

Enhancing Learning through Constructive Alignment in Vocational Schools in Cameroon

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Abstract: Through out the years, teaching and learning approaches have evolved in so many ways and in different educational context and settings. In Cameroon for instance, teaching and learning approaches have experienced paradigm shifts from the objective approach, to the New Pedagogic approach and now to the Competency based approach. The importance of learning outcomes is central to teaching and learning in schools especially in vocational training where the focus has moved to knowledge acquisition to knowledge construction through problem solving competences. This implies that teaching and learning should undoubtedly be more learner centered. Thus, Pedagogy needs to align with constructive learning theories with great consideration on the guiding principles of constructive alignment that takes into account the different purposes and settings in which learning takes place. Vocational education plays a very vital role in the socioeconomic growth of a country. Constructive alignment approach is aimed to improve students learning outcome in vocational schools through it application by deliberately aligning the intended learning outcome to the teaching learning activities and the assessment. Based upon constructive learning theory(constructivism) aligned curriculum can be achieved by focusing on what the students does. the use of constructive alignment approach in vocational schools should align the learning outcome to the three key elements of constructive alignment which are the learning outcomes, the teaching learning activities and the assessment strategies, this plays a key role in producing a skilled workforce and create the local workforce needed by the industry and the country. Using the quasi-experiment research design, the study advocates for a more constructive aligned instruction in technical colleges in Cameroon.

Keywords: Constructive, Alignment, Teaching, Learning, Outcome, Assessment, Vocational

Introduction and problem

Classroom teaching is a complex system that involves an interplay of roles among the teacher, the students, classroom context, learning activities and assessment (Biggs, 1993). Von Bertalanffy (1968) suggests that the interaction between the different classroom components must be driven towards a stable equilibrium. Therefore, improving one aspect of instruction should be accompanied with the improvement of the other interacting features of the system. This process is known as instructional alignment and it occurs when the curriculum and assessment methods are aligned resulting to improved instruction (Cohen, 1987). Today, Cameroon uses the Competency Based Approach in teaching. It embodied the assessment of Skills knowledge and Attitude. This is likely to the Constructive alignment Approach but for the fact that, constructive alignment is more on skills development and ensuring that all the components are well aligned to achieve the expected goals. what the learners can do at the end of the course. its more Hands -on than theory. With vocational Education, more skills are expected to be showcased than theory. Presently, Cameroon uses the Sequential System of Assessment (SSA), Assessment of learning (summative) and Assessment for learning (formative). The Sequential System in Cameroon is expected to be carried after every six weeks of learning. The practice isolates and considers assessment as a single exercise. Furthermore, teachers of vocational schools seem to teach students to pass rather than to develop the required and appropriate skills needed in the job market as well as building individuals who can solve

problem in the society. Students do not show prove of the learning outcomes expected from them to make them be of positive value to themselves and their society in the form of being practically skilled for most of the jobs. Thus, some students lack the practical skills to be able to fit in the world of works when they complete school. This explains why more often teachers evaluates more on theory and expect the leaners to give them back what they gave them and leaving out the aspect where Biggs (2014) says the learning activities and the assessment must be aligned to achieve the expected learning outcome and again teaching should be to entice creativity and critical thinking in the learners.

Objective and Hypothesis:

Assuming that the process of learning is as important as the end product, the study therefore aims at finding out the differences in learning outcomes of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

The study adopted the hypothesis below

Ho: There is no significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

Ha: There is a significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

The above guess is justified by the fact that, with the appropriate use of constructive alignment by the teacher, it is believed that the required skills will be acquired by the student. Alignment occurs when the learning activities that teachers ask students to engage in help them to develop the knowledge, skills and understandings intended for the unit and measured by assessment. If assessment drives students' learning, then students are most likely to achieve the intended outcomes if the assessment is aligned with intentions of the instructions.

Theoretical orientation

The theory that orients this article is known as constructivism. Constructivist theorists include

Piaget (1928, 1962); Vygotsky (1926, 1962); Dewey (1929, 1933); Dewey & Bentley, (1949); Bruner (1960, 1966, 1973); Jonassen (1999). They argue that learners are at the center of the teaching and learning process and they and information makes meaning to them based on how they inteprete it. They learn by observing, processing and interpreting information based on their experiences. That is to say learners learn best when thy can situate what they learn for immediate application and acquire personal meaning (Livingstone, 2014).

Bruner initiated curriculum change based on the motion that learning is an active, social process in which students constructs new ideas or concepts based on their current knowledge. According to Bruner (1996), learning is a social process whereby Students construct new concepts based on current knowledge. He developed the concept of discovery learning in which learners construct their own knowledge for themselves. In his view, discovering information was a more effective way of learning than just being told by a teacher. The concept of discovery learning implies that students construct their own knowledge for themselves (also known as a constructivist approach). The role of the teacher should not be to teach information by rote learning, but instead to facilitate the learning process. This means that a good teacher will design lessons that help students discover the relationship between bits of information. To do this a teacher must give students the information they need, but without organizing for them. The use of the spiral curriculum can aid the process of discovery learning.

