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Original Article

Dynamic factors affecting undergraduate health Science Students' Learning Engagement, Academic Performance and Achievement at Hawassa University, Ethiopia

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motivation and willingness;
educational process-inputs-outputs

Abstract

The study investigated dynamic forces affecting undergraduate health science students' learning engagement, academic performance and achievement. The study employed mixed method with embedded mixed design. A total of 238 participants were selected using availability sampling, simple and stratified random sampling techniques. Questionnaires, focus group discussion, observation and document analysis were used to collect data. The data collected through questionnaires were analyzed using descriptive and inferential statistics and those collected through focus group discussion, document review and observation were qualitatively narrated. The findings of the study revealed that although there were many attempts to enhance students' learning participation and academic performance, the in-campus and off-campus dynamics have contributed to learning engagement, academic performance and achievement of health science students. The demographic factors such as gender, family education and socio-economic status, quality of previous high school, student's admission point and medium of instruction played significant roles in determining students' learning, performance and achievement. The willingness, motivation, commitment and competences of students, instructors and management bodies were crucial dynamic factors contributing to academic performance of students. Improving the qualities of educational inputs, educational processes, support staff services and curriculum materials should improve to quality of students' learning participation, academic performance and achievement.

1 Introduction

Education as a complex system rooted in the society's economic, political and socio-cultural context that prepares the needed workforce with proficiency, competences and techniques required to transform global economies (Kipkebut, 2010). Excellence in education, curriculum, school and teaching philosophies demand dialogic and collaborative forms of practices and prominent contextualization of innovative ideas of teachers and

learners (Al-Balushi, 2017; M. G. Girma, 2022). The education system is one of the fundamental engines for development which gears towards economic development, stability and progress. The growing of international competitions, accountabilities, responsibilities, academic and professional competencies call for changes and respond to rapid changes occur in the learning environments because higher education makes significant changes driven by globalization and technology (Mense, 2018). Accordingly, one of the objectives of Ethiopian education policy in general and higher education in particular is to satisfy the country's need for skilled manpower by providing training in various skills and at different educational levels (Ministry of Education, 2018) because the success and development of the country would greatly depend on the productivity of its human capital. The dividing line between developed and developing countries relies on the capacity of higher education, scientific attainments and its application for economic progress and prosperity (Bloom et al., 2005). Therefore, the increasing practices of investments on higher education contribute to international organizations and communities.

The call for quality education emerged as almost a policy campaign to produce competent manpower resources and provide intensive training required for students to become skilled and productive workers when they become parts of the labor force (Rommel, 2004). The present era is characterized by a historical move towards mass higher education that intends to secure place for students of different socio-economic background. This ideological move is dramatically increasing the number of students beyond the existing capabilities of higher education institutions in terms of human, material and financial resources at their disposal. In higher education institutions, nothing can be taken on trust and the students have to think themselves (Barnett, 1997) through discovery and active participation in the experiences of knowledge creation and transformation (Kurt, 2020).

Higher education imparts the deepest understanding in the minds of students rather than superficial grasp that might be acceptable elsewhere in the system. The students' learning, academic performance and achievement play an important role in producing the best quality graduates who will become great leader and manpower for the country and thus, responsible for the country's economic and social development (Ali et al., 2009). The qualities of students' academic gain and learning performance are affected by numerous factors including gender, age, teaching faculty, students schooling, guardian SES, residential area of students, medium of instruction in schools, tuition trend, daily study hour and accommodation as day scholar (Waters and Marzano, 2006). Some empirical studies have been made to examine significant relationships between independent variables in terms of grades or degree completion, and dependent variable (academic success of students) at University level although the results have not been entirely satisfactory.

