Attitudes and Implementation Barriers:
HDP Teacher Education Program
at Aksum University

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ABSTRACT

The major objective of this study was to identify the attitudes of the Higher Diploma Program (HDP) participants toward the HDP program objectives and the participants perceived barriers to implementation of the HDP teaching methods at AKU. The hypothesis for this study was that a) The AKU faculty's attitudes towards Higher Diploma Programme (HDP) were positive and b) HDP training implementation barriers were existing at Aksum University (AKU). This study confirmed both of these hypotheses to be significantly supported by all significant measures of attitudes and implementation barriers. Rankings of the HDP modules (objectives) indicated that active learning, reflective teaching and action research were the highest rated. Consolidation of the respondents' attitudes towards the HDP objectives, PCA indicated that the most reliable seven measures of attitudes and eight variables for barriers were both reduced to three factors.

Keywords: HDP, attitudes, Barriers, Implementation, Aksum University

INTRODUCTION

One of the key measures to cushion the consequences of globalization is to bolster their capacity for human capital accumulation- which apparently calls for increased training and re-training not only to consume the knowledge and skills that are being rapidly produced by centers of knowledge, but most importantly, to survive the 21st century. As a result of this post-secondary institutions have been dramatically changing to present themselves as viable centers of lifelong learning of high quality.

Approximately 23% of this capital infusion is allocated to accomplishing the Ethiopian Education Millennium Development Goals (MDGs) (UNDP, 2010). The most significant way Ethiopia is addressing the MDGs is through dramatically expanded access to education opportunities at all levels and particularly higher education access and infrastructure.

At an U.S. sponsored conference in December (U. S. Embassy, 2010), Building Sustainable U. S. – Ethiopian University Partnerships, H. E. Alto Memeke Mekonnen, the Minister of Education for the Federal Democratic Republic of Ethiopia gave the following keynote address:

> The government of the Federal Democratic Republic of Ethiopia has given due attention to education as a principle development sector. In particular, higher education is considered to ensure the need for trained and skilled manpower, ...
>
> Our universities are committed to a big national mission in relation to producing capable human resources for the economy without which growth and transformation of the nation is impossible.

As part of this Ethiopian MDG driven education initiative, thirteen new Universities were opened beginning in 2006, more than doubling the number of higher education graduates in 2009. An additional four campuses are scheduled to be opened for fall term 2011, bringing the total number of public institutions of higher education to thirty. The 2005-2006 graduates were 21,371 and the 2008-2009 graduates were 47,238 (Engle & Rose, 2010; FDRE, 2010b) Total government enrollments in post-secondary education is planned to expand from 264,000 in 2008-2009 academic year to 467,000 in 2014-2015 academic year or a growth of more than 75% in six years or more than 12% per year (FDRE, 2010a).

Accomplishments of the MDG's by 2015 are precariously balance on the basic fulcrum of expanded education at all levels of the population. The following excerpts from the UNDP MDG (2010) report illuminate the issues:

> Many MDG Country Reports raised concerns about teacher quality. For example, as primary education becomes mandatory, the demand for teachers rises, leaving governments with the unpleasant choice between increasing student-teacher ratios or hiring less-qualified teachers, at least until a larger supply of certified educators graduates. "A second challenge [following regional disparities] relates to the trade-offs between the substantial success in raising the level of enrolment and the quality of education," the Ethiopia Country Report observes. (23)

Evidence extracted from the MDGs report (UNDP MDG Report. 2010) made it abundantly clear that the higher education challenges at Aksum University in Axum, Ethiopia are not confined to the region of Tigray or the country of Ethiopia. Building and sustaining education opportunities, capacity and infrastructure in at the primary, secondary, and higher education levels is endemic to all developing nations.

Traditionally, discipline expertise has been the most respected feature of a university teacher. In recent years, however, there have been discussions about the need to improve

university teachers' pedagogical thinking and skills as well. As a consequence, training of university teachers has recently become a widespread trend in many countries (Postareff et al., 2007). As Gilbert and Gibbs have highlighted, there is a need to establish the effectiveness of higher education teachers' training in improving university teaching. Evidence of impact is needed to guide educational development units to design their courses since earlier research in this field is rather descriptive than evaluative (Gilbert & Gibbs, 1999). An exception to this is a quantitative study conducted by (Gibbs and Coffey, 2004), in which they examined the impact of training of university teachers on approaches to teaching, teaching skills and approaches to learning of their students.

Many countries, such as Norway, UK and Sri Lanka have made decisions about the compulsory pedagogical training of university teachers (Gibbs & Coffey, 2004). In Finland, many universities arrange pedagogical training for their teachers, but training is not compulsory. However, for example, the strategy of the University of Helsinki (University of Helsinki, 2003) highlights, that every new teacher should have the possibility to participate in an introductory seminar on university teaching in order to improve teachers' pedagogical thinking and skills. However, the training is voluntary.

In Ethiopia, to tackle this teacher quality and teacher shortage problem, a national Agency for Quality and Relevance Assurance was established by proclamation and has started its work (FDRE, 2005) Accordingly, Ministry of Education, Ethiopia established Teacher Education System Overhaul (TESO) as a subcommittee to sort out the current problem. TESO found that Ethiopian Teachers are failed to impart the quality education due to the lack of any kind of pre service or in service pedagogical training to develop his knowledge, skill and abilities (Hunde, 2008). Consequently, TESO designed a special curriculum material as per Ethiopian Education policy (Federal Democratic Republic of Ethiopia (FDRE, 2004). In order to provide training, as per the newly designed curriculum, HDP was introduced.

