

Chapter - 3

The Constraints of Linking Instructional Methods to Learners' Real-Life Settings in the Context of Resources Scarcity

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Abstract

According to the Tanzania educational policy, formal education should be useful and applicable to learners' real-life settings. In this sense, classroom instructional approaches should have the power to enhance the acquisition of real-life related skills and knowledge. It is for this reason Tanzania reformed its secondary school curriculum in 2005 from the one that focused on the mastery of subject contents to the one that enhances acquisition of competences among students. For this change to materialise, the new Tanzanian secondary school curriculum emphasizes the use of inquiry and student-centred pedagogies such as problem-based, demonstrations, hands-on activities and conducting real-life related projects. This study assessed the extent to which teachers employed these methods in their classrooms.

Data were collected using semi-structured one-on-one interview involving sixty Agricultural Sciences, Biology and Civics teachers, and ten academic teachers. Besides, focused group discussion was conducted with teachers to discern the linkage between classroom instructional approaches to learners' real-life settings.

The study shows the disjunction between the policy and practice due to resources scarcity. The inadequacy of both human and physical resources appeared to be the main setbacks for teachers to practice instructional methods that could enable learners to acquire real-life knowledge and skills. The scarcity of human resources appeared to be a big issue because teachers were also incompetent in both content and pedagogical knowledge. The study recommends the concerned stakeholders allocate adequate and necessary instructional resources for teachers to practice teaching methods that could inculcate skills applicable to students' life.

Keywords: instructional methods, real-life settings, knowledge and skills, secondary education, education policy, Tanzania

1. Introduction

In Tanzania, the secondary education aims at equipping learners with competences that could be applicable for further studies, carrier, and real-life settings. The policy of education clearly stipulates that “*Students who would complete secondary education should be creative and innovative, productive and entrepreneurial and thus capable of solving social and economic challenges at the individual level, community, country and globally*”^[1]. To convey such real-life knowledge and skills to students, the current Tanzanian secondary education curriculum, therefore, emphasizes the use of constructivist, inquiry, and learner-centred methods. These methods promote learning by doing where both the teacher and the learner are fully involved.

Tanzania is facing an outgrowing number of youths in the informal sector whose highest level is secondary education. However, there is a wide-spread concern regarding the competence of secondary education leavers. Employers, researchers, and the general public unanimously report the lack of competences among secondary education graduates. These concerns have ignited wide-spread debates regarding the effectiveness of the Tanzanian secondary education, particularly the contribution played by the new curriculum in shaping qualities of the secondary school graduates. To uncover this question, this study was designed. The purpose was to assess whether, or not, teachers employed methods that could promote the acquisition of real-life relevant skills and knowledge to learners. Specifically, the study focused on assessing not only whether or not, but also how teachers employed problem-based; demonstrations; hands-on activities/practical^[1] and real-life related projects teaching methods in their classrooms because these are regarded by the Tanzanian curriculum as key in facilitating the acquisition of real-life relevant competences to students if teachers could effectively put them to use^[1].

Scholars such as^[2] admit that the use of problem-based teaching methods increases student’s ability to absorb, comprehend, retain, and utilize/apply the information in different contexts. The problem-based methods employ realistic problems that could engage students in investigating, planning, developing evidence-based explanations and making inquiries^[3-8]. By employing problem-based teaching methods, students are in the position to develop the capacity to apply the school knowledge sustainably in multiple contexts once they join the world of work.

Moreover, demonstration teaching methods were also selected because

they have the potential to enhance learners' understanding of the subject matter ^[9, 10], enhance learning, motivation, attitudes and increases students' curiosity and develop their reasoning abilities ^[11]. Students are likely to develop critical and creative thinking if demonstration teaching methods are appropriately employed in the classroom. It would, thus, be very possible for the students to relate the knowledge they learned in the classroom to their real-life settings as the policy of education in Tanzania stipulates.

It is believed that students study better when they can touch, measure, feel, draw, manipulate and find answers for themselves rather than being given the answers ^[12-15]. Hands-on activities such as experiments facilitate the development of creativity, problem-solving skills, independent learning skills ^[15], and enable students to apply the learned materials to various life situations ^[16]. Therefore, education can only become key tool in equipping learners with the skills and knowledge to help them to address their social-economic challenges ^[1, 17], if the hands-on teaching methods could be effectively practiced.

