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Higher Learning Institute Module Organization vis-à-vis the Criteria of Curriculum Development for Problem Solving Skill Development

Solomon Melesse

C & I at Bahir Dar University, Amhara Region, Ethiopia

ABSTRACT

In this paper, an attempt is made to disclose the state of philosophy and the nature of curriculum development in Higher Learning Institutes (hereafter HLIs) of Ethiopia. This paper also tries to reflect on the existing literature on the different views of authorities about the forms, values, and assumptions of using modules in HLI programs. Lastly, the theoretical framework for HLI module organization vis-à-vis the criteria of curriculum development for problem solving skill development is reviewed. The review is expected to benefit both decision makers at any educational level and practitioners in their attempt to bring the younger generation who passed through any higher learning institutes to teach the skill of 'learning how to learn' in this swiftly changing world. It is also of help for creating citizens who are well versed with the skill of problem solving which has been the vernacular of this nation since the inception of the current education policy. It further shows the status of module organization in Ethiopian Higher Learning Institutes.

Key terms: module organization, problem solving, curriculum development, Higher Learning Institutes, problem solving skill

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The State of Philosophy in Higher Learning Institutes of Ethiopia

Philosophy shapes the way we perceive both the social and natural world. The world views we have delineate our paradigms in relation to the ontological, epistemological, and axiological features of education, and hence, our philosophy of education which has two fold advantages: first, it contributes to a deeper understanding of educational theory and practice and concepts like education, teaching, knowledge, and curriculum; second, it provides the conceptual framework for intellectual dialogue and debate. Then, genuine change in our education system becomes inevitable.

As Amare (2009) vividly asserted “the absence of a proposal for a joint action and responsibilities in teaching and learning suggests the hidden bias of the curriculum to mere acquisition grounded in Western philosophy and context (culture) and hence lack meaning in the African context where traditional values underpin our understanding and moral behavior” (p. 428). When it comes to curriculum, the focal area I pursue about, “the absence of a proposal” has to do with, in my opinion, unclear ontological, epistemological, and axiological stances or, even worse, a lack of a philosophical rigor needed to take a defensible position on the part of the existing generation of Ethiopian scholars as regards to the nature of education itself. And, as a result, we resort to adopting others’ beliefs, values and attitudes.

The writer has never observed a single or a group of scholars from Ethiopian Universities debating in an open forum about the type of educational philosophy that is appropriate for our educational system with a deeper sense of “a nation at risk” except a few who tried to vent their concerns out in meetings and through articles they write. I am not pointing fingers at any one here. What I am saying is, without a clear philosophical perspectives and researches based on them, especially educational philosophies integrated with endogenous values and beliefs that give more local control to educational processes, it would be difficult or even impossible to realize the radical transformation in curriculum organization suggested in the related literature reviewed in this paper.

To create a significant and meaningful change at all levels of our educational system, it requires reconsidering our view of education and knowledge. What really is education? What is knowledge? What is the purpose and function of education? How should curricular materials be organized? The answers we have to these questions are indicative of our philosophical positions, if any, with regard to Ethiopian education.

Dewey, a pragmatist and progressive educator, cited in Amare (2009) is quoted to have said: "The aim of education should be to teach us rather how to think, than what to think – rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men". In this perspective, the whole process of educating is to draw out, as Socrates once said, and build upon the learner's internal abilities. It, however, seems that we Ethiopians are standing contrary to this philosophy. My lived experience at the different levels of the educational system in Ethiopia (i.e., universities, high schools and education bureaus), has already made me believe that most Ethiopian educators still see education as a process of pouring (injecting) information external to the learner. In this view, which the writer calls the "tabula-rasa paradigm", we see ourselves as HLI instructors as knowledgeable and the authorities of classroom instructions. We, therefore, complacently transfer our knowledge to "empty minds" and expect the "filled minds" to regurgitate that knowledge when asked. For me this is the result of the educational system we are in. Supporting this view, Amare (2009) asserted that "the teaching and learning process in class is aimed at making students acquire massive amount of information and thereby reflect it in the form of recall" (p. 421). He further disclosed the purpose of education in Ethiopia as "The most serious problem of our educational system is that acquisition (knowledge) becomes an end in itself ..." as long as this devastatingly overwhelming view lingers on in the mind of the educated, it would be naïve of us to expect a change despite policies designed in that direction (Ibid). Education, however, should serve far-reaching purposes than just bringing about acquisition of knowledge.

