

Group oriented instruction: a strategy for effective preparation of Technical and Vocational Education and Training trainees for industry

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Abstract

Effective preparation of TVET trainees for industry is paramount to industrial development. Meeting the current industrial employers demand for team work skills and ability among fresh Technical and Vocational Education and Training graduates requires the use of group oriented instruction which have the potential of inculcating in the trainees the skills needed to work together to achieve individual as well as group goals. The diversification towards group oriented instruction cannot be effective without understanding the nitty gritty surrounding group learning. The researcher therefore establish through literature evidence, the need to adopt group oriented instruction and its relevance in the preparation of TVET trainees. The study also developed strategies for effective implementation of group oriented instruction in TVET institutions. The study further recommended adoption of group oriented instruction by TVET teachers to enhance effective preparation of trainee for the industry.

Keywords: Strategy, Industry, Group oriented instruction, Technical and Vocational Education and Training.

Introduction

Technical and Vocational Education and Training (TVET) is a type of education whose major objective is to prepare individuals for employment in chosen occupations by equipping them with the vocational skills, knowledge and attitude necessary for employment. Federal Republic of Nigeria (FRN)(2013) defined Technical and Vocational Education and Training as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Technical Vocational Education and Training gives individual the skills to live, learn and work as productive citizen. It reduces the over dependence of graduates on government for employment. TVET is offered in Technical colleges, polytechnics, monotronics, and colleges of technology, among others. Technical colleges are regarded as one of the principal TVET institution in Nigeria for the training of craftsmen and women.

The National Policy on Education (FRN, 2013) revealed that the goals of TVET shall be to: provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical level; provide the technical knowledge and vocational skills

necessary for agricultural, commercial and economic development; give training and impart the necessary skills to individuals who shall be self-reliant economically. The central goal of TVET is to produce technical manpower to meet the needs of the industry and enhance industrial development in Nigeria. An industry according to Hornby (2014) is a place where goods are produced from raw materials. If carried out in a sustainable manner, industrial activities has the potential to help achieve a variety of objectives such as employment, poverty eradication, gender equality, labour standards, and greater access to education and healthcare. The more developed a country's industrial capacity, the greater the potential for economic growth and development.

For effective preparation of TVET students to meet the needs of the industry, the instructional method used during the education and training process must reflect the needs of the industry. Research study on employers needs by Ogundola, Popoola and Oke (2010) ranked team work skills or ability as the number one trait that chief executive of organizations seek in new employees during the job selection process. In the industries, the technical staffs are expected to interact, share ideas and work collectively on industrial projects or task as well as solve industrial problems to enhance productivity and industrial development. Acquiring team work skills or ability requires the use of group oriented instruction which have the potentials of inculcating in the trainees team work skills needed to interact collective with others to solve industrial problems. Felder and Brent (2001) defined group oriented instruction as a teaching method that involves students learning in small groups to achieve individual as well as group goals.

Group oriented instructional methods are being introduced into the class room to enhance teaching and learning. This type of learning has been called by various names: cooperative learning, collaborative learning, collective learning, peer teaching, peer learning, or team teaching (Melinda, 2008). The use of group oriented instruction creates an environment for collective interaction among students in a group as they progress from one learning activity to the other. This helps to stimulate students' interest to learn as students are free to interact and help each other in the learning process. Effective adoption of group oriented instruction in TVET institution requires the use of appropriate strategy that will enhance successful usage. A strategy refers to a skilful way of carrying out a plan to achieve a particular objective. A strategic approach to utilization of group oriented instruction will go a long way to enhance development of team work skills among TVET students. The students will be able to interact collaboratively and cooperatively since they must have acquired the collaborative and cooperative work skills

needed to ensure smooth transition from school to work. This will in turn enhance students' performance in the industry where team work skills are currently in need. The researcher therefore deem it necessary to establish the need for group oriented instruction, unveil the relevance of group oriented instruction in the preparation TVET trainees for industry through a research to establish theoretical and empirical literature evidence in this regards as well as developed possible strategies to enhance effective implementation of group oriented instruction in TVET institutions.

Objectives of the study

1. To establish the need for group oriented instruction in the preparation TVET trainees for industry.
2. To unveil the relevance of group oriented instruction in preparing TVET trainees for industry.
3. To develop strategies for effective implementation of group oriented instruction in TVET institutions.