The aim of the Higher Diploma Program (HDP) is to create a reflective teacher. Dewey (1910, 1933) recognized the value of reflection in education. According to Dewey, reflection ('reflective thought/thinking') involves 'active, persistent and careful consideration of any belief or supposed form of knowledge' and 'turning a subject over in the mind and giving it serious and consecutive consideration'. Similarly, Boud (1985) define reflection as 'an important human activity in which people recapture their experience, think about it, mull it over and evaluate it' (pg 19).

Motivation theory suggests that individual and context characteristics, which play an important role in the acquisition of new knowledge. (Battistelli, Lemoine & Odoardi, 2007) explained training motivation as a multidimensional construct of the motivation to acquire new knowledge and work skills, apply acquired skills to the work place and the individual's motivation to improve his professional standing Tannenbaum and Yukl (1992) described that for a positive training outcome one has to consider the needs of the trainees, a thorough planning, and most importantly, the person's ability to learn and the person's motivation. In the literature, (Ford & Noe, 1987) explained training value as a: "individual's attitudes toward the usefulness of training programs", (Noe & Schmitt, 1986) explained Pre –training motivation as: "a trainee's specific desire to learn the content of the training program" and Ford & Weissbein (1997) explained post-training motivation as: "the degree to which trainees apply the knowledge, skills and attitudes gained in training to their job".

Literature showed that it is not only the training program which can create a quality teacher but individual characteristics also play an important role. UNESCO (1994) made an international recommendation that teachers' attitudes, beliefs, expectations and acceptance towards teacher training programme will decide the effectiveness of programme.

The hypotheses for this study were that
- The AKU faculty's attitudes towards Higher Diploma Programme (HDP) were positive.
- HDP training implementation barriers were existing At AKU.

PROBLEM STATEMENT

The HDP training program has been offered at Aksum University commencing in fall semester 2008. Approximately sixty five AKU instructors were enrolled in the HDP class each year and HDL was provided by the VSO program.

Are the faculties' having negative attitudes towards the HDP teacher training program objectives at Aksum University? What are the barriers to implementation of the HDP objectives?

METHODOLOGY

Research Design

A non-experimental design was used. The participants in the HDP were selected through an application process that required multiple levels of approval. This design used a hypothesized expectation based on a pretest instrument administered to 19 Shire AKU campus HDP participants and random interviews of HDP participants on the Axum campus. The design was situational and implementable. Problems in measurement and database construction were adjusted to improve the quality of the responses, to eliminate irrelevant variables and to improve the construct and internal validity of the data.

Research Study Population

The target population of the of the study were the current HDP participants on the AKU campus. This campus was selected on the basis of the proximity and accessibility of the target population to the researchers.

Sampling Method and Sample Statistics

Approximately sixty five questionnaires were distributed to the HDP participants at one of their two weekly meetings. The College of Agriculture located in the city of Shire, 25 kilometers from the main campus, was excluded from the final sampling. Collection of the completed questionnaires was accomplished through the HDP leader and her assistants. Those students absent from the class on the day questionnaires were distributed and collected were asked to complete a questionnaire at the next weekly class meeting. This process resulted in 49 questionnaires that were useable. The final sample represented 75.4% of the target population. The distribution of respondents from the HDP training program is shown in Table 1.

TABLE 1 HDP Respondents by College and University

College	# Responses	% Resp./65	Tot # Fac	Resp. %/Tot # Fac
Business & Economics	13	20.0	66	19.7
Engineering & Technology	1	0.015	70	1.4
Natural & Comp. Science	13	20.0	85	15.3
Social Science & Language	19	29.2	81	23.5
Health Sciences	1	0.015	11	9.1
Agriculture	0	0	0	0
Missing Respondent College	2	0.30		
TOTAL	49	75.4%	313	15.02%

Sampling Instrument

A pilot instrument was developed based on interviews and administrative presentations on the HDP at AKU. The pilot instrument was completed by 19 College of Agriculture full-time faculties at Shire campus. Some questions were rewording to reduce variance and to improve their fit with the total score. The statements were randomly alternated between positive and negative to reduce the possibility of respondent responses on only one of the seven Likert item scales. The quality of the data was validated by checking the logical consistency of the responses to the positive and negative statements. Individual responses were logically linked to the research question under investigation. It was determined that the respondents were highly motivated and provided thoughtful responses. Two respondent questionnaires were eliminated from the sample due to incomplete questionnaires. The data collection instrument HDP Attitudes and Barriers are shown respectively in Figures 1 and Figure 2 in appendix.

Statistical Procedures

The researchers used parametric statistical methods to determine the initial results of the research study. Statistical analysis was accomplished using the SPSS statistical package as the primary driver. Pearson (Pearson, 1931) correlations were used to investigate the relationships of the attitudes and barriers variables. In the data analysis phases the negatively worded question responses were re-coded to represent a positive response. (Brendle, 1996)

Analysis of the HDP attitudes and HDP barriers construct validity of the Likert scale responses used Pearson correlations between each of the variables and the total scores (Packer, 2004). Variables that had a correlation coefficient less than 0.5 were eliminated from the analysis.