Students construct their own knowledge through new ideas and concepts that they develop when teachers provide an enabling learning environment with enough instructional materials for them

to interact and come out with certain tasks after prior knowledge and observation in the workshops or practice training. The students would select the information and come up with tentative statements on how tasks should be done independently until they reach mastery of required skills. Teachers make sure that students are motivated to learn and instruction carried out using learner-centred methods to allow the students to discover how to carry out the tasks assigned to them in ways that the learning objectives align with the teaching method as well as the assessment strategy to get the desired learning outcome of a skilled technician.

Constructive Alignment

"Constructive alignment is an outcomes-based approach to teaching in which the learning outcomes that students are intended to achieve are defined before teaching takes place. Teaching is then designed to engage students in learning activities that optimise their chances of achieving those outcomes, and assessment tasks are designed to enable clear judgments as to how well those outcomes have been attained" (Biggs, 2014, pp. 5-6). It brings in to alignment the predetermined competences, the learning and teaching activities, and assessment types. It is one of the most influential principles in teaching. Teaching is then designed to "engage students in learning activities that optimise their chances of achieving those outcomes, and assessment tasks are designed to enable clear judgments as to how well those outcomes have been attained" (Biggs, 2014). Thus, the ultimate aim of constructive aligned teaching is to design teaching so that it promotes students' deep approach to learning which is more likely to enhance deep understanding and lead to higher quality learning outcomes (Entwistle, 2018; Trigwell, 2012).

The constructive alignment approach recognises "knowledge is constructed by the activities of the learner" (Biggs, 2014, p.9). rather than being directly transferable from teacher to student. "Learning takes place through the active behavior of the student: it is what he does that he learns, not what the teacher does." (Tyler, 1949). The central step in designing learning is to define the intended learning outcomes that is, what the students are supposed to learn and how they will demonstrate that learning has taken place (Biggs & Tang, 2011). Further, the intended learning outcomes should be stated as actions that the students are supposed to bring into play and define what the students should master after the course, for example, 'identify', 'compare', 'analyze'. The role of the instructor is to engage the student in relevant activities that support the attainment of the intended learning outcomes (Biggs, 1996).

Rather than being directly transferable from teacher to student, alignment occurs when the learning activities that we ask students to engage in help them to develop the knowledge, skills and understandings intended for the unit and measured by our assessment. A constructively aligned unit capitalises on the powerful effect of assessment on students' learning experiences. If assessment drives students' learning, then students are most likely to achieve our intended outcomes if the assessment is aligned with our intentions. The framework of constructive alignment is represented as follows:

1. Identify the intended learning outcomes.
2. Design assessment tasks to measure attainment of the learning outcomes.
3. Plan learning activities to enable students to develop the skills, knowledge and understandings described in the intended learning outcomes and measured by assessment.
4. Choose the content (topics/examples/resources/materials) required to support the learning activities (Biggs & Tang, 2011, p. 6).

Constructive alignment therefore reflects the more general paradigm shift from teacher-centered teaching to student-centered teaching in which the student is seen as an active constructor of knowledge (Tran et al., 2010). By choosing appropriate assessment methods and tasks and aligning assessment with the intended learning outcomes and the teaching-learning activities, instructors can effectively guide students' study practices and enhance deep, meaning-oriented learning (Biggs & Tang, 2011; Boud & Falchikov, 2006). To sum up, constructively aligned

teaching is essentially a criterion-referenced system where the central elements, that is, intended learning outcomes, teaching-learning activities and assessment, are aligned and there is consistency throughout these elements.

Vocational Education

Also known as career and technical education, Vocational Education can be defined as the education that is based on occupation and employment. Vocational Education is designed to prepare individuals for a vocation or a specialised occupation and so is directly linked with a nation's productivity and competitiveness. (Cornford, 2005). It prepares students for specific trades, craft and career at various levels in all spheres of life. It is sometimes referred as technical education because the trainee directly develops expertise in a particular group of techniques. Education designed to prepare skilled personnel at lower levels of qualification for one or a group of occupations, trades or jobs. Vocational education, usually provided at upper secondary level, includes general education, practical training for the development of skills required by the chosen occupation, and related theory.

According to Zaib and Harun (2014), vocational education is a unique kind of education because it aims to develop understanding, attitudes and work habits that are useful for the individual so as to meet the social, political, and economic needs in accordance with the features. Vocational education and training is an educational approach that emphasizes on the needs of the industry so that the enhancement and development of individuals can be done in the industry.

The goals of technical educational settings in Cameroon include providing a trained workforce for various employment sectors, to increase understanding of technology, and to prepare people who might be able to solve the environmental problems Cameroon is facing. According to Atayo (2000), technical and vocational education is confronting similar issues as general education in Cameroon: lack of resources, including material infrastructure, trained teachers, and financial sponsors. The goals of technical educational settings in Cameroon include providing a trained workforce for various employment sectors, to increase understanding of technology, and to prepare people who might be able to solve the environmental problems Cameroon is facing. According to Atayo (2000), technical and vocational education is confronting similar issues as general education in Cameroon: lack of resources, including material infrastructure, trained teachers, and financial sponsors.