Methodology

This study adopts literature review method to establish literature evidence on the relevance of group oriented instruction in preparing TVET trainees for industry. Data were gathered from existing document in form of theoretical and empirical literature from primary and secondary sources. Data was collected from past research works which are mostly published and unpublished information such as text book, official gazette, government document records, seminar papers, journals, thesis, conference papers, review of literature and statutory enactments, reviews of research reports, book reviews, other books, among others.

The Need for Group oriented instruction in the preparation of TVET trainees for industry

Meeting the current industrial employers demand for team work skills and ability among fresh TVET graduates requires the use of group oriented instruction which have the potential of inculcating in the trainees the skills needed to work together to achieve individual as well as group goals. Proponents of group oriented instructional methods claim that, the fact that students are actively exchanging ideas, debating and negotiating ideas within small groups not only increases achievement and interest among the participants but also promotes critical thinking and social skills (Slavin, 1995). It does not only teach social skills but facilitates retention, improves the experience, enhances creativity and also teaches leadership skills which is possible as team

leader role is rotated among students within each group in every new lesson class. Thus, the success of one student helps other students to succeed.

A large and rapidly growing body of research confirms the effectiveness of group oriented instruction in science and engineering education. Johnson, Johnson and Smith (2000); Jumoke and Idowu (2012) in separate studies revealed that relative to students taught traditionally with instructor-centered teaching method, students taught with group method tend to exhibit higher academic achievement, better high-level reasoning and critical thinking skills, deeper understanding of learned material, less disruptive behavior in class, lower levels of anxiety and stress, greater intrinsic motivation to learn and achieve, greater ability to view situations from others' perspectives, more positive and supportive relationships with peers, more positive attitudes toward subject areas, and higher self-esteem. Ngozi and Aphonsus (2014) revealed that weak students working individually are likely to give up when they get stuck; working collaboratively, they keep going. Intelligent students faced with the task of explaining and clarifying material to weaker students often find gaps in their own understanding and fill them in. Students working alone may tend to delay completing assignments or skip them altogether, but when they know that others are counting on them, they are motivated to do the work in a timely manner.

Slavin (1995) and Rosser (2008) on separate studies on instructional methods revealed that group oriented instructional method of teaching vocational trade courses has currently gained more relevance in meeting industrial needs because it encourages collaborative effort or team work which is currently a fundamental requirement for effective performance in the industry in line with workplace best practice globally. Ogundola, Popoola and Oke (2010) ranked collaboration or team work as the number one trait that chief executive of organizations seek in new employees. Odigiri and Ede (2010) lamented that TVET graduates are expected to work in teams in industry and collaborate on projects, yet in technical college they are taught with traditional instructional method which is teacher-centered, encourages more of individualized learning procedure and deprive students the full opportunity to practice learning together in teams.

It is clear that group oriented instructional method of teaching TVET courses is needed if the teacher is to expose the students to the transition towards collaborative effort required in the industrial workplace. Due to the high potentials of group oriented instruction in promoting

students achievement, interest, retention, skill performance as well as in the development of team work skills in the trainees, the researcher therefore deem it necessary to establish through literature evidence, the need to adopt group oriented instruction in the preparation of TVET trainees.

The relevance of group oriented instruction in preparing TVET trainees for industry

Theoretical and empirical literature evidence abounds on the relevance of group oriented instruction in preparing students for industry which TVET trainees can also benefit from to enhance their performance in the industry. Group oriented instruction is based on the social interdependence theory and constructivist theory.

Social interdependence theory: Social interdependence theory provides a foundation on which all group learning is built. Group oriented instruction is based on the theory of social interdependence, grounded in the work of Morton Deutsch and Kurt Lewin at the university of Berlin in the early 1902 (Johnson, Johnson, and Smith, 1998b). Social interdependence exist when the outcomes of individuals are affected by their own and others' actions (Johnson & Johnson, 1998). There are two types of social interdependence: positive (when the actions of individuals promote the achievement of joint goals) and negative (when the actions of individuals obstruct the achievement of each other's goals).

According to Slavin (1991) the social interdependence theory increases the learning circle from individuals competing alone to groups learning together, multiplying the potentiality for learning. In the practice of group learning, positive interdependence creates promotive interaction which occurs as individuals encourage and facilitate each other's efforts to reach the group's goals, and in turn, maximizing each member's learning. Slavin (1995) revealed that through social interdependence, group members can promote each other's success by: (a) giving and receiving help and assistance, both task-related and personal; (b) exchanging resources and information, orally explaining, elaborating and summarizing information, and teaching one's knowledge to others; (c) giving and receiving feedback on task work and teamwork behaviours, monitoring each other's effort; (d) challenging each other's reasoning through intellectual controversy, promoting curiosity and motivation to learn; (e) advocating increased efforts to achieve, encouraging others to achieve increases one's own commitment to do so; (f) mutually influencing each other's reasoning and behaviour; (g)engaging in the interpersonal and small group skills needed for effective teamwork; and (h) processing how effectively group members

are working together and how the group's effectiveness can be continuously improved. A good understanding of the theory of social interdependence will greatly enhance effective group orientated instruction.

