CHAPTER IV

SOME NEW METHODS AND TECHNIQUES APPLIED IN VOCATIONAL TRAINING IN GERMANY

As it is previously mentioned, the Federal Republic of Germany has a well-organised system of vocational education and training. But now-a-days there is a general feeling that the time available for the study of instructional material is not enough because today the trainees are required to learn a lot more due to the advancement of science and technology. Some specialists in this field also fear that the present system of apprenticeship is somewhat rigid and should be replaced by a more flexible one. So several schemes have been thought of for improvement of training of industrial workers, and new methods are tried out to make the training programme more effective. It is interesting to note that many journals on vocational and technical education have recently come forward with different proposals with a view to make the training system more effective. Within the framework of the reform of industrial vocational training, the idea of training

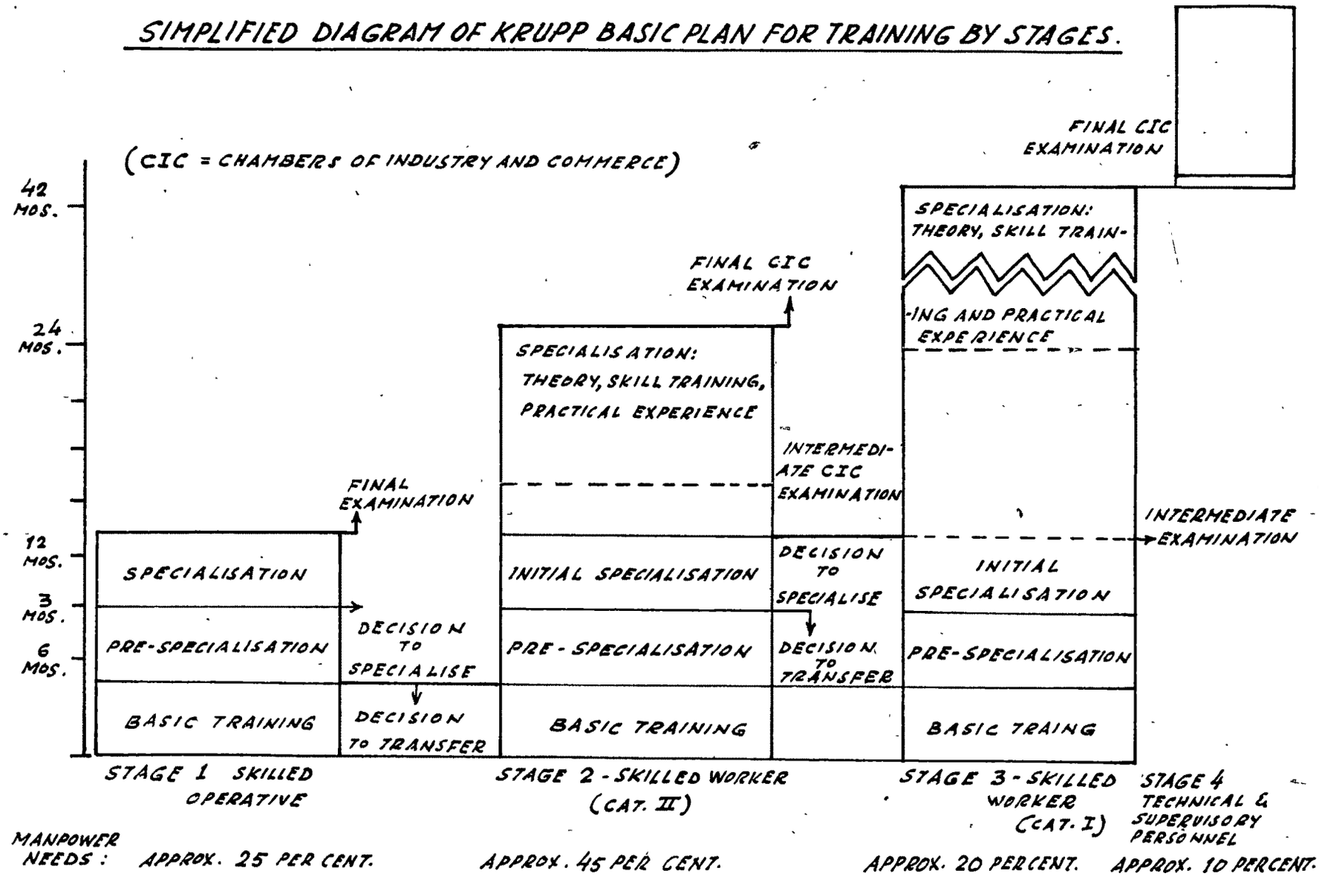
by stages (Stufenaus + bildung) has increasingly gained ground.