Furthermore, project-based teaching methods were selected because they are useful approaches to helping learners to develop the capability to plan, implement, and evaluate activities ^[18, 19] that have a direct linkage to their real-world ^[20]. The project methods build learner's capacity to construct knowledge and transfer the content knowledge to different contexts ^[20] particularly in their livelihood. If teachers could effectively use project-based instructional methods, learners are likely to acquire knowledge and skills that could be relevant and applicable in their life.

1.1 Theoretical framework

The classroom instructional practices that develop the capability of learners rely on constructivism and particularly social constructivism theory. Social constructivism can be traced from the eighteenth century through the seminal work of Giambattista Vico ^[21]. He hypothesised that *"truth is verified through creation or invention and not through observation"*, implying that human beings could only understand clearly what they themselves have constructed and not otherwise. Bruner (1960), extending this notion, argued that learners construct new ideas or concepts based upon their own existing knowledge. Bruner avows learning as an active process that includes selection and transformation of information, decision making, generating hypotheses, and making meaning from information and experiences. Considering the afore-discussed ideas, Dewey (1820-1952) ^[22], argued that the traditional teaching needs to be balanced with a much greater

concern of students' actual experiences and active learning. A child, according to Dewey, learns better by taking active roles in learning. Dewey, as such, regarded a teacher as the intellectual leader of a social group and not a dictatorial ruler ^[23].

Social constructivists, therefore, regard the learner as one who can construct knowledge through experience, collaborate, and actively participate in the learning process. It calls for the teacher's role to be the facilitation of learning rather than being a source of knowledge. This means that the learner should be actively engaged in the teaching and learning processes in a joint enterprise with the teacher in constructing the new meanings/knowledge ^[24]. In so doing, the instructions help learners to acquire real-life relevant knowledge/skills.

1.2 Methods and Materials

Sixty teachers of Agricultural Sciences, Biology, and Civics subjects and ten academic teacher-leaders were purposely selected from ten ward secondary schools in Mvomero district. Teachers of these subjects were purposely involved because the contents of these subjects are directly linked to learners' real lives. The intention was to investigate how the instruction of these subjects have helped learners to acquire real-life knowledge and skills as stipulated in the latest Tanzanian Education Policy of the year 2014. To achieve such objective, problem-based, demonstrations, hands-on activities ^[1]; and conducting real-life related projects we considered to be the useful teaching methods ^[1].

Data were collected using the Likert-scaled semi-structured interview. Both teachers and academic teacher-leaders were required to point out which among the specified teaching method they regularly employed in their classrooms. After responding to the structured question, the participants were then asked to clarify their answers by providing vivid examples and experiences concerning the issues investigated. Additionally, focused group discussion was conducted with teachers to get more information on the questions. Quantitative data were analyzed by using the SPSS 16 computer program while qualitative data we analysed on the grounds of the content analysis procedures.

2. Teachers' practice of real-life relevant instructional methods

To achieve the objective, the study assessed teachers' practice of instructional methods such as problem-based, demonstrations, hands-on activities/practical, and conducting real-life related projects. If teachers effectively use them, such instructional methods help students to acquire the

real-life, relevant competences. The study findings show that teachers hardly employed these methods, and this was influenced by their incompetence or resource scarcity or both.

2.1 Teachers' practice of problem based teaching methods

Problem Based instruction uses complex and real-world problems to promote students' learning of principles and concepts rather than directly presentation of facts. It uses problems to foster collaborative, self-directed learning ^[25] and thus increases student's competence to absorb, recognize, retain, and make use of information ^[25] in different contexts. Studies ^[26] identified the features of problem based instructional methods as learner-centered, teachers as facilitators, small group work, problem-solving skills, and self-directed learning. The methods embrace relevant and realistic problems that could engage students in investigating, planning, developing evidence-based explanations, and making inquiries ^[3, 6-8]. In problem-based classroom teaching, the teacher plays the role of facilitating learning of which students participate fully.

Studies note the merits of problem-based teaching methods such as promoting critical thinking skills, problem solving capacity, creativity, communication skills and enhance students' life-long learning capabilities ^[27]. In the same line, studies ^[2,28-30] recommend problem-based teaching and learning methods to have the potential of improving students' higher order thinking skills, understanding and application of learned knowledge. Once teachers embrace problem-based teaching, students develop such competences and improve their livelihood.