Constructivist Theory of Learning: Group oriented instruction is also based on constructivism theory. Knowledge is constructed, and transformed by students. The constructivists' theory originated from the works of Jean Piaget (1896–1980) and Jerome Bruner (1915-1999) in the year 1968. The theoretical framework for constructivism holds that learning always builds upon knowledge that a student already knows; this prior knowledge is called a schema. Because all learning is filtered through pre-existing schemata, constructivists suggest that learning is more effective when a student is actively engaged in the learning process rather than attempting to receive knowledge passively (Devries and Zan ,2003). The learning process must be understood as something a learner does by activating already existing cognitive structures (schema) or by constructing new cognitive structures that accommodate new input.

Learners do not passively receive knowledge from the teacher; teaching becomes a transaction between all the stakeholders in the learning process. The constructivist theory of learning or philosophy is based on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences through interaction. Using the constructivists approach, the goals of instruction are to help learners develop learning and thinking strategies; focus on individuals' and group's active construction of knowledge and facilitate learning by encouraging active inquiry.

A number of research works have been conducted to establish the relevance of various types of group oriented instruction over non group oriented instruction. For instance, Goyak (2009) carried out a study on “the Effects of Cooperative Learning Techniques on Perceived Classroom Environment and Critical Thinking Skills of Preservice Teachers”. The study was carried out in New York. The study analyzed the effects of cooperative learning techniques versus lecture techniques. 137 undergraduate students participated in the study. Z-test statistics was used to analyze data. Results revealed significantly higher means in the cooperative learning group. The outcomes of this study suggest that cooperative learning techniques have merit and profit in the undergraduate classroom.

In a related study by Jumoke and Idowu (2012) on” the effectiveness of cooperative learning strategies on Nigerian junior secondary students' academic achievement in Basic

Science”. The study was carried out in Ogun state. The study investigated the effectiveness of cooperative learning strategies on Nigerian Junior Secondary students’ academic achievement in basic science. Quasi experimental pretest-posttest-delayed posttest control group design was used by the researchers to carry out the study. Total number of one hundred and twenty students (120) obtained from the intact classes of the three selected Junior Secondary Schools in South-west Nigeria participated in the study. Achievement Test for Basic Science Students (ATBSS), and Basic Science Anxiety Scale (BSAS) were the main instruments used to collect data from students. Descriptive statistics and Analysis of Covariance (ANCOVA) were used to analyze the data collected. This study revealed that students in the two cooperative learning strategy (Learning Together and Jigsaw II) groups had higher immediate and delayed academic achievement mean scores than the students in the conventional-lecture group. Learning together and Jigsaw II cooperative teaching strategies were found to be more effective in enhancing students’ academic achievement and retention in basic science more than the conventional-lecture.

A study was also conducted by Burcinand and Leman (2007) on “Effect of collaborative learning strategies on students understanding of concepts in metal casting. The used 108 Canadian secondary school students as participants to examined the effect of collaborative learning on ninth grade students’ understanding of metal casting. The data was collected from two different groups of subjects. The data was analyzed using mean, standard deviation and t-test statistics. The study group was diverse in terms of language, age and gender. A questionnaire was used to obtain data from the group. The results of the students’ t-test indicated that the mean score of the students in collaborative learning group was significantly higher than the mean score of their colleagues in control group. The study recommended the regular use of collaborative learning to enhance students’ achievement and interest in learning metal casting.

Another related study was also conducted by Kimura (1998) on “Effects of Collaborative learning on students’ achievement in welding practice”. The study was carried out in Delta state. 125 technical college students participated in the study. The data was collected from two different groups of subjects. The data was analyzed using mean, standard deviation and ANOVA. The findings of the study also confirm the effectiveness of collaborative learning methods. They investigated the effects of collaborative learning method on students’ achievement in welding practice. Using a non-equivalent control group design, the study found

that collaboration foster students' learning in welding practice more than conventional methods. The study also recommended the continuous use of collaborative instructional method to enhance students' academic achievement in welding practice.

