Enhancing the Pedagogical Competencies of the Academic Staff through the Provision of Higher Diploma Program: The Case of Addis Ababa Institute of Technology

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Abstract: The purpose of this paper was to analyze the contribution of the Higher Diploma Program to the development of pedagogical competences of instructors of Addis Ababa Institute of Technology. To this end, qualitative approach was used as an appropriate tool to undertake an in-depth analysis of the problem. Data were collected by using semi-structured interview guides and document analysis. The primary sources of data were twelve instructors of engineering fields, two university-level teaching and learning support experts, four academic officers of Addis Ababa Institute of Technology (AAIT), and two university level academic officers. The data were analyzed qualitatively by classifying issues of pedagogical competence in various themes. The findings indicated the training helped the trainees improve their pedagogical competences (methods of teaching, classroom management, and assessment), it opened up their interest for further professional development training, it helped them improve their interpersonal skills; and it created for them the opportunity to raise and discuss with colleagues various issues related to the quality of teaching and learning at higher education. Based on the findings, it was concluded that enhancing pedagogical competence of engineering instructors is crucial in improving the teaching and learning processes in engineering education.

Keywords: pedagogical competence, professional development training

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Background

Ethiopia has embarked on the expansion of its higher education institutions to produce competent graduates required by the various social sectors. The 1994 Education and Training Policy has tried to address four main issues: overcoming the problems of limited access, ensuring equity, relevance and quality at all levels of the education system.

Much has been achieved in the areas of access, equity, and relevance of the curricula; however, dire situations are still observed in the area of quality. Specially, the situation of increased access and equity can be seen from the following statistical descriptions of the Ethiopian Ministry of Education.

The country has also launched the policy of 70:30 (70 % of those who successfully complete the preparatory school and are eligible to join higher education must be assigned in the areas of natural science and technology whereas the 30% would be assigned in the broad areas of social science). Similarly, the number of newly recruited young instructors has increased. Hence, offering a short-term pedagogical training for the academic staff in general and for the engineering instructors in particular has become a common practice in Ethiopian higher education institutions today. The short term training aims at helping the newly recruited instructors develop their pedagogical competence and refresh and update their pedagogical content knowledge.

Kolari and Savander-Ranne (2002) state that the pedagogical content knowledge of engineering instructors is constructed through the effective mix of academic studies, subject matter knowledge and industrial experience.
Effective professional development enables educators to develop the knowledge and skills they need to address students’ learning challenges (Mizell, 2010). Likewise, Kolari and Savander-Ranne (2002) assert that newly recruited teachers start developing their pedagogical content knowledge when they start teaching.

Addis Ababa University has the experience of delivering pedagogical training for its engineering instructors through the German-supported project known as Engineering Capacity Building Program (ECBP). However, recently it has designed its own Higher Diploma Program (HDP), which consists of five modules to be completed within a period of four months, with the aim of enhancing the professional development of its academic staff. Accordingly, prior to the launching of the program, a needs assessment was conducted. As a result, five areas were identified; namely, higher education and effective teacher, modularization and the modular approach, learning and assessment, subject area teaching, and action research. Based on this, Addis Ababa University developed the Higher Diploma Program (HDP) and
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has given it to its academic staff as a package of training for over the last three years to enhance, among other things, their pedagogical competence.

Yilfashewa (2016) studied the attitudes of the academic staff towards academic development programs in Haramaya University and Adama University. Despite the difference in terminology, this also pertains to professional development training or the provision of HDP. Even though the empirical analysis has relevance in understanding how the academic staff perceives professional development training, it is quite different from the topic of this qualitative research both in relation to purpose and research setting.

Hence, this research can contribute to closing the existing research gap in the areas of the contribution of higher diploma program to the enhancement of teaching skills of instructors at Addis Ababa Institute of Technology.

Research Questions

The following two questions were set to guide the study:

- How does the provision of HDP contribute to the improvement of the pedagogical competences (teaching methods, classroom management skills and assessment techniques) of instructors at Addis Ababa Institute of Technology?
- What are the major challenges encountered in the implementation of HDP at AAiT?