In the construct validity for HDP attitudes variables A1 and A4 were eliminated due to not significant correlations ($p < .05$) and low correlation coefficients with total score. Variables A10 and A11 were eliminated from the PCA model because the addressed attendance policies rather than attitudes about the HDP program content.

In the construct validity for HDP barriers variables B2, B7, B9, and B12 were eliminated due to not significant correlations ($p < .05$) and low correlation coefficients with total score.

To reduce the variables relating to HDP attitudes and barriers , PCA with Varimax rotation was used. (Darling, 1966) The use of PCA with seven point Likert Scale data limitations were considered (Allen & Seaman, 2007; Lubke & Muthen, 2009) and based on the evidence from the statistical analysis the researchers judged the application to be parametric.

Descriptive Statistics and Responses for Attitudes and Barriers Variables

Table 3 shows the distribution of responses for HDP attitudes variables.

TABLE 3

HDP Attitude Variables Descriptive Statistics

Variable	Mean[a]	Med[b]	Sig.[b]	Variance	#SD[c]	#SWD[c]	#D[c]	#N[c]	#A[c]	#SWA[c]	#SA[c]	N
A1	6.02	7	.001	1.60	1	0	0	3	14	5	26	49
A2+	6.43	7	.001	1.17	0	0	2	1	7	3	36	49
A3	6.19	7	.001	0.86	0	0	0	1	14	9	25	49
A4	5.63	6	.001	1.53	1	0	0	6	11	10	15	49
A5	5.84	6	.001	1.85	1	1	1	1	15	9	21	49
A6+	5.92	7	.001	2.91	3	0	2	2	9	3	30	49
A7	5.92	6	.001	1.16	0	0	0	5	15	8	21	49
A8	6.04	6	.001	1.12	0	0	0	5	11	10	23	49
A9+	5.98	7	.001	2.19	1	2	0	3	9	7	27	49
A10+	4.33	4	.269	4.18	5	6	7	10	3	7	11	49
A11	5.80	6	.001	1.96	1	1	0	7	7	13	20	49

(+) Recoded as positive
(a) Missing values were replaced with the mean of the variable.
(b) One sample t Test (Null: Mean = 4; two tail test)
(c) SD=Strongly Disagree; SWD=Somewhat Disagree; D=Disagree; N=Neutral; A=Agree; SWA=Somewhat Agree; SA=Strongly Agree

Table 4 shows the distribution of responses for HDP attitudes variables.

TABLE 4

HDP Barrier Variables Descriptive Statistics

Variable	Mean[a]	Med[b]	Sig.[b]	Variance	#SD[c]	#SWD[c]	#D[c]	#N[c]	#A[c]	#SWA[c]	#SA[c]	N
B1	3.10	3	.001	3.05	9	14	10	2	9	3	2	49
B2+	3.82	3	.559	4.78	8	9	10	4	3	5	10	49
B3	4.52	5	.104	4.83	8	2	7	5	8	4	15	49
B4	3.39	4	.019	3.12	13	2	8	11	10	4	1	49
B5+	5.08	5	.001	3.66	3	1	9	4	10	3	19	49
B6	3.69	4	.152	2.26	5	4	12	16	6	4	2	49
B7	4.11	4	.658	2.93	5	5	4	14	14	1	6	49
B8	5.21	5	.001	1.75	1	1	3	4	22	9	9	49
B9	3.57	4	.083	2.88	8	6	9	9	12	3	2	49
B10	5.17	5	.001	2.56	2	2	4	2	19	8	12	49
B11	4.9	5	.008	3.05	2	5	7	4	13	10	8	49

| B12+ | 6.22 | 7 | .001 | 1.80 | 1 | 1 | 0 | 2 | 8 | 5 | 32 | 49 |

(+) Recoded as positive
(a) Missing values were replaced with the mean of the variable.
(b) One sample t Test (Null: Mean = 4; two tail test)
(c) SD=Strongly Disagree; SWD=Somewhat Disagree; D=Disagree; N=Neutral; A=Agree;
    SWA=Somewhat Agree; SA=Strongly Agree

The internal validity of the HDP attitudes and barriers variables was verified using Cronback's Alpha (Cronbach, 1951) and resulted in an acceptable alpha of .824 and .728 respectively.   None of the attitudes or barriers variables were found to be normally distributed using the statistical goodness-of-fit tests Anderson-Darling and Kolmogorov-Smirnov.

HDP ATTITUDES STATISTICAL RESULTS

HDP Attitudes Variable Reduction Principle Components Factor Analysis

The HDP attitudes analysis explained 79.7% of the variance by sums of squared loadings. The complete PCA results are shown in Tables 5 through Table 7 and Figure 3 and Figure 4.

TABLE 5

HDP Attitudes Factor Components Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.486	49.803	49.803	3.486	49.803	49.803	2.372	33.881	33.881
2	1.152	16.452	66.255	1.152	16.452	66.255	2.143	30.610	64.491
3	.944	13.481	79.737	.944	13.481	79.737	1.067	15.245	79.737
4	.580	8.284	88.021						
5	.338	4.826	92.847						
6	.315	4.503	97.350						
7	.186	2.650	100.000						

Extraction Method: Principal Component Analysis.

Figure 3 is Cattell's scree plot (Cattell, 1966) of the components shown as the X axis and the corresponding eigenvalues as the Y axis. Where the decrease in eigenvalues flattens and the curve makes an elbow, Cattell's scree test says to not consider all further components after the one starting the elbow. Therefore, an eigenvalue of .9 was used for the selection of four components.