Amare (2009) put the blame to the "wrong curriculum" for not achieving the 1994 Ethiopian Education and Training policy intention as expected. According to his analysis, the effect of teaching the wrong curriculum was to "urbanize the rural youth through inculcation of Western values ..." (p. 425). The curriculum is simply a reflection of our conceptions of knowledge, teaching and learning. It seems that the "wrong" curriculum designers, whoever they might be, ontologically view knowledge as existing "out there" independent of the human thought processes; and, perhaps, tacitly assuming that the West discovered the knowledge out there. Consequently, Ethiopian curriculum emerged laden with Western epistemic and cultural values threatening indigenous knowledge and culture. This is not to mean, in any way, that we don't need to share Western experience, however.

Let's collectively begin to look inward and try to develop profound philosophical thoughts of the nature, purpose, process, and function of education. Let's view knowledge (curriculum content) from multiple perspectives, both in theory and practice, and broaden the curriculum to include pedagogies that reveal learners' hidden potential, endogenous values and actual local needs, varieties of traditionally preserved knowledge, etc. To this end, we need to design a curriculum with a holistic purpose of attaining social relevance and pedagogic quality thereby producing citizens capable of using and generating knowledge to solve theoretical and real life problems; definitely, not a curriculum that produces a generation with a white-collar-job attitude. Educational institutions must also be willing to make a paradigm shift from immutable "knowledge transmission" view to the dynamic "knowledge construction" view where they can serve the respective society by serving their students and hence fulfilling the purpose and function of education. To realize this view, curricula should be designed following some problem solving skill development criteria suggested in the current education literature.

The Nature of Curriculum in Higher Learning Institutes of Ethiopia

Amare (2009) contends that curriculum as a vehicle for realizing educational intentions in Ethiopia is highly tainted by the course coverage syndrome and that the whole teaching and learning process focuses on only one dimension of educational goals – knowledge acquisition. Amare (2009) tried to show that the country finds itself in this dilemma in consequence of a curriculum "characterized by bulky content" and "narrowly defined" educational goals. He also accused the school system of being uncommitted to "the goals of skill development" and suggested a "radical transformation of the curriculum and the school system". This is also manifested in internal auditing attempts made by the Task Force at BDU (2008). Investigations made by the Task Force at BDU (2008) in two departments confirmed that the knowledge aspect was given emphasis to transferred skills and there is lack of balance between the two. However, early research works (e.g., McNiel, 1996) confirmed the fact that learners' problem solving skill as an adult increases as they get an opportunity to practice solving real life problems in their actual classroom settings while they were in educational institutions. Sharing this view, the writer insists that educational institutes in Ethiopia create mechanisms of keeping reasonable balance between subject knowledge and

transferred skills in its programs. This is possible only if the curriculum as a vehicle to the intentions of educational institutions be designed following problem solving skill development criteria suggested in the related literature, which will be discussed in this paper.

Views about the forms, values and assumptions of using modules in HLIs

Modules could take different forms. In some circumstances, computer assisted learning materials are considered as modules. In some other cases, course contents are divided into different parts which are composed of objectives, set of activities, reading materials and evaluation activities, and involve usually visual materials, and the sum of which is considered as modules. Still in other cases, modules may involve a set of reading and written assignments, small group discussion, and project works.

When it comes to uses of modules in HLIs, controversies are common from the existing literature. Proponents of the idea of using modules in HLIs pointed out that modules develop feelings of responsibility among students, promote active and collaborative learning, and are efficient and effective instructional materials (Giddings, 1986 cited in Dawit, 2007). On the other hand, opponents argued that modules don't only limit student learning but also make them dependent on some pre-determined concepts and ideas. Still some others contend that modules represent the behaviorist notion of learning and promote passive learning.

Notwithstanding these controversies, many private and public HLIs in Ethiopia have been engaged in the preparation of modules. This has been the case for years irrespective of the form of program delivery: whether it is face-to-face or distance education programs. This nation-wide endeavor has been based upon a number of assumptions. In this regard, rumors made it clear that some private HLIs considered module preparation for the sake of attracting their customers. But, the Ministry of Education (MoE) of Ethiopia and its attendant public HLIs have proposed module preparation in order to alleviate the shortage of reference materials and maintain uniformity in course provisions across HLIs in Ethiopia.

Well, all the above assumptions of module preparation give little emphasis to the grand intention of the existing national policy, i.e., developing a problem solver citizen (ETP, 1994). On my behalf, therefore, I feel that the ministry as well as public and private HLIs needs to see their assumptions of using modules in HLIs against the grand educational policy intention of the country and be geared into the problem solving aim of the Ethiopian educational policy.