Training by Stages (Stufenausbildung)

The scheme for training by stages virtually divides vocational training into three or four stages corresponding to three or four levels of qualifications. The training during the first stage is sufficiently broad-based to permit further training at any juncture. Passage from one stage to another takes place, in principle, after basic training.

Mr.Erwin Krause, the Director of the Central Office for Industrial Training (Arbeitsstelle für betriebliche Berufsausbildung - ABB) had proposed a plan for training the apprentices by 'Stages'. This plan, generally known as 'The Krause Scheme', comprises three stages, corresponding to the three years of apprenticeship. During the first stage, the trainees spend about six months taking the course of basic training common to trades within a given occupational group. They learn the specific techniques of this trade only after completing this basic training. In the second stage the trainees apply in practice what they have learnt in theory during stage one. Here they work as independently as possible. Of course, the training for these two stages is provided in a training workshop. The third stage is a stage of specialisation. The trainees work in the production workshop during this third stage and become familiar

SIMPLIFIED DIAGRAM OF KRUPP BASIC PLAN FOR TRAINING BY STAGES.



with all the machines and processes connected with the trade. Obviously, each stage ends with an examination. The examinations for the first two stages are concerned with trade practices and the third with trade theory.[1]

The plan, drawn up by the Krupp Factories for training by stages, has also attracted the attention of many in West Germany. This scheme divides vocational training vertically ihto four stages corresponding to four levels of qualifications. The first stage trains for a skilled operative (Betriebswerker). The duration of training for the first step is one year. The second stage of two years' duration, trains skilled worker of II category (Facharbeiter II). The third stage of 3 to 3½ years' duration trains a skilled worker of I category (Facharbeiter I) and the fourth stage prepares technical and supervisory personnel. The duration here is variable according to requirements. Horizontally, the Krupp Plan is subdivided into several levels of qualifications like (a) General Basic Training (basic skills), (b) pre-specialisation and (c) specialisation. (See the attached Diagram).

According to the opinion of Mr.G.P. Bunk[2], Business and commercial occupations are also suitable for training by stages. In the first stage, basic training (simple jobs carried

[1] Krause, Erwin, 'Stufenausbildung - der gemeinsame Nênner' (Training by Stages - the Common denominetor) in a Journal Die Berufsbildende Schule, Bochum, Vol.16, No.6, June 1964, p.399.

[2] Bunk, G.P. 'Kaufmännische Berufsausbildung in mehreren Stufen' (Vocational Administrative and Commercial Training in Stages) in a Journal Informationen über das Berufliche Bildungswesen, Dusseldorf, Vol.15, No.12, Dec. 1964, pp.6-8.

out according to instruction) should be provided. The second stage will train them in routine administrative duties including development of ability to foresee, co-ordinate and check. In the third stage they will grasp organisational duties. Here they also know the basic economic principles and develop the ability to discern key points. Here it may be pointed out that while the duties performed in stages 1 and 2 are much the same in all commercial firms, organisational duties in stage 3 will vary considerably from one type of business to another. The fourth stage demands a thorough competence in the occupation including specialised duties. Here they are specialised as programmers, planning technicians, accountants etc. Training at this fourth stage is no longer at apprenticeship level, but it is further specialised training. The apprentices may be allowed to leave the firm, take up employment in whichever sector they prefer after the completion of the second stage.

Advantages of Training by Stages

1. One important advantage of the system of training by stages is that the trainee's aptitude can be identified earlier than in other systems and he can therefore be given more effective guidance during his training.

2. The plan would permit broad basic training for all young people, including those who are not under indenture. It would give young people more time for choosing their trade or occupation, thereby reducing the risk of wrong selection.

3. Skill levels will be determined according to the skills and knowledge acquired by the adolescent and perhaps there will be greater equality of opportunity for all adolescents.

4. All the youths will undergo training according to their abilities, aptitudes and interest so there will be no untrained workers in the industry. Moreover, even after completing one stage of training, the youth will have a feeling of being trained and that has a very great psychological advantage. There will be a new definition of a skilled worker concept.

5. Generalised introduction of training by stages would facilitate better co-operation between vocational schools and undertakings. Their respective responsibilities could be better determined.

6. Moreover, training by stages entails grouping apprentices in similar or related trades and occupations during the first two years of training, which is given mainly in a training workshop. This grouping would make it easier to form special subject classes (Fachklassen) in the lower grades of the vocational schools than it is at present..

7. Since unsuitable youngsters would not be admitted to the third stage, the senior classes of the vocational schools would not be burdened with these less able trainees.

8. Further training and education could be organised in additional stages after the three basic stages of apprenticeship, resulting in a systematic corresponding extension of related instruction in vocational schools.