FIGURE 3

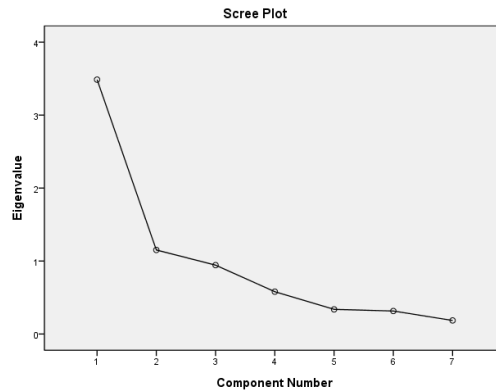**HDP Attitudes Cattell's Scree Plot**

Scree Plot

Table 6 shows the Variable Loadings (correlations) for each factor after rotation. As an arbitrary rule-of-thumb for level of correlation significance, primary variable loadings in a factor should be .7 or higher to confirm that independent variables initially selected are represented by a particular factor or about half of the variance in the variable ($r^2 = .49$) is being explained by the factor.

TABLE 6

HDP Attitudes Factor Variable Loadings

Rotated Component Matrix[a]			
	Component		
	1	2	3
A2+	.328	.804	.178
A3	.505	.631	-.088
A5	.922	-.054	.007
A6+	-.020	.887	.077
A7	.709	.432	.133
A8	.803	.335	.205
A9+	.112	.098	.981
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 4 iterations.			

Figure 4 shows each of the seven variables included in the three factors found in this analysis. Factor 1 variables A5, A7 and A8 are well clustered. Factor 2 variables A2+ and A6+ are also well clustered. Factor 3 variable A9+ is in the same plane of the rotated space only separated in component 2 space. Variable A3 is shared between factor 1 and factor 2 having almost an equal coefficient for both.

FIGURE 4

HDP Attitudes Component Plot in Rotated Space

Component Plot in Rotated Space
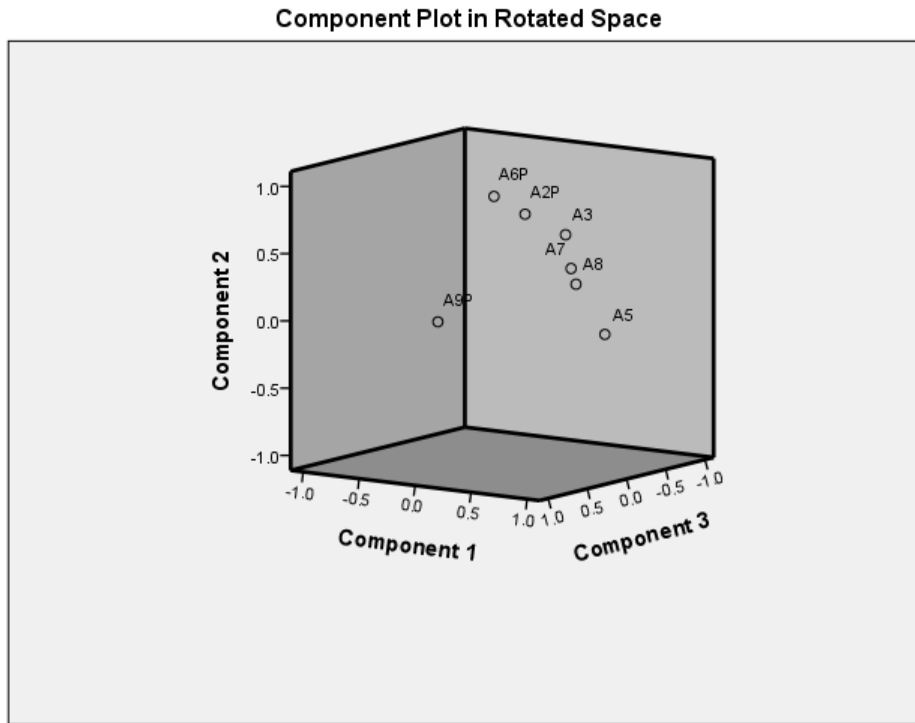
Table 7 shows the standardized component factor scores which become the coefficients for the variables in three factor models.

TABLE 7

HDP Attitudes Standardized Variable Scores by Factor

Standardized Component Score Coefficient Matrix				
		Component		
	Question	1	2	3
A5	The HDP training has helped me to improve my action research skills.	.922	-.054	.007
A7	The HDP training has motivated me to improve my teaching performance.	.709	.432	.133
A8	The HDP training has motivated me to implement new teaching methods.	.803	.335	.205
A2+	The HDP training has helped me to improve my active learning skills	.328	.804	.178
A6+	The HDP training has motivated me to seek a teaching career.	-.020	.887	.077
A9+	The HDP observation feedback has help to improve my teaching methods.	.112	.098	.981
A3	*Shared - AFAC1 & AFAC2*:The HDP training has helped me to improve my student centered teaching.	.505	.631	-.088
(+) Recoded question to be positive Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				

HDP Attitudes Factor Models, Correlations and t Test of significance

      The following Factor definitions demonstrate the Factor mathematical models.