Conceptual-framework for Higher Learning Institute Module Organization vis-à-vis the Criteria of Curriculum Development for Problem Solving Skill Development

From the literature (e.g., Dawit, 2007), I came to understand that the same kind of content can be taught through teacher-led instruction (direct instruction) or problem solving (indirect instruction) depending on how the contents are organized in HLI modules. The earlier mode of organizing knowledge in modules is compatible with a requirement for instructors to cover a large amount of information in lesser amount of instructional time where it facilitates surface learning. But, the latter requires a more economic organization of content around central questions and problems which integrate various disciplines and thereby promoting learners' level of critical thinking, creative thinking, thinking for problem solving, in-depth treatment of the given materials, and trigger learners to integrate higher order behavioral changes of the three domains (cognitive, affective, and psychomotor) and their respective levels.

What is very decisive in a program that intends to develop problem solving capacity among learners, therefore, is how contents are organized in modules meant for serving as textbooks in HLIs in Ethiopia due to shortage of internationally written textbooks in the respective areas of learning. Modules for such purposes should put students as actors for solving problems and constructing knowledge through the process of Bloom & associates (1956) different levels of thinking, such as recalling, comprehension, application, analysis, synthesis and evaluation. Modules should also give students to discover knowledge by themselves rather than imposing ready-made knowledge on them. This raises students' creativity and inquisitiveness which are the two valued elements that enable learners to adapt with the rapidly changing world that they are in. This in turn promotes among learners the skill of what is considered as "learning how to learn" at the cost of learning only mere facts drawn from an ocean of information, which is usually prevailed through a highly traditional and information rich approach in content organization.

Moreover, we live in a very dynamic world in which information mastered today becomes easily obsolete after some years. Thus, there is no option other than triggering the younger generation to develop the skill of "learning how to learn". On the basis of this general consensus, what should content organization in modules for developing the skill of "learning how to learn" or problem solving, or higher order thinking skill development look like? The literature review made below tries to give a handful answer for the question raised before.

In this line, Newman states that developing problem solving ability or higher order thinking skills requires an in-depth study and sustained concentration on a limited number of topics, issues or questions. Another scholar (Collins, 1992) also noted that depth rather than coverage is the means for developing problem solving capacity or realize deep learning. He further recommended the inclusion of matrices, imagery, back reference problems, and omissions to develop the skill of “learning how to learn” among learners (Ibid). Similarly, McNeil (1996) stressed meta-cognitive and cognitive strategies as the main tools for developing modules employed for problem solving or higher order thinking skills development. Through modules prepared using these strategies, students learn the heuristics of diagramming, breaking a problem into sub-elements and working backward. This in turn demands learning experiences for problem solving in situations where in problems are not completely solved. In this respect, in their extensive research on developing curricula for the skill of “learning how to learn”, renowned scholars in the area (Tinzman, Jones and Pierce, 1992) came up with suggestions of fulfilling six component criteria of developing curriculum for problem solving skill development. These include: problem situated learning, phases of learning, recursivity, graphic organizer, meta-cognition, and collaboration. An attempt is made to briefly explain each of these suggested criteria of curriculum organization for problem solving or higher order thinking skill development, which I feel could be adapted to module organization for HLIs in Ethiopia.

a) Problem situated learning

This criterion refers to the stipulation of real world problems as valid contents of modules. At this stage, students get an opportunity to confront with problems that they know very well or contents of global issues organized in the form of problems and questions. In Ethiopia, problems like traditional practices, improper networking, lack of cooperatively working system, HIV/AIDS, deforestation, soil erosion, malarial dissemination, illiteracy, unemployment, etc could be used as centers of curriculum organization. The assumption of including real world problems as contents of modules stems from the belief that these kinds of problems have usually more than one solution. They also involve application, analysis, synthesis, and evaluation in more than one subject area, which are the basics of developing higher order thinking skills among students.

b) Phases of learning

Once the above kinds of problems are identified students have to be allowed to pass through three phases of learning, such as: focusing, finding out and back reference (Ibid). In focusing, HLI modules have to set purposes, questions, and make predictions about the outcome. These could be followed by learners’ engagement into reading, discussing, and organizing their experience that would allow them to take part in thinking, i.e., finding out. Thus, finding out refers to ways by which students are exposed to knowledge such as describing, explaining, discussing, experimenting, organizing solutions by themselves. This is a stage where students go through different levels of higher order thinking so that they could discover and construct knowledge which is purposefully missed out/ ill-defined from modules. In back reference phase, students have to be allowed to summarize and reflect on what they have learnt.

c) Recursivity

This criterion for module organization refers to the process of application of what students have learnt to new situations or thinking about what students will learn based on major contents covered in modules. Thus, modules should give ample opportunity for students to apply what they have learnt in theory into the world of work and again provide ample opportunity for them to extrapolate something socially and personally valuable on the basis of major issues they have learned in the respective modules.

d) Graphic organizers

This criterion connotes the incorporation of visual illustrations of verbal statements with a corresponding set of questions or categories that are important to further understand a given topic in the form of mind/concept maps, flow charts, cycles, semantic webs, etc. They are effective devices for students to record their prior knowledge when they begin a unit, and take notes as they read and summarize basic issues of a unit at its end.

