the objectives. Hence, the introduction of two year full time training at the VTCs in an effort to meet the demands for more skilled artisans. This is shown in Fig. 2.1 where the annual intake of two years full time trainees rose sharply from 1994 to 1996.

The impact of manpower shortage in the construction industry at the artisans level led to the establishment of the Construction Industry Trust Fund (CITF) primarily to conduct crash training programs for the unskilled workers.

The institution is administered as a joint venture between the construction industry and the Ministry of Labour and Home Affairs (MTTC) [8]. The MTTC charged with the responsibility of setting up the training standards [12] of the vocational institutions also collaborates with the construction industry on industrial training matters. The trades being administered at CITF, are identical in nature to the other local vocational training institutions. CITF runs a Competency Based Individualized Modular Training (CBIMT) based on the training methodology prescribed by the Building Industries Federation of South Africa (BIFSA)

The trainees, upon completion, are awarded Competence Mastered Certificates. This certification is

lower than the Trade Test A Level obtained from VTCS.

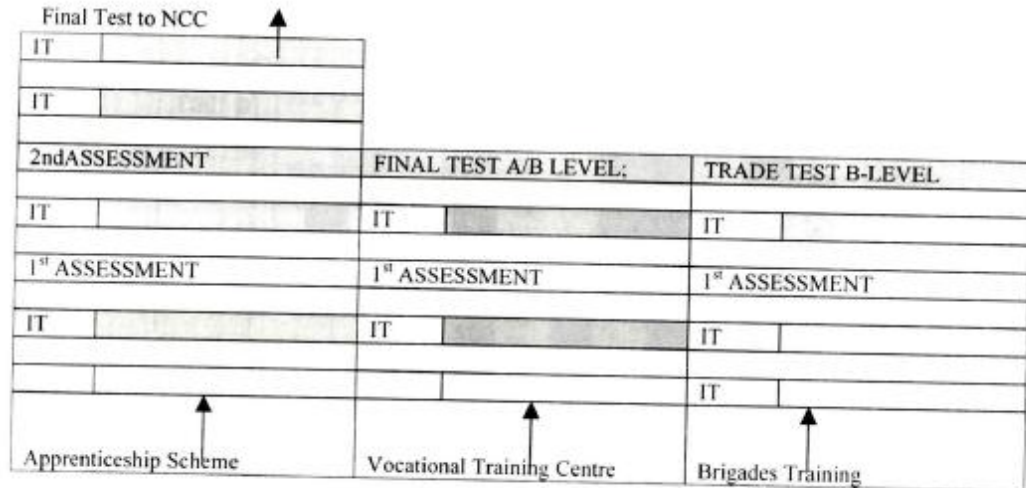


Fig. 3.1 To get to National Craft Certificate (Source MTTC)

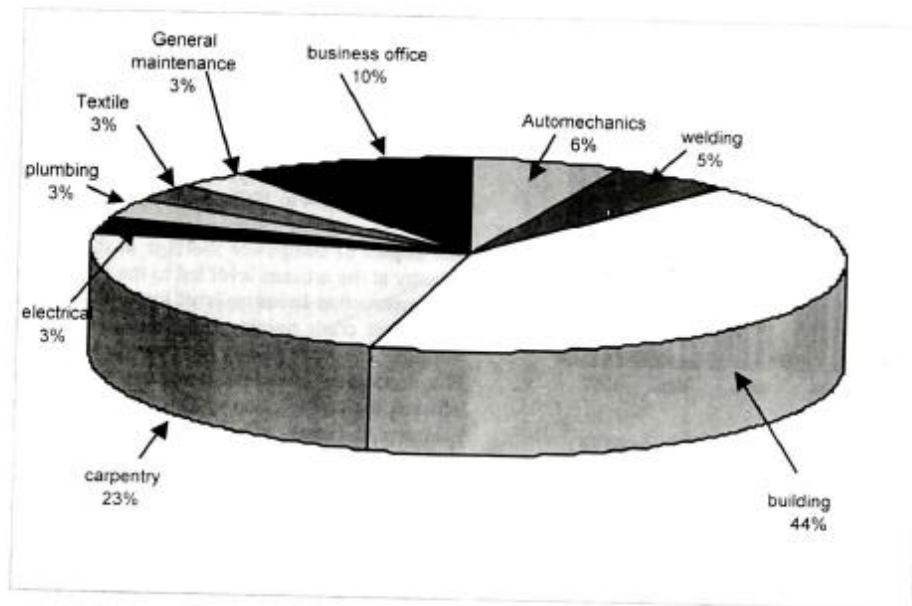


Fig. 3.2 Students intake at VTC

The choice of trades by students vary from time to time and is largely influenced by the socio-economic impact prevailing in the country [6, 7]. Very often students are

more inclined to choose a career, which will give them employment opportunities quickly. It is evident from Figure 3.2 that the highest proportion of trainees



registered between 1989 to 1996 was for the building and carpentry courses. This, indeed, compares well with the findings of the study by the World Bank on unemployment of the educated in Third World countries [6, 7] which states that students' motivation is strongly influenced by perceptions of subsequent job opportunities.