AFAC1 Factor 1 (variables - A5, A7, A8 & A3)

Teaching Factor Description: ***HDP training helped improve my action research, teaching performance, teaching methods as well as my student centered teaching/learning skills.***

Factor Mean = - .052*A2P+.124*A3 +.535*A5-.260*A6P +.269*A7+.341*A8 -.070*A9P = 5.25

Factor Mean Test Value: = - .052*4+.124*4 +.535*4-.260*4+.269*4+.341*4 -.070*4 = 3.55

t test mean conclusion: 5.25 > 3.55 (*p* = .001) Somewhat Agree

AFAC2 Factor 2 (variables - A2+, A6+ & A3)

Learning Factor Description: ***HDP helped improve my active learning skills, motivated me toward a teaching career as well as improved my student centered teaching/learning skills.***
Factor Mean = .394*A2P +.270*A3-.285*A5 +.553*A6P +.063*A7-.033*A8-.091*A9P = 5.44
Factor Mean Test Value = .394*4 +.270*4 -.285*4 +.553*4 +.063*4-.033*4-.091*4 = 3.484
t test mean conclusion: 5.44 > 3.484 (*p* = .001) Somewhat Agree

AFAC3 Factor 3 (variable - A9+)

Factor Description: ***HDP classroom observation helped improve my teaching methods.***
Factor Mean = .046*A2P -.223*A3-.087*A5-.029*A6P +.005*A7+.080*A8+.977*A9P = 4.59
Factor Mean Test Value = .046*4 -.223*4-.087*4-.029*4 +.005*4+.080*4+.977*4 = 3.076
t test mean conclusion: 4.59 > 3.076 (*p* = .001) Somewhat Agree

      Table 8 summarizes the three factor means test against the test mean calculated by assuming each variable = 4. The One-Sample *t* Test (Null: Mean = 4; two tail test) parametric statistical was used and all three factor means scores were highly significant (*p* < .001).

TABLE 8

HDP Attitudes Summary of Factor tests of significance

Factor	Mean	Test Mean[a]	Sig.	N	Indication
AFAC1	5.25	3.55	.001	49	Somewhat Agree
AFAC2	5.44	3.48	.001	49	Somewhat Agree
AFAC3	4.59	3.08	.001	49	Somewhat Agree
(a) One sample t Test (Null: Mean = 4; two tail test					

HDP BARRIERS STATISTICAL ANALYSIS RESULTS

HDP Barriers Variable Reduction Principle Components Factor Analysis

The HDP barriers analysis explained 61.2% of the variance by sums of squared loadings. The results of the complete PCA are shown in Tables 9 through Table 11 and Figure 5 and Figure 6

TABLE 9

HDP Barriers Factor Components Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.421	30.258	30.258	2.421	30.258	30.258	2.053	25.661	25.661
2	1.440	17.997	48.255	1.440	17.997	48.255	1.715	21.441	47.102
3	1.032	12.900	61.155	1.032	12.900	61.155	1.124	14.053	61.155
4	.999	12.488	73.643						
5	.846	10.576	84.219						
6	.659	8.232	92.451						
7	.361	4.517	96.968						
8	.243	3.032	100.000						

Extraction Method: Principal Component Analysis.

Figure 5 is Cattell's scree plot (Cattell, 1966) of the components shown as the X axis and the corresponding eigenvalues as the Y axis. Where the decrease in eigenvalues flattens and the curve makes an elbow, Cattell's scree test says to not consider all further components after the one starting the elbow. Therefore, an eigenvalue of 1.0 was used for the selection of three components.

FIGURE 5

HDP Barriers Cattell's Scree Plot
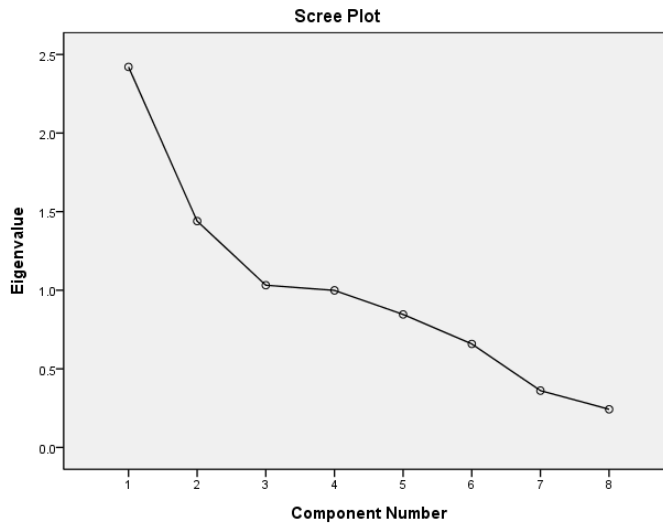
Table 9 shows the Variable Loadings (correlations) for each factor after rotation. As an arbitrary rule-of-thumb for level of correlation significance, primary variable loadings in a factor should be .7 or higher to confirm that independent variables initially selected are

represented by a particular factor or about half of the variance in the variable ($r^2 = .49$) is being explained by the factor.

TABLE 9

HDP Barriers Factor Variable Loadings

Rotated Component Matrix[a]			
	Component		
	1	2	3
B1	.524	.132	-.235
B3	.308	.770	.065
B4	-.030	-.035	.880
B5+	-.091	.866	-.041
B6	.024	.409	.465
B8	.416	.417	.246
B10	.890	-.037	.104
B11	.842	.104	.032
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 4 iterations.			