9. Moreover, there will be greater mobility of labour and increased flexibility with regard to changing from one specialisation to another while remaining within the same occupational group. There is also possibility of a greater degree of uniformity in the training given for related trades, and consequently the possibility of teaching larger classes.

Some Difficulties

The system of training by stages might create some difficulties also :

- Additional central training workshops for basic training would be needed mainly for small and medium undertakings.
- Vocational schools would have little say in the organisation of training, since as yet, there is no legal basis for their participation.
- Under this plan, more theoretical instruction would be given in the undertakings also; the vocational schools are doubtful whether the undertakings are in a position to assume this task.
- The scheme also raises a number of problems for the related instruction given at the part-time vocational schools (Berufsschule). Pupils whose vocational training comes to an end with the first or second stage will still, if under 18, have to attend the school, according to the law. It will

then be difficult to link the instruction with any precise objective as regards their trade or occupation and their motivation for study will be weakened.

- The theoretical instruction given in the first stage will necessarily be limited by the fact that it will be directed to a group of young people of widely varying abilities.

However, it can be safely said that there is a positive trend to shift towards training by stages in vocational training programmes. According to the views expressed by the Federal Minister of Labour and Social Affairs and the Minister for Economic Affairs, the Federal Government also supports this scheme of training by stages and attaches great importance to it and hopes that it will help in solving some of the problems and promoting the vocational training programme. At the time of personal interviews with some of the principals of the vocational schools, they also expressed the view that in the coming five to ten years practically the whole apprenticeship training will be given by stages and that will be a radical change in the whole system of vocational training in Germany which is provefbially conservative and rigid.

Programmed Instruction

It is generally agreed that traditional teaching methods have proved inadequate to provide the high level of qualification and standard required in undertakings anxious to remain competitive. Modern pedagogies have, however, other effective methods to offer, one of which is certainly programmed instruction.

Compared with the U.S.A. and the U.S.S.R., the Federal Republic of Germany is much less advanced as regards use of programmed instruction methods in vocational training. Yet experts are now interested in this method and efforts are being made to make it more popular and useful. The lack of knowledge about what is being done in undertakings to train employees by this method led to an enquiry[1] among industrial, commercial and insurance companies in 1964. In selecting the firms, preference was given to limited companies with a large staff. The firms chosen were considered representative of the main branches of the German economy. The enquiry was in the form of a questionnaire. Of those which responded to the questionnaire, 8% were already using programmed instruction in a systematic and regular manner; and 9% were preparing to introduce programmed instruction. Therefore, only 17% were actively using or planning to use this method. Others were undecided about using it, or were not interested.

Programmed instruction was mainly applied to commercial subjects, e.g. fiscal law, programming in electronic installations, etc. The persons receiving this type of instruction belonged to widely different categories among them were apprentices learning skilled or semi-skilled trades and technicians, supervisors, sales personnel, etc. In most cases, the programmes had been prepared by the firms themselves. Sometimes they had taken the help of

[1] Steinbuch, Pitter A. 'Programmierter Unterricht in der betrieblichen Ausbildung.' In the Journal 'Programmiertes Lernen und Programmierter Unterricht,' Berlin, No.1..1965.pp.7-9.

outside specialists. Some firms adopted programmes which had originally been written in English.

A new survey was carried out by the same author in 1965,[1] one year later than the first survey. But the sample was twice the size of the 1964 sample. The response was 71% in 1965 (and 73% in 1964). The following results were found :

	1964	1965
Companies using PI regularly	8%	23%
Companies preparing to introduce P I	9%	13%
Companies considering the use of P I	18%	19%
Companies thinking of P I at a later date.	15%	14%
Companies not intending to introduce P I.	20%	17%
Companies giving no indication as to whether they intend to use P I.	30%	14%

The table indicates that :

- In 1964, only 17% were using PI or were preparing to use it while in 1945, 36% (more than double percentage) were using or were preparing to use PI.
- The percentage of companies considering the use of PI and thinking of PI at a later date was 33 in 1964 and also 33 in 1965.
- It also indicates how, even within one year so many other companies started to use PI. It shows a progressive tendency on the part of German business and industries to adopt new methods when found useful.

In 1964 the main reason given for using PI was 'to save time'. In 1965 two new reasons, however, were given :

[1] Steinbuch, P.A. 'Betriebliche Ausbildung mit programmiertem Unterricht, das Ergebnis einer Befragung'1), in 'Programmiertes Lernen und Programmierter Unterricht,' Bonn. Vol.3 No.2,15, June, 1966, p. 49-52.

- The lack of teaching personnel and
- The better results obtained by this method.