Objectives of the study

The general objective of this study was to investigate the contribution of Higher Diploma Program (HDP) to the improvement of engineering
instructors’ pedagogical competence with reference of instructors of AAiT.

The specific objectives of this study were to investigate the contribution of the HDP to the improvement of engineering instructors’

  - Understanding of curriculum development in higher education;
  - Use of diverse teaching methods and classroom management skills;
  - Use of a variety of assessment techniques; and
  - Use of action research for solving classroom problems;

Operational definitions of terms

Globalization: It refers to the economic, social, political and environmental interdependence of countries of the world.

Higher education: It refers to universities offering degree programs.

Pedagogical competence: It refers to knowledge, skills and desirable values of teaching expected to be possessed by higher education instructor

Review of Related Literature

Higher education in a globalized world

The process of globalization has intensified specially since the 1990s. The interdependence among countries has dramatically increased. Today, the following trends in global higher education are observed: the phenomenon of massification, globalization, internationalization, information and communication technology and the rise of private higher education and privatization of universities (Altbach, Reisberg, and Rumbley, 2009).
These global trends in higher education have great influence on higher education institutions of Ethiopia; for example, the expansion of academic programs in the field of ICT can be seen as part of the efforts to cope with rapid changes in this age of information (Yizengaw, 2008). Likewise, these global trends imply the need to restructure and democratize the system of higher education. This includes, among other things, clarifying and ensuring the idea and practice of academic freedom in higher education institutions (Amare, 2007).

In 1994, the Delors Commission was assigned by UNESCO to come up with a report that would outline the kind of learning deemed necessary for the 21st century. Accordingly, the Delors Commission came up with its report known as “Learning: the treasure within” (1996), in which the following four pillars of education were identified:

- Learning to know – by combining a sufficiently broad general knowledge with the opportunity to work in depth on a small number of subjects.
- Learning to do – in order to acquire not only an occupational skill but also, more broadly, the competence to deal with many situations and work in teams.
- Learning to be – education contributing to a person’s complete development: mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality.
- Learning to live together and with others – peacefully resolving conflict, discovering other people and their cultures, fostering community capability, individual competence and capacity, economic resilience, and social inclusion.

Professional development of higher education teachers

Different countries use various methods and ways of enhancing the capacity of the academic staff in higher education. The Oxford Learning Institute provides postgraduate diploma in learning and teaching in higher education. It is a one year course and the academic
staff members of the Oxford University participate by studying and applying educational literature in order to improve their teaching skills. Furthermore, they are expected to analyze and propose enhancements to courses, programs and policies in their own settings.

The relevance of the higher diploma program in Ethiopian higher education can be seen from the ideas of Jacob, Xiong and Ye (2015). These authors argue that African higher education institutions must make professional development a priority among their strategic planning and capacity building initiatives.

Professional development could lead to three levels of results (Mizell, 2010:19) because it helps educators to:

- acquire new knowledge and develop new skills through their active participation;
- improve their teaching and leadership skills; and
- use what they learned in professional development training so as to improve students’ learning and achievement.

The participation in professional development training and its impact as well need to be assessed by higher education institutions. In relation to this, Mizell (2010:10) states that:

The results of professional development can be evaluated through techniques such as surveys, tests, observations, video recordings, and interviews. If administrators become better leaders and teachers become more effective and apply what they learn so that students achieve at higher levels, professional development is worth the cost.

Professional development in higher education requires the sharing of experiences. Senior academic staff members usually have rich experiences that would help young and dynamic teaching staff develop positive ways of solving problems. Martha Friedenthal-Haase
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(2015:173) asserts that increased interconnectedness of the world has led to benefits as well as challenges to the human kind. Hence, it is essential to consider the fact that the fundamental global principle of sustainability requires consideration of the perspectives of people in different stages of life. She underscores the need to listen to older generations or senior citizens so that modernizers would be more effective by combining elements of the old with those of the new.