Figure 6 shows each of the eight variables included in the three factors. Factor 1 variables B1, B10 and B11 are well clustered. Factor 2 variables B3 and B5+ are also well clustered. Factor 3 variable B4 is in the same plane of the rotated space only separated in component 3 space. Variable B6 is shared between factor 2 and factor 3 and B8 is shared between factor 1 and factor2.

FIGURE 6

HDP Attitudes Component (variable) Plot in Rotated Space
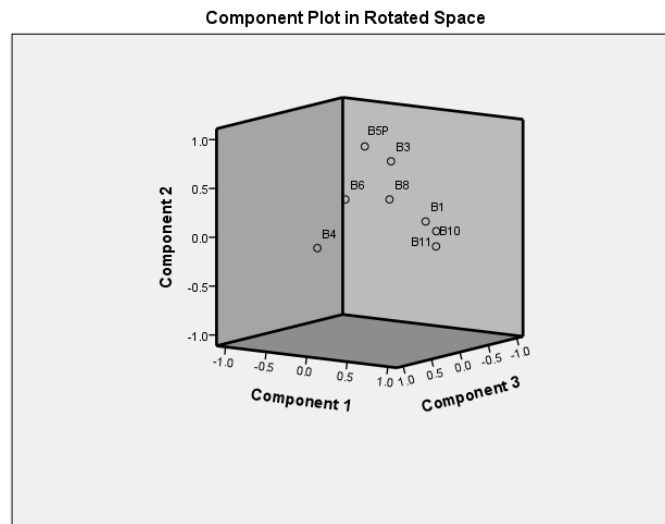
Table 10 shows the standardized component factor scores which become the coefficients for the variables in three factor models.

TABLE 10

HDP Attitudes Standardized Variable Scores by Factor

Standardized Component Score Coefficient Matrix				
		Component		
	Question	1	2	3
B1	The HDP time management techniques are difficult to implement.	.258	.041	-.242
B10	Implementing HDP teaching methods requires too much time in the classroom.	.466	-.160	.082
B11	The HDP continuous assessment methods use too much time in the classroom.	.422	-.054	.000
B3	Class size is too large to implement HDP teaching methods.	.052	.441	-.043
B5+	The teaching workload is too large for implementing HDP teaching methods.	-.166	.571	-.145
B4	The AKU administration consistently follows-up on implementation of HDP teaching methods.	-.028	-.129	.814
B6	*Shared - BFAC2 &BFAC3*: There is a gap between the student's objectives and the goals of the HDP instructor.	-.053	.199	.375
B8	*Shared - BFAC1 & BFAC2*: The regular course content (syllabus) is too large for the time available in the classroom.	.153	.178	.165
(+) Recoded question to be positive Extraction Method: Principal Component Analysis. Rotation Method:Varimax with Kaiser Normalization.				

DP BarriersFactor Models, Correlations and t Test of significance

The following Factor definitions demonstrate the Factor mathematical models.

BFAC1 Factor 1 (variables – B1, B10, B11, & shared B8)
Teaching Factor Description: ***HDP teaching methods, continuous assessment and course content are difficult to manage in the given class time for effective teaching.***
Mean =.258*B1+.052*B3-.028*B4-.166*B5P-.053*B6+.153*B8+.466*B10+.422*B11 = 5.09
Mean Test Value: = .258*4 +.052*4 -.028*4 -.166*4 -.053*4 +.153*4 +.466*4 +.422*4 = 4.42
t test conclusion: 5.09 > 4.42 (*p* = .002) Agree

BFAC2 Factor 2 (variables – B3, B5+, & shared B6 & B8)
Learning Factor Description: ***Class size and teaching work load are too large and shared variables course content and gap with students' preparation are obstacle in learning .***
Mean =.041*B1+.441*B3-.129*B4+.571*B5P+.199*B6+.178*B8-.160*B10-.054*B11= 5.17
Mean Test Value =.041*4+.441*4-.129*4+.571*4+.199*4+.178*4-.160*4-.054*4= 4.35
t test conclusion: 5.17 > 4.35 (*p* = .005) Agree

BFAC3 Factor 3 (variable – B4, B6 shared)
Administrative Factor Description: ***Administration consistently follows up on HDP teaching methods and shared variable there is a gap with students' preparation and capacity.***
Mean =-.242*B1-.043*B3+.814*B4-.145*B5P+.375*B6+.165*B8+.082*B10+.000*B11= 3.74
Mean Test Value =-.242*4-.043*4+.814*4-.145*4+.375*4+.165*4+.082*4+.000*4 = 4.02
t test conclusion: 3.74 < 4.02 (*p* = .127) Neutral/Disagree

Table 11 summarizes the three factor means test against the test mean calculated by assuming each variable = 4 for each of the Likert scale items in the factor. The One-Sample t Test (Null: Mean = 4; one tail test) parametric statistical significance are noted.

TABLE 11

HDP Barriers Summary of Factor tests of significance

Factor	Mean	Test Mean[a]	Sig.[a]	N	Indication
BFAC1	5.09	4.42	.002	49	Agree
BFAC2	5.17	4.35	.005	49	Agree
BFAC3	3.74	4.02	.127	49	Neutral/Disagree
(a) One-sample t Test (Null: Mean > 4 or < 4; one tail test)					

HDP ATTITUDES CORRELATIONS WITH HDP BARRIERS FACTORS

Table 12 shows the correlation relationships between the attitudes factors and the barriers factors.
AFAC1 (HDP training helped improve my action research, teaching performance, teaching methods as well as my student centered teaching/learning skills) positive significant correlation with BFAC3 (Administration consistently follows up on HDP teaching methods and there is a gap with students)
AFAC3 (HDP classroom observation helped improve my teaching methods) negative significant correlated with BFAC1 (HDP teaching methods, continuous assessment and course content are difficult to manage in the class time) reflects the relationship.