#### 4 DISCUSSION

To develop artisans and apprentices of an acceptable quality there must be better training programs in collaboration with the construction industry. The vocational training should include courses covering requirements of new building materials, which need new maintenance techniques different from the traditional ones. The employers' views are clear indicators of the necessity to review the current vocational training programmes. This seemingly is the cause of some complaint from construction firms about the artisans' performance. It is, therefore, important to place emphasis on the inclusion of skills in the training programs for both new construction materials and their maintenance requirements. This concept is also applied in the study of the performance of the British construction industry [5] and the World Bank Policy Study of 1988 [7]. It was found that because of the increasing proportion of repair works, maintenance and rehabilitation works, the vocational training programs require maintenance skills which are different from those for the new works.

The training programs should institute a clear understanding and acceptance of the necessity of training to become skilled manpower at all levels. The training should be for better job opportunities and for social economic benefits. The Industrial Advisory Board which has been established to participate jointly with the MITC and the training institutions in the formulation of training programs must devise ways of incorporating the necessary changes taking place in the technological production. At the same time vocational training should emphasize the need for effective communication skills and good work attitudes. The desire of many stakeholders in the construction industry is to have technical cadres who can adequately maintain the existing infrastructures.

#### 5 THE SURVEY

A survey was organized to assess the relevance of the vocational training programmes and the level of their appreciation by local employers in the construction industry. On many forums the common question asked by many training institutions is "Do we deliver the skilled work force needed by industry?" [1]. Indeed,

this question serves as the backbone of the questionnaire shown in appendix 2 which was sent to companies operating in the construction industry. The details of the survey have been analyzed and discussed under the areas that were identified as being imperative to the overall study.

#### 5.1 Findings of the Survey

From the study, the majority of employers contacted were in favour of reviewing the present artisan training because the performance was still not impressive in the construction industry. This is in response to some questions (Q4, Q5, and Q16) in the appendix 2. They lacked competency in their work especially in areas of quality attainment, communication skills and work attitude. The results of the survey show a wide range of employers' reaction towards the quality of the vocational training programmes in the following manner:-

Seventy five percent (75%) of the firms were in favour of reviewing the present programmes while 25% was not. The surprising thing here is that a large proportion of respondents has been operating in the country for a long time and that these companies are aware of the existence of the vocational training centers from where they could hire the artisans. Some employers argued that they could not get new skilled artisans because they had been working on small/ medium size maintenance jobs for a long time without getting new construction projects. Under such situations, employers could not conduct on job training programs.

Graduate artisans were found being employed either directly on site or through the advertised jobs. Usually they are called for practical or oral interviews before they are finally employed. The survey also found that a few of the employers were providing on-the-job-training to their unskilled workers.

The response of employers on the local artisans' performance was mixed and this was reviewed under two groups namely: firms happy with the performance and firms not happy with the performance. Those who were not happy with the artisans' performance highlighted some difficult areas, which the artisans were facing during their performance, such as lack of competent skills at work, lack of interest to work and poor communication. The other group that was happy with the performance indicated that the artisans only lacked adequate training otherwise they could do better. This is in response to questions (Q4 and Q15) in the appendix 2.

35% of the firms found artisans with lack of interest to work, 41% of the firms found artisans with lack of skill while another 41% of the firms found artisans with poor communication skills.

Furthermore, the issue of supervisory training of apprentices was also highlighted by the respondents as being essential for effective participation. The survey shows that there is shortage of skilled artisans and it is more serious at the apprenticeship level. The survey revealed that the construction firms could easily hire more new apprentices if only they could win bigger construction projects

## 6 CONCLUSION

Considering the trend of student enrollment in all vocational institutions, the level of intake will continue rising up. The potential candidates are mainly O' level and junior certificate (JC) holders. These applicants have better cognitive skills to undertake apprenticeable courses effectively than the artisans of the previous second construction boom who had no formal education. Once these get trained it will ensure a good supply of skilled manpower.

The trainees should be adequately trained in order to cope with the new construction and technological requirements. Hence a well-structured competency based training, which encompasses both practical and theoretical education at an equitable pace of learning should be introduced on a wider scale. It is, therefore, important to place emphasis on the inclusion of skills for both new construction and maintenance works. The current study shows that on average many of the construction employers are engaged in maintenance works of the existing infrastructures. To develop the cadres for better future, the training programs should put emphasis on the need for effective communication skills and good work attitudes. Shaping their work attitudes and behaviour in a way that will facilitate the smooth transition from training atmosphere to industrial sector will contribute towards higher productivity. Additionally, the staff training program should be encouraged in order to disseminate any new developments.