Professional development promotes the development of pedagogical competences of higher education instructors, meaning it helps them develop the ability to solve pedagogical problems and typical pedagogical tasks occurring in situations of real pedagogical activities by applying knowledge, professional and life experience, values and talents in a creative manner so to obtain appropriate and effective results (Suciu and Mata, 2011:413-419). Accordingly, these authors assert that pedagogical competences enable instructors to:

- Use a variety of active learning methods and techniques;
- Design and plan their lessons and/or training sessions effectively;
- Organize diverse pedagogical activities and tasks;
- Employ different ways of motivating students during the teaching and learning process;
- Help their students become lifelong learners;
- Apply different forms of assessment based on the learning outcomes and contents delivered;
- Promote the development of desirable interpersonal and social skills; and
- Develop effective instructional leadership role
Pedagogical content knowledge for engineers

It was Schulman (1986) who introduced the concepts of content knowledge of teachers and their pedagogical content knowledge. In the context of teaching, this content knowledge encompasses:

Subject matter content knowledge

With regard to the subject matter knowledge of an engineering educator, Kolari and Savander-Ranne (2002: 62-63) stated that:

Subject matter knowledge is a form of content knowledge and it comprises facts and subject content, including major concepts of the field, the relationships among concepts and a full understanding of the structures of the subject. In science and engineering education, this includes theoretical facts of phenomena and propositions and their justifications. The mastering of the applications to everyday life and engineering, of course, is of crucial importance. The subject matter knowledge of engineering educator should be built of, not only of academic studies, but also of a wide experience of working in the industry or as a researcher where the knowledge has been applied, proven, and refined in practice.

Pedagogical content knowledge

Pedagogical content knowledge includes an understanding what makes the learning of specific topics easy or difficult and ways of representing and formulating the subject matter that make it comprehensible to others (Kolari and Savander-Ranne, 2002). It is to mean that pedagogical content knowledge helps instructors utilize diverse active learning methods and techniques in the delivery of the subject matter. Moreover, it helps them develop attitudes to reflective thinking, manage their classroom effectively and assess their students fairly by using appropriate assessment formats. What is more, it helps
them develop behaviors to effective teaching skills like caring, teaching self-efficacy, instructional alignment, review and closure, feedback, communication, questioning and monitoring (Eggen and Kauchak, 2001).

Curricular knowledge

Higher education instructors need to have basic knowledge of curriculum and curriculum development. Basically, curriculum design and development is influenced by three disciplines (Print, 1993), namely, philosophy, psychology, and sociology and culture.

Philosophy serves as the foundation of curriculum development for mainly two reasons: firstly, philosophical thoughts have influenced how people educate their citizens over so many centuries. The existing philosophies of education cannot be well understood without having a look into philosophical schools of thoughts. Secondly, it plays a significant role in screening educational aims, goals and objectives by providing logical justifications.

Psychology also serves as a basis for curriculum development because many of the learning theories have been developed in the fields of psychology. In the behaviorist approach which stimulus-response and structured learning contributed to the understanding that it is necessary to use reinforcement so as to shape the behaviors of learners. However, it was also criticized for ignoring the internal, mental factors in the process of learning. The cognitive perspective has stressed that humans are information processors, and in doing so it has revolutionized the ideas of learning. Today, the social constructivist perspective which emphasizes the importance of language, social construction of knowledge and the significance of hands-on approach to learning has widely been appreciated by many scholars. Finally, many of the assessment methods and techniques are developed in the fields of psychology. Hence, curriculum developers as well as
implementers can use knowledge of psychology to consider the needs, interests and motivation of the learners.

Sociology and culture are also a crucial foundation of curriculum development because sociology deals with the study of social groups and institutions. In educational settings like higher education institutions, students from different socio-economic and cultural backgrounds are learning together. Hence, curriculum developers should take into account elements of curriculum development process such as the formulation of learning outcomes, selection and organization of contents, strategies and assessment techniques.

Likewise, Kolari and Savander-Ranne (2002, p. 63) suggested:

Curricular knowledge encompasses the range of programs designed for the teaching of particular subjects and topics. It tells how a special field is organized for instruction. It can also include knowledge about purposes, goals and rationale for a program of course.

The expansion of higher education in Ethiopia has led to the fact that a number of young and novice instructors are assigned into the newly established public universities. Hence, the provision of a higher diploma program in the higher education institutions is indispensable for equipping them with the knowledge of curriculum development which includes curriculum planning, implementation and evaluation. It also provides them innovative models of curriculum such as the modular approach to curriculum development.