The rationale to use graphic organizers rather than linear outlining to represent and organize issues covered in the respective module stems from the uncertainty that reading, writing and thinking follow a sequential and linear fashion. Instead of this linear representation of information, non-linear ways of representing information in matrices, cycles, flow-charts, etc, has been found more effective in reflecting the structure of information, clarifying the relationship among ideas and concepts, and thereby increasing retention and meaningfulness of learning materials.

However, it seems invaluable to disclose the fact that presenting graphic organizers in completed and finished way is not better than giving finished modular information to be read. In this respect, research (3) (e.g., McNeil, 1996) indicates that students can be motivated when they are presented with semi-

complete or incomplete graphic organizers or ill-defined problems. The reason behind this kind of content organization is that it creates an opportunity for students to participate in the learning process.

e) Meta-cognition

Meta-cognition is similar to graphic organizers except that the former attempts to form a mental picture of the points to be discussed in modules but the latter provides flow-chart that shows relationships of the points discussed in graphic form physically out there. That is, meta-cognition is graphic organizer at a mental operation level. Therefore, the kinds of activities endorsed in modules should have an interactive effect on student cognitive representation of issues under emphasis so that they trigger learners to form a mental picture about the issues discussed in the HLI modules. To this end, the theoretical discussions made in HLI modules could be reflections of each and every student's life experiences. Moreover, these issues need to be coherently organized so that learners can easily see how they relate to one another and perform a meaningful adaptation with their repertory of knowledge.

f) Collaboration

From the methodology literature, I learnt one of the guiding learning principles which states that learning is both a social and personal product. It means that we learn something concretely mainly if we share our understandings with others and see how others understand the issues we have already articulated. Moreover, it so happens that some may be strong in certain areas and some others may be strong in some other areas. Therefore, sharing of strengths to one another makes learners to be relatively more full-fledged individuals in terms of developing higher order thinking skill, knowledge and attitudinal elements expected of them especially at a swiftly changing world that we are in. Thus, modules need to give ample opportunities for learners to work together so as to enable them to see different understandings and views of the issue under discussion and thereby come-up with a unified view of the educational issue.

Generally, the active engagement of students in learning heavily rests on how properly the preceding module organization criteria are entertained and the extent of provision of ill-defined problems and omissions to be filled-in by students' in the higher order thinking process as part of the modules we want to organize. Higher order thinking, therefore, requires the presence of omissions and ill-defined problems that need to be completed by the respective students through integrating new knowledge with prior knowledge they have accumulated for years. Otherwise, many students may lack curiosity to involve in higher order thinking and developing the skill of 'learning how to learn' due to the fact that they believe from the onset that modules have given the needed knowledge in its complete form and no need of critically considering the basic contents of the modules. Due to such kind of influences, students at Bahir Dar University (BDU) question me why I comment their papers regarding the basic elements of the curriculum (concepts, skills, values and generalizations) they have taken from modules and endorsed into their term papers. Of course, I always react to such kinds of student challenges by saying that taking curricular elements without acknowledging authorities for one thing is plagiarisms for the other such kinds of materials need to be critically addressed between the lines in their term papers.

Generally, what I propose at this level is that module preparation attempts that promote problem solve or higher order thinking skills development needs to make provisions of omissions and ill-defined problems, experimental activities, issues for group discussion and presentation, and interviewing resource people on the respective topics of emphasis in modules.

In the end, I wind up my discussion by emphasizing on what Tinzman, Jones, & Peirce (1992) forwarded in relation to supporting the effectiveness of following those criteria. They indicated that experimental group students who were taught using modules developed in the form of breakthroughs (graphic organizers, meta-cognition, problem situated learning, open-ended questions) demonstrated a significant gain in higher order thinking ability in post-tests as opposed to control group students who were taught in the traditional linear organization of information in modules. As a result, decision makers and module writers in HLIs in Ethiopia in general and BDU in particular shall consider the preceding criteria while designing modules for better problem solving skill development that enable the younger generation to effectively fit with the rapidly changing global world that we are part of it.

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