When one considers the trend of enrollment prevailing in other vocational centres, CITF is presently under utilized. The trainee enrollment at the CITF should be extended to cover the junior secondary school leavers. The institution is well equipped and its training programs are well structured. The institution can play a vital role as a Centre for apprenticeship courses for the trainees from VTCs especially in the construction sector. In view of the anticipated influx of O' level school leavers, the current number of VTCS is not likely to cope with the rising number of students. It is

with this in mind that a review be undertaken to consider upgrading some Brigade Centres to the status of the VTCS. The enrollment pattern shown in Fig. 2.2 at Brigades is another area of concern. The number of semi-skilled manpower that remains underutilized after training is too big. MTTC and the Bridec should devise new approaches that can facilitate the continuity of their training up to some recognizable certification for employment. In fact majority of these candidates for the Brigades will now be from Junior Certificate and a few from O' level holders with so much potential to become dependable apprentices.

## 7 ACKNOWLEDGEMENT

I wish to take this opportunity to thank unreservedly the companies, organizations and the individuals who heartedly spared their precious time to listen and answer to my provoking questions until sufficient data had been collected. I would not hesitate to extend my great appreciation to the following individuals.

Mr. B. Moepe (DVET),  
Mr. S. Kuhlmann (CITF),  
Mr. C. T. Harradeni (VTC -Gaborone),  
Mr. E. Dewah (BOCCIM),  
Mr. R. C. Rokos (MTTC),  
Mr. D. Makhura (GIEC),  
Mr. T. Leshetla (Multi-Constr Co.),  
Mr. M. O. Kaetwa (VTC-Gaborone),  
Mr. O. N. Kisenga (DVET),  
Mr. Sibanda (DVET),  
Mr. M. Taukobong (MTTC)

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### Appendix 1

#### List of Companies /Parastatals / Departments

No.	Name of firm	Remarks
1	BHC	
2	BOSWE	
3	C.B.Griffin (Pty)	
4	Consup (Pty)	
5	DABS	
6	Daily Plumbers (Pty)	
7	Gaborone City Council	
8	GIEC (Pty)	
9	Itaswana Constr. Co.(ICC)	
10	Multi.Construction Co.	
11	Nyantanga Plant Hire	
12	PAME	
13	Plumbers Specialist Services Ltd	
14	SUNCON	
15	Thoraboroko Constr. Co.	
16	University of Botswana(Maint)	

### Appendix 2

#### Questionnaire

**Que. 1** What are the main activities of your company?

- a) Bricklaying
- b) Painting
- c) Sanitation
- d) Carpentry
- e) Road construction

**Que. 2** What is the best way of employing artisans?

- a) Through training centres
- b) Through advertisement
- c) Through in-service training

**Que. 3** Are you aware of the existence of vocational training schools in the country?

- a) Yes
- b) No

**Que. 4** Are you happy with the performance of the local artisans?

- a) Very happy
- b) Fairly happy
- c) Unhappy



- Que. 5** Is the training given to them adequate for the company's requirements?  
 a) Adequate  
 b) Fairly adequate  
 c) Inadequate
- Que. 6** What type of interviews do you conduct for employment?  
 a) Oral  
 b) Written
- Que. 7** What is the general construction period of your projects?  
 a) 1 to 5 months  
 b) 5 to 10 months  
 c) 10 to 15 months  
 d) More than 15 months
- Que. 8** Do you experience problems in securing construction projects?  
 a) Very much  
 b) Not much  
 c) Sometimes  
 d) No problems
- Que. 9** Do you experience any shortage of artisans for your projects?  
 a) Yes  
 b) No  
 c) Sometime
- Que. 10** In which category of artisans do you experience serious shortage of manpower?  
 a) Bricklayers  
 b) Painters  
 c) Plumbers  
 d) Carpenters  
 e) Foremen
- Que. 11** For how long have you been in the construction industry within Botswana?  
 a) 1 to 2 years  
 b) 2 to 4 years  
 c) 4 to 8 years  
 d) 8 years and more.
- Que. 12** How many artisans have you employed to date?  
 a) 1 to 2 people  
 b) 2 to 5 people  
 c) 5 to 10 people  
 d) 10 and more
- Que. 13** What has happened to those artisans in your company?  
 a) Resigned  
 b) Fired  
 c) Retired  
 d) Present
- Que. 14** Do you provide addition training at your work place?  
 a) Yes  
 b) No  
 c) Sometimes
- Que. 15** What difficulties do you see in their performance?  
 a) Technical language (communication)  
 b) Lack of interest  
 c) Lack of experience  
 d) Inadequate training
- Que. 16** What advise can you offer to improve the vocational training?  
 a) More training period  
 b) Maintain the present training program  
 c) Review the present training program