**Professional development as reflective practice**

Dewey (1933) underscored the fact that reflection moves us from confusion to clarity. Furthermore, he stressed that knowledge alone is not enough. In addition to knowledge, he identified four attitudes to reflective thinking; namely, open-mindedness, whole-heartedness,
responsibility and directness. Likewise, Schoen (1983) underscored the importance of reflective practice for professional development. He views reflective practice can be seen as analyzing, reconsidering, and questioning experiences within a context. At the same time, he indicated some of the reasons for growing skepticism towards professional effectiveness. These include professional self-interest, bureaucratization and subordination to the interests of business or governments.

Instructors need to continuously reflect on their practice in order to improve their communication skills, planning skills, classroom management skills and assessment skills. Particularly, the rapid change of knowledge and skills in the world of today require the fact that instructors need to be lifelong learners.

Generally, higher education instructors need professional development training for two major reasons, firstly, many university instructors suffer from deficient knowledge base for teaching because of the insufficient preparation they receive (Nativa, 2000:16). Hence, they need to upgrade their knowledge base through professional development of training; and secondly the rapid changes in the areas of teaching and learning, research and community service require that instructors continuously update their competencies.

**Method**

The purpose of this study was to analyze the contribution of the Higher Diploma Program in the development of pedagogical competences of instructors of Addis Ababa Institute of Technology.

A total of 1,697 instructors participated in the HDP at Addis Ababa University, out of which 84 instructors (11 female and 73 male) were from Addis Ababa Institute of Technology (Teaching and Learning Support Office of AAU, 2016). This is nearly 85 % of the academic staff. The remaining staff members, who could not take the training for
various reasons, were expected to participate in the HDP in this semester.

In this study, qualitative approach was used, for it is appropriate to undertake an in-depth analysis of the problem. As Patton (1990) cited in Best and Kahn (2004: 184) qualitative methods consist of three kinds of data collection: (1) in-depth, open-ended answers; (2) direct observations; and (3) document analysis.

Sources of data

The primary sources of data were twelve instructors of engineering fields, two university-level teaching and learning support experts, two instructors involved in the facilitation of HDP in AAiT, four academic officers at AAiT, and two University level academic officers. Generally, 22 respondents were used in this study.

The secondary sources of data were AAU policy documents, reports and relevant education and training policy documents. The data were analyzed qualitatively by classifying issues of pedagogical competence into various themes.

Instruments of data collection

Data collection instruments were semi-structured interview guide and document analysis. The former was used to illicit in-depth information from respondents whereas the latter was employed to obtain important secondary data from relevant policy documents.

Findings and Discussions

For the purpose of qualitative data analysis, the issues raised in this study were categorized into the following themes:
Enhanced understanding of higher education

With regard to the question whether the HDP helped him understand more about higher education in the globalized world of today, one of the Engineering instructors (E-1) said:

The higher diploma program created for me an opportunity to share experiences with my colleagues. We discussed on the role of higher education and tried to critically argue on ways of maintaining the quality of education in light of growing massification. Furthermore, we dwelt on issues pertaining to our specific institutional context. The responsibilities of higher education academic staff in relation to the vision, mission and values of our University were discussed. Thus, I believe that I have a better understanding of higher education. (July 28, 2016).

Concerning this issue, one of the university-level teaching-learning support experts said:

Currently, more than 85% of the academic staff members successfully completed the professional development training offered through the higher diploma program. Therefore, I believe that the majority of the academic staff has improved its understanding of higher education. In this regard, it is worth mentioning the College of Health Sciences which has most effectively implemented the program. (October 6, 2016).

Thus, one can safely conclude that the higher diploma program has enhanced the understanding of trained instructors about higher education. The studies conducted by pre-eminent researchers on higher education like Altbach (2007) also stated that higher education is strongly influenced by forces of globalization and the phenomenon of internationalization. It is hence imperative for any higher education
teacher to update his/her knowledge, skills and attitudes to cope up with current and emerging challenges.