This study revealed the paucity of using problem-based teaching methods among teachers. Teachers indicated that they hardly employed these methods in their classrooms. The findings may imply that teachers hardly provided their students with opportunities to interact with the subject matter to make sense of the taught materials. It may also indicate that teachers relied more on emphasising rote learning among students. The inappropriate forms of teaching and learning methods employed by teachers in these schools fails the Tanzanian Education Policy. The failure to employ relevant instructional approaches in implementing this curriculum has been also noted by other academics as a major setback for the development of necessary life skills among students ^[31] in developing countries. For the teaching practices to develop relevant livelihood competences to learners, teaching and learning practices should embrace problem-based teaching methods.

2.2 Teachers' implementation of the demonstration teaching method

Demonstration is a teaching method that communicates to learners through visual aids. It does not only combine both telling and showing, but also provides learners with opportunities to imitate and practice what has been concurrently listened and observed ^[32]. It entails illustrating the knowledge/skills to be learnt by something else other than regular teaching aids or other ways of instruction ^[32]. Well organized and appropriate demonstrations enhance students' understanding of the subject matter ^[33], learning, motivation, and attitudes ^[11]. Additionally, the proper practice of demonstrations arouses learners' curiosity and develops their reasoning aptitude.

Respondents of the study were asked to state whether, or not, they employed demonstrations teaching methods and how well they employed such methods if at all they did. The results show that teachers hardly employed demonstrations while teaching. This implies that students are not given the opportunity to combine the listening, observation, and the application processes while studying. It is clear, therefore, that students are deprived of opportunities to acquire the knowledge and skills of these issues. These findings concur with those reported by ^[34-37] who found paucity and ineffective use of learner-centered instructional methods. From these findings, it is clear that there is a low possibility of attaining the goals of competence-based curriculum in Tanzania. As a study reported by ^[32] acknowledges, demonstration teaching methods increase students' curiosity and develop their reasoning abilities, the poor practice means inability of students to relate the classroom learnt materials to real life and therefore not able to apply in different contexts.

2.3 Teachers' practice of hands on activities teaching methods

Hands-on activities involve learning by doing. Literature shows that students learn better when they have an opportunity to touch, measure, feel, draw, manipulate, make charts, record data, and when they find answers for themselves rather than being given the answers ^[12-14]. Experiments, among the approaches to hands-on activities, facilitate the development of creative skills, problem-solving skills and independent learning skills ^[15] and enable the student to apply the learned materials to various life situations ^[16]. This study observed the contribution of hands-on activities in improving relevant livelihood knowledge of learners. The participant teachers were requested to inform whether, or not, they had arranged time for students to implement hands-on activities in delivering their lessons. The results show that teachers

hardly employ hands-on activities in their lessons. This implies that students did not have time and opportunity to practice the knowledge they study and thus they were not able to explore and make sense of the learned materials. Similarly, [21, 34, 37] noted the constraints in the practice of practical sessions in science subjects among teachers in Tanzania. Based on these findings, one could conclude that it is challenging for the secondary education in Tanzania to develop livelihood skills to learners. The chance that students can utilize the knowledge and skills they learn in different context and particularly beyond the classroom is low.

2.4 Teachers' practice of project-based teaching methods

Project based is an authentic approach to teaching that enables learners to plan, implement, and evaluate projects [18, 19] that are directly linked to the real-world applications as they go beyond classroom [20]. It is a student-centered, motivational, creative and meaningful teaching approach because the practices emphasize interdisciplinary and learner centered lessons [38]. The project methods are directly linked to constructivism theory which views learning as an outcome of knowledge construction based on previous ideas [39]. The project-based teaching method not only aims at equipping content knowledge to students but also the ability to transfer the content knowledge to different contexts [20] including their livelihood. Due to the role of project teaching in student's knowledge development, the study saw a need to find out how teachers have been using project-based teaching in their teaching practices.

The interview results from both classroom teachers and academic teachers show that teachers are reluctant in practicing project-based teaching methods. This trend shows that students hardly develop real life competences in relation to the lessons they studied at school and therefore contrary to the policy's expectations.