The enquiry also showed that a large number of firms would have adopted PI if programmes corresponding to their training needs had existed in the market. This lack of availability of suitable programmes is one of the main problems of PI. The number of programmes developed by the firms themselves was approximately the same as the number of tailor-made programmes ordered from outside. The programmes used are mainly in the forms of books, pamphlets and instruction cards. In 1964, only one firm was using teaching machines, but in 1965, about 15% of the firms were using means other than books.

It is certain that in Germany programmed instruction is going to be used more and more frequently in future, especially in firms, which are already using it in their vocational training programmes.

In order to make this programme effective, training courses for programme instructors is organised in Germany. The Bergisch-Land Technical Institute (Wuppertal), attached to the Rhein-Westphalia Technical University at Aachen (Technische Akademie Bergisch Land, Ausseninstitut der Rheinländisch-Westfälischen technischen Hochschule Aachen in Wuppertal) organised a training course for programmed instruction programmers. The course comprised lecturers, seminars and exercises; for the latter, participants were grouped in working groups of not more than five persons. The participants gave a very favourable opinion about the course.

Correspondence Courses

Teaching by correspondence has not developed in the Federal Republic of Germany to the extent that can be observed in some of the other countries.[1] Recently, however, some large undertakings have asked correspondence schools to co-operate in the training of their apprentices or in the retraining of their adult workers.

The 'lessons' (Lehrbrief) provided by the correspondence schools are also used by the plant instructors for the apprentices. Sometimes discussion groups, within the undertaking, are set up where the lessons can be studied and discussed in common before each trainee goes on to the next stage of writing the answers to the questions and doing exercises. Of course, the procedure of exchanging written lessons and answers between teacher and pupils is adopted in general.

The instructional material sent by mail to the trainee is illustrated with examples drawn from the actual working experience. Some undertakings are now thinking to arrange for some of its experienced management staff to collaborate in the preparation of the correspondence lessons. Sometimes they also grant special leave for attending seminars organised by schools for the trainees.

One of the difficulties encountered in these types of courses

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[1] Löbner, Walther, ' Fernunterricht als Mittel der Betriebspädagogik' (Correspondence Courses as an Element of In-plant Training), Heidelberg, Quelle und Meyer Verlag: Jahrbuch Für Wirtschafts - und Sozialpädagogik, 1966, p.79.

is that the state has no effective central over the vocational instruction given through privately run correspondence schools. It can only attempt to ensure that they offer courses which correspond, from the point of view of quality and content, to actual training needs.

Moreover, a pupil who contracts to take up a correspondence course with a private correspondence schools has no guarantee that he will receive instructions of the required pedagogical standard and will enable him to achieve the occupational proficiency he is aiming at. But slowly this type of mistrust is diminishing.

An inquiry carried out by the Institute of Economic and social pedagogies at the University of Erlangen Nurnberg[1] has shown that people who take correspondence courses have a strong desire to have the qualifications they gained by passing private examinations be given due recognition. It is suggested that the setting up of an independent examining body would guarantee the status of the certificates granted. The task of organising the examinations and awarding certificates should be given to the institutions with a nation-wide reputation such as the German Council for Industry and Commerce (Deutscher Industrie- und Handelstag. DIHI) or the German Productivity Council (Rationalisierungskuratorium der Deutschen Wirtschaft-RKW).

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[1] Fischlein, Wolfgang, 'Prüfungen als Mittel Zur Qualitätssicherung im berufsbildenden Fernunterricht' in a Journal, Wirtschaft und Berufs-Erziehung, Bielefeld, Vol.18, No.9, Sept. 1966, p.164.

Use of the Audio-Visual Methods

Scientific research has shown that an average person remembers from 30 to 35% of what he sees, from 10 to 15% of What he hears, and about 50% of what he hears and sees simultaneously. A major advantage of audio-visual techniques is the possibility of putting the trainee in contact with the item being studied. They overcome the limitations of time and space. However, the effectiveness of audio-visual methods depends on selecting the most appropriate media for the purpose in view. By a rational combination of the various types of audio-visual media and instructional methods it is possible to make instruction an automatic process.

It is interesting to note that at the time of visits to the vocational schools or to the undertakings - both big and small - it is noticed that the use of audio-visual equipment is so common that they almost forms the part of the training programme and education. Each and every vocational school has most upto date audio-visual aids with special audio-visual rooms and mostly almost all the teachers and instructors know the use of them. In the big undertakings like 'Hoesch' there are talking machines, hearing instruments, and electrical boards and various aids which worked with the help of the teachers and some of them worked even without the teachers. So it is safe to conclude that the use of audio-visual aids and methods is very wide and popular in vocational education and training programme also.