*Improved pedagogical competence*

Pedagogical competence is necessary for any higher education instructor because it helps him/her to comprehend learning theories and make use of a variety of teaching strategies. With regard to this issue, Brookfield (2006:19) posits that *an approach that one finds particularly useful or congenial may well be profoundly unsettling and confusing to the student sitting next to her.*

Concerning the question whether the higher diploma program contributed to his pedagogical competence, another respondent stated the following during an interview session (E-2):

> I am really happy that I joined the HDP. Of course, at the beginning I had some doubt about the importance of pedagogy for engineers. However, after I have joined the training program, I improved my methods of teaching, classroom management skills and assessment techniques. I am of the opinion that all instructors must attend the program. Moreover, it is necessary to organize periodic and updated professional development training for all instructors.

From the above response, it is clear that the respondent benefited from the HDP in that it enhanced his or her teaching skills. Today, scholars generally appreciated the scholarship of teaching. For example, Elton (2009:1) emphasizes the positive influence of the Humboldtian approach concerning the unity of teaching and research. Of course, the author regrets the ongoing dichotomy between the scholarship of teaching and research whereby the latter is enjoying more prestige than the former.
Moreover, a similar kind of continuous professional development program for higher education academic staff is available today at the University College of London. Major features of this program (Elton, 2009:4) include the fact that the participants are expected to:

- Do mini-researches and submit the reports which will be part of their own portfolios;
- Read recommended compendium to broaden their knowledge and understanding;
- Submit what they have done throughout the program in the form of a portfolio in order to fulfill the assessment criteria.

Likewise, one of the university-level academic officers asserted:

I believe that the higher diploma program has helped instructors improve their teaching methods, classroom management skills and assessment methods and academic staff, I came to know that instructors are increasingly engaging themselves in the required and appropriate interaction during the teaching-learning process. This is crucial for the implementation of inclusive approach where students with diverse cultural and socio-economic backgrounds, abilities, religions, ethnicities, sexes, ages, and disabilities learn together cooperatively.

From this, one can conclude that the HDP has contributed to the development of pedagogical competences of trained instructors at AAiT. This goes in line with idea of Gravels (2012) who asserts that teachers are expected to develop the culture of ensuring the idea of equal opportunity within their classrooms so that learners feel safe and comfortable during the teaching and learning process. Pedagogical competence helps instructors to appreciate inclusiveness and to consider equity in teaching (Scheurlich and Skrla, 2004:41).
Higher education academic staff members are expected to have clear understanding about the process of curriculum development. One of the engineering instructors (E-3) was asked if the higher diploma program helped him understand about curriculum development process and he reported:

Prior to joining the HDP, I had poor understanding of the curriculum development process, particularly when it comes to the modular approach. The professional development training was like a discussion forum where instructors with various levels of experience shared ideas. The fact that one of the modules in the HDP dealt with modularization, I have really acquired useful knowledge on components of a module, on formulating SMART objectives, on ways of addressing the diverse learning styles of my students and on making use of a variety of assessment techniques (August 5, 2016).

With regard to this, one of the academic officers at the Addis Ababa Institute of Technology (AAiT/ AO-2) replied:

The issue of curriculum is an essential component of any academic program. It is appropriate that the higher diploma program offered by Addis Ababa University for its academic staff consists of a module that discusses on modularization, the modular approach, lesson planning, etc. I am sure that trained instructors have got basic knowledge and skills of curriculum development process. Now, it is up to the individual effort of the academic staff member to read more in the area, to work in team and share experiences with colleagues so as to deepen his/her knowledge and conceptions of curriculum.

Thus, one can conclude from the responses indicated above that the higher diploma program has enhanced instructors’ understanding of
the curriculum development process. Generally, instructors can participate in curriculum development process as developers, adapters, implementers and researchers (McNeil, 1996).

**Enhanced skills for conducting action research**

Concerning the question whether the higher diploma program has contributed to instructors’ skills of conducting action research, another instructor (E-4) said:

> Prior to joining the HDP, I had vague understanding of action research. Today, I have improved skills of conducting action research. I have even conducted an action research on the problems associated with F (x) in our grading system. Yet, it is not simple to come up with action strategies. (October 4, 2016).

Today, instead of overemphasizing the dominance of quantitative research, a number of scholars appreciate the need to consider qualitative research (Stake, 2010) and mixed methods research (Creswell, 2009) in analyzing research problems.