2.5 Constraints of implementing instructional methods that are relevant to learners' real life settings

Classroom instructional methods are the ones that put the theoretically formulated education policy under practice by providing feedback on whether the policy is implementable or not. For the policy to be practical, resources such as human and physical should be available and adequate. Literature [21] acknowledges teachers' knowledge as a critical resource in classroom practice since the more knowledgeable the teacher is, the more effective she will be in her teaching. Likewise, physical resources such as classrooms and adequate instructional resources are vital in achieving the

expected policy outcomes. Available and adequate physical resources facilitate learners to understand the lesson by motivating ^[40] and exposing them to the real world ^[41] and thus could be able to apply the learned knowledge in multiple contexts and their life in particular. The study noted the scarcity of both human and physical resources and that this brought about setbacks for teachers to employ instructional methods that could link the knowledge taught at school with real-life settings.

2.5.1 Scarcity of teaching and learning resources

Teaching resources are the key variables that enable the teaching process to be done successfully. The use of instructional resources facilitates active participation and critical thinking to learners. They enhance students' learning by facilitating the retention of materials as more than one sense is involved in learning. Adequate instructional resources improve learners' participation in the learning process. However, for the instructional resources to assist learners to understand the lesson, it is important that such resources are related to the nature of the learner and content of the lesson ^[40]. Such resources motivate learners ^[41] to participate fully in the classroom teaching and learning process because they expose them to the real world.

This study found the lack of the use of teaching and learning resources and these limited teachers from employing teaching methods that could enable students to be creative, problem solvers, critical thinkers, productive and innovative. For example, most of the participant teachers affirmed that they had no well-resourced laboratories in their schools, and this challenged their attempts of using constructivist approaches to teaching. Because of the same problem, teachers had the opinion that it was difficult for their students to acquire useful scientific principles which could be applicable in daily life. Most of them agreed with what one of the participant who stated, *“Due to absence of laboratory in our school, it is very difficult for students to link science knowledge to real-life settings”*.

Studies show the importance of teaching and learning resources and particularly the science laboratory for students to conduct scientific experiments. The adequately resourced teaching and learning process, according to ^[42], is associated with the development of students' useful values in class and future life as well. Comas Camps (1925) in ^[42] cited examples such as the spirit of observation, calmness, self-control, the practice of looking for the causes of things, order, teamwork, caution in making claims, admiration of nature, modesty, and tolerance as the portion of the human mind which could be cultivated by good science education.

As noted previously, a well-structured science lesson could bring about useful values in life if employs relevant teaching and learning resources. One of the key teaching and learning resource is the well-resourced science laboratory as this allows students to conduct scientific experiments and other investigations. In view of the results, it appears that many secondary schools in Tanzania and particularly those located in rural areas do not have functional science laboratories. The findings correlate with [21, 43-45] who avowed the inadequate teaching and learning resources as a setback for teachers to practice quality teaching in Tanzanian schools.

It is, thus, important for the concerned stakeholders to allocate adequate teaching and learning resources for the teachers to use teaching methods that could inculcate skills applicable to students' life. Concerning the benefits of good science learning as put forward by Comas Camps, it is difficult to distinguish between a person who attained secondary education and that of lower levels. This finding has an important implication to policy makers and education stakeholders. Formulating good policies has nothing to do with the achievement of intended goals but the appropriate implementation. For this case, the inadequacy of resources has a big impact on the type of graduates produced by the Tanzanian secondary education system. If Tanzania is keen to use secondary education as a means of equipping students with useful and life-related competences, teaching resources should necessarily be provided. The availability of resources is likely to motivate teachers to employ teaching methods that could facilitate students' acquisition of knowledge and skills applicable in their life.

2.5.2 Teacher's competencies in delivering the subject matter

Competence is described as a complex combination of knowledge, skills, understanding, values, attitudes and desire, which lead to effective embodied human action in a particular domain [46]. A study [47] denotes competence as knowledge, skills, attitudes, values, motivations, and beliefs that are needed by people to successfully perform a particular work. Teachers' competences encompass field competences, which denote academic studies about the content or the subject matter specialized for pedagogical competences, which denote pedagogical skills in lesson deliverance and social-cultural competences, which encompass the background of students and teachers in both social and cultural aspects [47]. Effective lesson delivery is a result of teachers' competence in both pedagogical and content knowledge. Teachers' competence in their area of specialization is very crucial for quality classroom instructional practices.