In Cameroon, vocational education is highly recommended these days as it ties with the Cameroon vision of 2035. According to Che (2007), the goals of technical educational settings in Cameroon include providing a trained workforce for various employment sectors, to increase understanding of technology, and to prepare people who might be able to solve the environmental problems Cameroon is facing. Like general education, technical and vocational education in Cameroon is confronting some problems among which are: Poor delivery of instruction, lack of resources, including material infrastructure, trained teachers, and financial sponsors (Atayo, 2000).

Bukit (2014) proposed that vocational education being a different type education from other forms of education should have the following characteristics:

1. oriented towards individual performance in the workplace;
2. Special justification on real needs in the field;
3. The focus of curriculum on the aspect of psychomotor, affective, and cognitive aspects;
4. The benchmark of success is not only limited in school;
5. sensitivity to the development of the workplace;
6. Require adequate facilities and infrastructures; and
7. environment supporting

In terms of delivery approaches, teaching in vocational training should mostly be hands-on and so teachers either teach using a linear follow-up of the curriculum or a circular follow-up of the curriculum. However, in Cameroon today, it is difficult to find hands-on activity classroom or students going for workshops. It is rather more of lectures or handouts given for students to read and they are assessed more on knowledge rather than skills and creativity. With constructive alignment, teachers are expected to teach learners to be creative, solve problems and develop valuable and required skills in the learners. In contemporary vocational training, particular skills are required based on teaching methods such as simulations, project-based learning, laboratory learning, problem-based learning, role play, cooperative learning, flipped classroom, but teachers focus more on lectures and direct teaching methods. Liaqat (2018) concluded that, the major issue that arises in learning and teaching in vocational education is how constructive alignment can be accomplished? Also, the major challenge faced by the academics in realizing the constructive assessment is to ensure that the learning outcomes are in line with learning and teaching activities and assessment in a way that student has managed to construct the meaning of the information and whether that information has been transformed into knowledge by engaging in the appropriate learning activities. The study therefore attempts to provide ways by which constructive alignment can be accomplished in vocational schools in Cameroon.

Design

The study adopted the pretest, post test quasi- experimental research design to test the hypothesis that was generated at the beginning of the research. This research design was deemed necessary because the effects on the students learning outcomes in vocational schools when taught using the constructive alignment approach will be seen whether it improves their outcomes or not and whether it could emphasize the effective use of the approach by teachers of vocational schools Fako Division so as to develop in the students (trainees) the appropriate skills needed or required in the job market or industries when they graduate.

Sample

Using a simple random sampling technique, the study selected 40 final year trainees in the department of hotel management and catering of Cameroon Opportunity Industrialization Center (COIC) Buea. These were further divided into 2 groups of 20 still using simple random technique. One group (experimental) was taught using Constructive Alignment Approach and the second group (control) was taught using the normal traditional teaching approach used in vocational schools. At the end, measures of the intervention are then compared between the experimental and the control groups.

Results

The research question for the study asked was, what is the difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division?

While the hypothesis (**H₀**) stated that there is no significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

The table below presents the t-test analysis of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

Table 1

T-test analysis of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools

	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t _{cal.}	Df	Sig. (2-tailed)	t _{crit.}	Decision
Exp. Grp	40	4.43	1.107							
Control Grp	40	2.98	1.609	.229	1.45	6.328	78	.000	1.960	Reject Ho ₄

N= Sample size t_{cal.} = t_{calculated} t_{crit.} = t_{critical} df = Degree of Freedom

From the table above, since the calculated value (t_{cal} = 6.328) is greater than the critical value (t_{crit.} = 1.960) with df = 78 at p ≤ 0.05 level of significance, the study rejects the null hypothesis (Ho) and conclude that there is a significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in favour of students taught using the constructive alignment approach.

The findings here reveal that there is a moderate positive and statistically significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division in favour of students taught using the constructive alignment approach. From the above findings, the null hypothesis was rejected while the alternative hypothesis retained which read thus: there is a significant difference in the mean scores of students taught using the constructive alignment approach and those taught using the conventional approach in vocational schools in Fako Division.

Discussion

The above finding agrees with Zhang et al. (2022) who conducted an experimental study in the education sector to compare two different teaching models—traditional and constructive alignment—and used statistical tools to analyse differences in students' learning effectiveness and also found that there is a significant improvement—in terms of students' learning experience scores and academic grades—was seen in the experimental group compared with the control group. This study has further verified that implementing a constructive alignment template can significantly improve students' learning effectiveness in scientific courses, hence providing theoretical and practical references for teaching and learning in scientific courses. Further, this finding is supported by Biggs and Tang (2011) who explained that constructive alignment is a principle used for devising teaching and learning activities, and assessment tasks, which directly address the intended learning outcomes in a way not typically achieved in traditional lectures, tutorial classes and examinations.

Recommendations

Teaching and learning in vocational colleges should be based on the principle that learning should be constructive collaborative and should emphasize students acquisition of competences such as self-directed learning, develop problem-solving skills, analytical thinking, teamwork, critical reflection and knowledge gained is sustainable so that what is learned could be extrapolated in other contexts.

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