TABLE 12

Correlations between HDP Attitudes and HDP Barriers Factors

Attitudes and Barriers Correlations			
Attitude Factors	Barriers Factors	Corr.[a]	Sig.
AFAC1	BFAC3	.316	.027
AFAC3	BFAC1	-.340	.017
(a) Pearson Correlations			

HDP Module Rankings

     Table 13 summarizes the HDP respondent's rankings of the five modules in the HDP curriculum.   The active learning module was the most highly ranked followed by action research and reflective teaching.

TABLE 13

HDP Module Rankings

HDP Module Rankings					
Module	Rank	Mean	Variance	Description	N
AR4	1	1.60	0.64	Active learning	47
AR3	2.5	2.68	1.22	Reflective teaching	47
AR1	2.5	2.72	1.77	Action Research	47
AR5	4	3.49	1.13	continuous assessment	47
AR2	5	4.55	0.73	School placement	47

HDP BARRIERS RANKINGS BR1-BR6 and BR7-BR12

Ranking of Time Barriers

     Table 14 summarizes the HDP respondent's rankings of six hypothesized time barriers to implementation of the HDP objectives. Under the assumption of validity of parametric statistical tests, verified by comparison with non-parametric median statistical tests yielding the same results, the following statistics identified the significant ranked HDP time barrier variables. The one sample t Test (one-tail) indicated that variable R1 mean = 2.79 is < 3.5 ($p = .007$) and R4 mean = 3.23 < 3.5 ($p = .091$). Similarly, R3 mean = 4.33 > 3.5 ($p = .001$) is the least important time variable. The conclusion was that large class size and large course content are the top time taking barriers to implementation of the HDP objectives. The other time related variables were not statistically different than the mean = 3.5 and therefore indeterminate in importance.

TABLE 14

Rankings of Time Related Barriers to Implementation of HDP Objectives

Question: ***Please rank the following <u>time</u> related barriers to implementing HDP objectives. (1 through 6: 1 = most important)***					
Var.	Rank	Median	Mean	Barrier Description	N
BR1	1	3	2.79	Class size is too large to implement HDP methods.	49
BR4	2	3	3.23	Course content is too large for the time in the class.	48
BR2	3	3	3.27	Teaching workload is too large	49
BR6	4	3.6	3.52	Continuous assessment uses too much class time.	48
BR5	5	4	3.85	HDP teaching methods require too much class time.	48
BR3	6	4.5	4.33	Time management techniques difficult to implement.	48

Ranking of Perception Barriers

Table 15 summarizes the HDP respondent's rankings of six hypothesized perception barriers to implementation of the HDP objectives. Under the assumption of validity of parametric tests, verified by comparison with non-parametric median statistical tests yielding the same results, the following statistics identified the significant ranks of the HDP perception barrier variables. The one sample t Test: (one-tail) indicated that variable R9 mean = 2.83 is < 3.5 ($p = .004$) and R12 mean = 2.94 < 3.5 ($p = .009$). Similarly, R8 mean = 3.90 > 3.5 ($p = .058$) is the least important perception variable. The conclusion was that no textbooks and students not prepared are the top perception barriers to implementation of the HDP objectives. The other perception variables were not statistically different than the mean = 3.5 and therefore indeterminate in importance.

TABLE 15

Rankings of Perceptions of Barriers to Implementation of HDP Objectives

Question: *Please rank the following <u>perceptions</u> of barriers to implementing HDP objectives. (1 through 6: 1 = most important)*				
Var.	Rank	Mean	Description	N
BR9	1	2.83	No textbooks for the student's takes extra effort in the classroom.	48
BR12	2	2.94	Students are not prepared for HDP teaching methods	49
BR7	3	3.67	No administrative follow-up on implementation of HDP teaching.	49
BR10	4	3.73	No personal motivated to implement HDP teaching methods.	49
BR11	5	3.76	Implementing HDP teaching methods is difficult.	49
BR8	6	3.90	Gap between student's objectives and instructor's goals	48

DISCUSSION

The major objective of this study was to identify the attitudes of the HDP participants toward the HDP program objectives and the participants perceived barriers to implementation of the HDP teaching methods at AKU.

The hypothesis for this study was that

- The AKU faculty's attitudes towards Higher Diploma Programme (HDP) were positive.
- HDP training implementation barriers existed at AKU.

This study confirmed both of these hypotheses to be significantly supported by all significant measures of attitudes and implementation barriers reported.

Consolidation of the respondents' attitudes towards the HDP objectives, PCA indicated that the most reliable seven measures of attitudes were reduced to three factors which all confirmed the significance of the study attitudes hypothesis.

Rankings of the HDP modules (objectives) indicated that active learning, reflective teaching and action research were the highest rated. The lowest rated module was school placement. The PCA teaching attitudes factor AFAC1 was described as HDP training helped improve my action research, teaching performance, teaching methods as well as my student centered teaching/learning skills. This factor was significantly positive (Somewhat Agree) and supported the HDP objective of changing attitudes toward teaching in the classroom.