As facilitators and coaches, teachers' main role is to arouse students' learning by allowing them to participate in the lesson. While participating, students may come with different ideas and perceptions about the knowledge at hand. The teacher as the main coach plays a critical role in improving and sharpening students' ideas to reach the common understanding. If the teacher is not knowledgeable enough it could be very difficult to refine students' ideas and relate to the lesson. The study participants doubted their competence in delivering the lesson which could enable students to acquire skills and knowledge relevant to real-life settings as one noted; *"The school teaching is more of theoretical and unrealistic because we are not competent enough to cite students' real-life related examples"*.

The ability to formulate relevant examples in the teaching and learning process is influenced by both the pedagogical and subject content knowledge background of the teacher. The capability to use the context relevant example other than that noted in the textbook could be influenced by the teacher's content knowledge concerning the subject matter. From our study, some teachers seemed to lack competence in the subjects they taught. This problem could be attributed to the pre-service teachers' training program they attended in that it did not address much of this problem among teachers. To improve teachers' competence, in-service training is required ^[48].

Teachers' competence is also associated with pedagogical knowledge such as knowing when and how to apply a specified teaching method to the intended learning objectives, know different types of assessments and how to apply them, classroom management, and lesson planning with the specified learning objectives. As noted by literatures ^[49-52], the way student-teachers are taught in colleges is contrary to what graduate-teachers are demanded to practice in schools. In his study ^[50] about tutors' understanding and their instructional practices on competence-based curriculum, the study found Tanzanian tutors' teaching practices as more authoritarian, theoretical, and teacher-centered rather than student-centered nature. The repercussion of tutors being accustomed to teacher-centered pedagogy could be associated with preparing passive prospective teachers who could not be researchers but assimilators of facts. Instructors' practices in teachers' colleges have an impact on the prospective teachers' pedagogical knowledge competence as their teaching and learning practices could hardly differ from their instructors ^[49].

The secondary education curriculum in Tanzania aims at preparing students who could demonstrate several capabilities. Some of the capabilities a graduate has to demonstrate in everyday life include the application of

scientific and technological knowledge, principles and skills to successfully solve existing problems in the society and meet its changing needs ^[1, 17]. According to the findings, it would be difficult for teachers to practice teaching methods that could facilitate the development of relevant livelihood competences of learners if their own competencies are limited. For a teacher to be able to practice methods that could develop real-life related competences, she/he must be conversant with the origin of knowledge, how it changes and how it is acquired ^[4]. The incompetency of teachers in the subject they specialised to teach is the reason for most of them to embrace the teacher-centered approach to classroom instruction ^[21].

Competency in both pedagogical and subject knowledge is vital for employing teaching methods that could facilitate learners to acquire knowledge and skills relevant to real-life settings. Competence in the subject matter allows the teacher to relate the subject contents to learners' immediate environment. Therefore, the curriculum developers, teacher education department and secondary education department should find the modality of enhancing teachers' pedagogical skills and content knowledge. Solving this problem could be done through in-service training ^[48]. The teacher education curriculum in Tanzania should also be designed and implemented in ways that allows pre-service teachers to gain competence in both pedagogical and content knowledge to enhance their subsequent teaching capacities ^[49].

3. Conclusions and recommendations

This study assessed the role of classroom instructional approaches in promoting the acquisition of life-related skills and knowledge to learners. To determine this, the learner-centered teaching methods such as problem-based; demonstrations; hands-on activities, and conducting life-related projects teaching methods were regarded as ones that could facilitate the acquisition of real-life relevant competences among students if teachers could effectively use them. The study shows the disjunction between the policy and practice not only due to resources scarcity but also because of the lack of competencies among teachers. The lack of resources coupled with poor content and pedagogical knowledge among teachers created a demarcation between school knowledge and real-life settings knowledge. It is for this reason that school learning has continued to be perceived as for formal employment rather than for gaining useful knowledge for one's livelihood.

It is thus important for the concerned stakeholders to allocate adequate teaching and learning resources for the teachers to practice quality teaching

methods that could inculcate skills applicable to students' life. Curriculum developers are informed that the formulation of good policies has nothing to do with the achievement of intended goals but the appropriate implementation. If the country is keen to use secondary education as a means of equipping students with useful and life-related competences, teaching resources should be provided to teachers and teacher-education should be re-designed to improve teachers' pedagogical content knowledge.

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