Action research helps higher education instructors to solve practical problems in their respective classrooms. From the above response, it can be concluded that the fact that one of the modules of the Higher Diploma Program at Addis Ababa University is ‘Field-Based Learning and Action Research’ seems logical and appropriate, for it enables instructors solve problems they face during the teaching and learning process.

The Ethiopian Education and Training Policy of 1994 also clear state the need to produce citizens that appreciate diversity (TGE, 1994). In Ethiopian higher education institutions, there are students from diverse backgrounds. This situation is both an opportunity and a challenge for instructors; it is an opportunity in that students can enrich the teaching and learning process with their diverse life experiences. It is also a
challenge in that instructors are expected to develop the required knowledge, skills and values to address the diverse needs of students. Concerning the need to address diversity in educational settings, Sleeter and Grant (2007:37) stated that “students differ from each other in numerous ways, including academic achievement, learning abilities, gender, ethnic, and racial and family background”.

Summary, Conclusion and Recommendations

Summary of the major findings

The purpose of the study was to analyze the contribution of HDP to the improvement of pedagogical competence of instructors at Addis Ababa Institute of Technology. To this end, qualitative approach was employed. The primary sources of data were instructors of engineering fields, university-level teaching and learning support experts, academic officers at AAiT, and University level academic officers. Besides, relevant policy documents were used as secondary sources. Semi-structured interview guide and document analysis were used to obtain the required data. The data obtained from various sources were analyzed qualitatively by classifying issues of pedagogical competence under various themes. Finally, the data analysis led to the following major findings:

- The study disclosed that HDP helped instructors understand more about higher education in a globalized world.
- The findings indicated that despite their initial doubt about the importance of higher Diploma Program (Pedagogy), the respondents asserted that it helped them improve their pedagogical competences.
- The study disclosed that the professional development training helped them also construct knowledge in the areas of curriculum development in general and in the use of the modular approach in particular.
• It was found out that the HDP enhanced their skills of doing action research.
• Furthermore, it was revealed that the HDP opened up their interest for further professional development training;
• The HDP helped them share experiences among colleagues and improve their interpersonal skills;
• The major challenges encountered the implementation of HDP at AAiT were:
  • Unlike other colleges of AAU, there were no teaching and learning support experts assigned to coordinate the HDP activities.
  • Instructors were overloaded with work with rising number of students;
  • At times, lack of clear understanding about the importance of the HDP for engineers led to lack of interest among some instructors.

Conclusion

The higher diploma program (HDP) helped engineering instructors develop their knowledge of higher education in this era of globalization. Furthermore, it created ample opportunity for them to critically reflect on their teaching experiences thereby improving their pedagogical competences. To put it in other ways, the professional development training helped them recognize the importance of planning one’s lessons, engaging students actively in the teaching and learning process, doing action research to improve the teaching and learning process, providing timely feedback and without damaging the emotional values of their students, employing diverse forms of continuous assessment. In addition, the training contributed to the development of interpersonal skills of the engineering instructors as evidenced by their readiness to work with others in team setting and in sharing their experiences. Finally, it helped them improve their knowledge and skills of curriculum development and appreciate the
significance of participation in diverse short-term trainings, conferences and workshops for their own professional development. However, the lack of teaching and learning support experts in the institute as well the growing work overload of the engineering instructors hampered the timely delivery of the program to remaining ones.

The study indicates that the higher diploma program significantly contributed to the enhancement of the pedagogical competences of engineering instructors at Addis Ababa Institute of Technology.

Recommendations

Based on the findings of the study, the following recommendations are made:

- The Ethiopian Ministry of Education should further strengthen its international cooperation to meet the growing demands of engineering instructors, mainly the demands for updated professional development training, staff exchange, and the like;
- Addis Ababa University should establish a Center for Engineering Pedagogy which could organize and deliver tailored pedagogical skills training for its engineering instructors;
- Addis Ababa University should strengthen its linkage to the industry so that engineering faculty members get extensive opportunities to develop their industrial experience;
- The Addis Ababa Institute of Technology should create a conducive environment for professional development of its academic staff through increased collaboration and partnership with appropriate national and international institutions.
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