In a study designed to determine the "effects of co-operative learning approach of students' teams-achievement-division on the achievement and content knowledge retention and attitudes in home economics", Abu and Flowers (1997) compared co-operative learning to non co-operative learning classroom structure using a quasi-experimental design. The study was carried out in Lagos state. The sample of the study consisted of 155 students of vocational home economics. Abu and Flowers found out that: the co-operative learning approach is more effective than the non co-operative learning approach with regard to Home Economics students' achievement and retention of information; the co-operative learning approach is more effective than the non-cooperative learning approach with regard to Home Economics students' attitude toward the method of instruction.

While the above empirical studies revealed the effectiveness of various types of group oriented instruction, it is worthy to note that the benefit of group oriented instruction is not automatic. If wrongly implemented, group oriented instruction can create considerable difficulties for the teacher especially among wrong learning groups or teams who may develop resistance to the interactive process. To avoid difficulties and maximize the benefit of group oriented instruction, the researcher offers a number of strategies needed for forming study teams to enhance effective implementation of group oriented instruction in TVET institutions.

Strategies for forming study teams for effective implementation of group oriented instruction in TVET institutions

1. Form teams of 3-4 students for most tasks. When students work in pairs, the diversity of ideas and approaches that leads to many of the benefits of group learning may be lacking. In teams of five or more, some students are likely to be inactive.
2. Make the teams heterogeneous in ability level. This involves mixing intelligent students with weak students, mixing males and females, and verbal and quiet students. In heterogeneous groups, the weaker students gain from seeing how better students approach problems, and the stronger students gain a deeper understanding of the subject by teaching it to others.

3. If the assignments require work being done outside class, form teams whose members have common blocks of time to meet during the week.
4. Give individual tests that cover all of the material on the team assignments and projects.
5. Make someone on the team (the process monitor) responsible for ensuring that everyone understands everything in the report or assignment that the team hands in. The monitor should also make sure everyone participates in the team deliberations.
6. Make teams responsible for seeing that non-contributors don't get credit (score).
7. Use peer ratings to make individual adjustments to team assignment grades. In a fairly simple but effective peer rating system, students rate one another on specified criteria for good team.
8. Provide last resort options of firing and quitting. When a team has an uncooperative member and everything else has been tried and failed, the other team members may notify the hitchhiker in writing that he/she will be fired if cooperation is not forthcoming, sending a copy of the memo to the instructor.
9. Establish team policies and expectations. As part of the first assignment, have teams generate and sign a list of policies and expectations (e.g. being prepared before team sessions, calling if they have time conflicts, etc.). Have them sign the list and make copies for themselves and you.
10. Keep groups intact for at least a month. It takes at least that long for the teams to encounter problems, and learning to work through the problems is an important part of teamwork skill development.
11. Provide for periodic self-assessment of team functioning. Every 2–4 weeks, have teams respond in writing to questions such as: How well are we meeting our goals and expectations? What are we doing well? What needs improvement? What (if anything) will we do differently next time?
12. Give students tools for managing conflict. Caution them that dealing with conflicts quickly and rationally can avoid later serious problems that are almost certain to arise if they attempt to ignore the conflicts.

Conclusion

Based on the literature evidence reviewed, one can conclusively say that group oriented instruction is relevant in inculcating team work skills in students and also have the potentials of enhancing students' performance in various institutions. Since group oriented instruction helps in developing collaborative and cooperative ability in students, it is therefore needed for preparing TVET trainees for industry. For easy employment and effective performance of TVET students in the industry, there is urgent need for TVET teachers and master trainers to adopt any of the group oriented instructional methods to inculcate in the trainees team work skills which is currently a fundamental quality needed by industrial employers during job selection exercise.

Recommendations

Based on the literature evidence reviewed, the following recommendations were made:

1. TVET teachers should adopt group oriented instruction to enhance students performance.
2. The National Board for Technical Education, National Business and Technical Examinations Board and state technical education boards should periodically organize retraining programmes in form of workshops, seminars and conferences to update the TVET teachers on the skills and procedures for teaching using group instructional method.
3. At regular intervals the TVET teachers should be given orientation to create awareness on the relevance and need to prepare the TVET students for the industry to enhance industrial development.
4. Group oriented instruction should be adopted at TVET teacher training programmes in tertiary institutions to prepare the teacher for group teaching task needed for effective teaching and learning.
5. The curriculum planners and developers should carry out curriculum improvement to capture group learning activities and experiences.
6. Adopting the strategies for forming study teams to enhance effective implementation of group oriented instruction.

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