The PCA learning attitudes factor AFAC2 was described as; HDP helped improve my active learning skills, motivated me toward a teaching career as well as improved my student centered teaching/learning skills. This factor was significantly positive and supported the HDP objective of changing attitudes toward student learning in the classroom.

The PCA observation attitudes factor AFAC3 was described as HDP classroom observation helped improve my teaching methods. This attitude factor was found to be significant positive and reinforcement the HDP objective of stimulating change in the teaching methods and attitudes in the classroom.

The time barriers and perceived barriers to implementation of the HDP objectives were ranked by the respondents. The ranking of the time barriers concluded that large class size and large course content were the top time barriers to implementation of the HDP objectives. The ranking of perception barriers concluded that no textbooks and students' prepared are the top barriers to implementation of the HDP objectives.

The PCA time barrier factor BFAC1 was described as HDP teaching methods, continuous assessment and course content are difficult to manage in the class time. This factor was significantly positive (Agree) and identified that time expected for HDP teaching methods, assessment, and syllabus course content (shared variable) were significant barriers to implementation of the HDP objectives.

The PCA class size and associated work load factor BFAC2 was described as class size and teaching work load are too large and shared variables course content and gap with students are difficult. This factor was significantly positive (Agree) and identified that expectations for large class size, high teaching load and shared variables course content and gap with students' preparation and capacity for change were significant barriers to implementation of the HDP objectives.

The PCA administrative factor BFAC3 was described as Administration consistently follows up on HDP teaching methods and shared variable of there is a gap with students' preparation and capacity. This factor was not significant and candidates were neutral to negative (Disagree) with this factor indicating a lack of administrative interest and follow up. Respondent comments indicated that there was no administrative follow up of graduates' implementation of HDP objectives.

This empirical study, although not a replication, reached the same conclusions as a 2007 Jimma University study of the HDP program candidates (Hunde, 2008). The findings support a conclusion that little has change in the HDP program implementation in Ethiopian higher education institutions. As indicated by the previously sited study at Jimma University and this study at AKU, HDP program implementation at both well established and new universities in Ethiopia is challenging.

This study confirms that the instructional barriers of class size, teaching load, course content and administrative follow-up can negatively impact faculty's attitudes and severely restrict the implementation of world class pedagogical methods and a positive student learning environment.

Additional research is necessary to confirm the findings of this study. Additional research is necessary to confirm and mitigate the identified barriers.

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APPENDIX

FIGURE I: ATTITUDES ABOUT HDP TRAINING PROGRAM

Please ☑ check the appropriate response (1 to 7) for each question!								
Q. #	Questions on your Attitude about HDP	Strongly Disagree	Somewhat Disagree	Disagree	Neutral	Agree	Somewhat Agree	Strongly Agree
A1	The HDP training has improved my relationship with my students.	□1	□2	□3	□4	□5	□6	□7
A2+	The HDP training has helped me to improve my active learning skills.	□1	□2	□3	□4	□5	□6	□7
A3	The HDP training has helped me to improve my student centered teaching skills.	□1	□2	□3	□4	□5	□6	□7
A4	The HDP training has helped me to improve my *formative* assessment skills.	□1	□2	□3	□4	□5	□6	□7
A5	The HDP training has helped me to improve my action research skills.	□1	□2	□3	□4	□5	□6	□7
A6+	The HDP training has motivated me to seek a teaching career.	□1	□2	□3	□4	□5	□6	□7
A7	The HDP training has motivated me to improve my teaching performance.	□1	□2	□3	□4	□5	□6	□7
A8	The HDP training has motivated me to implement new teaching methods.	□1	□2	□3	□4	□5	□6	□7
A9	The HDP observation feedback has **not** help to improve my teaching methods.	□1	□2	□3	□4	□5	□6	□7
A10+	The HDP 80% attendance requirement is a motivate for me to be in class.	□1	□2	□3	□4	□5	□6	□7
A11	HDP certification is a positive motivation for me to complete the course.	□1	□2	□3	□4	□5	□6	□7

FIGURE 2: BARRIERS TO ACCOMPLISHING THE OBJECTIVES OF HDP

Please ☑ check the appropriate response (1 to 7) for each question!								
Q. #	Questions on Barriers	Strongly Disagree	Somewhat Disagree	Disagree	Neutral	Agree	Somewhat Agree	Strongly Agree
B1	The HDP time management techniques are difficult to implement.	□1	□2	□3	□4	□5	□6	□7
B2+	The HDP teaching methods are difficult to implement in the classroom.	□1	□2	□3	□4	□5	□6	□7
B3	Class size is too large to implement HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7
B4	The AKU administration consistently follows-up on implementation of HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7
B5+	The teaching workload is too large for implementing HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7
B6	There is a gap between the student's objectives and the goals of the HDP instructor.	□1	□2	□3	□4	□5	□6	□7
B7	No student textbook's takes extra time to implement HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7
B8	The regular course content (syllabus) is too large for the time available in the classroom.	□1	□2	□3	□4	□5	□6	□7
B9	The students are prepared to accept the implementation of HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7
B10	Implementing HDP teaching methods requires too much time in the classroom,	□1	□2	□3	□4	□5	□6	□7
B11	The HDP continuous assessment methods use too much time in the classroom.	□1	□2	□3	□4	□5	□6	□7
B12+	I am personally motivation to implement HDP teaching methods.	□1	□2	□3	□4	□5	□6	□7