Some major independent variables affect academic performance of higher education institutions' students. This includes university management, facilities and quality of instructional processes: quality of instructors, instructional materials, methods of teaching, assessment techniques are among the many (Amin, 2005). These variables are part of the inputs and processes (independent or manipulative variables) which play fundamental roles to contribute to the outputs-academic performance and achievement (dependent variable). Moreover, educational institutions take inputs from the learning environments, undergo educational process, and convey outputs to the learning environment (Shavelson, 1987). The university admits students (inputs) and then transforms them through teaching and learning which is reflected by the students' academic performances (outputs). The types of contexts such as target knowledge, skills and dispositions, organization and facilitation of educational process determine the capacity of institutions (Egert et al., 2018). Therefore, quality inputs via quality educational process produce quality outputs in the learning systems based on the input-process-output standards and indicators.

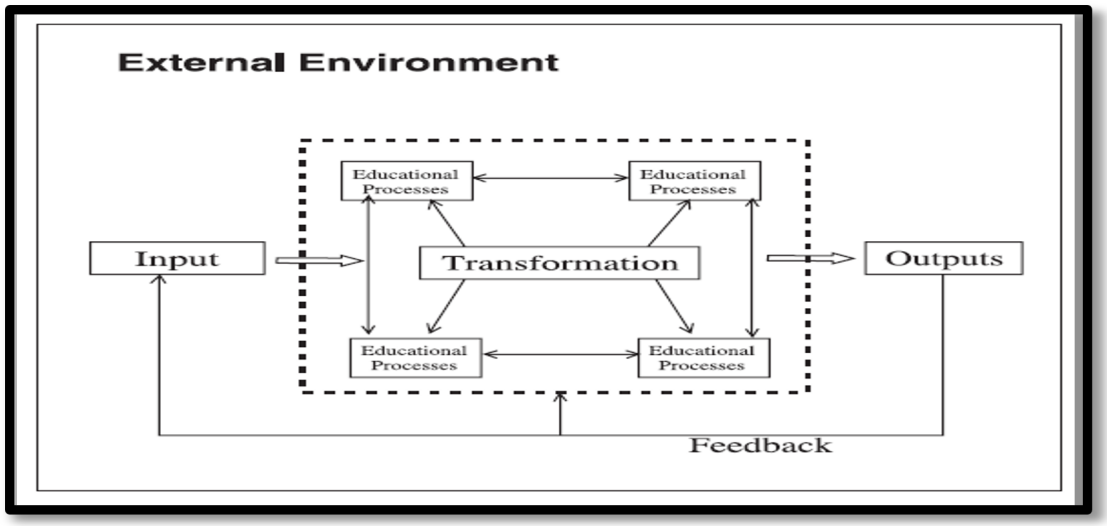


Figure 1: Systems view model of quality in education

According to Minnesota measures (2007), a report on higher education performance which was produced by the University of Minnesota, the most reliable predictor of student success in college is the academic preparation of students in high school. Similarly, Geiser and Santelices (2007) found out that high school grade point average is consistently the best predictor of the success of college students. This indicates that high school grades were without doubt the best predictors of academic performance. Academic performance as a dependent variable related to independent variables-admission points. Accordingly, if the admission points are high, then the academic performance is likely to be high and if admission points are low, then academic performance may be low (Geiser and Santelices, 2007). In the Ethiopian context, a national assessment made on EGSECE, for example, indicated poor achievement of students in English and other subjects (National Examination Agency, 2007).

In the same manner, some studies of EGSECE achievement of students in secondary schools reported poor performance of students in English language and mathematics (Amare, 2009). This poor performance in English language as a medium of instruction hindered understanding of information and communication system in higher education institutions. The previous performance affects the future academic performance of students whether the HEIs education quality, graduates' satisfaction, and employers' perceptions have been affected as a result of the past and current assessment methods (Moges, 2018).

In addition, Dills (2006) suggested that students' learning engagement and academic performance are dependent on parents' SES remarking that students from high socio-economic backgrounds perform better than their counter parts from low social economic backgrounds. Likely, it is evident that students from educated family are better perform than students from non-educated families. Students' learning, academic performance and achievement depend on number of socio-economic factors like students' attendance in the class, family income, mother's and father's education, teacher-student-ratio, presence of trained teacher in school, sex of a student, and distance of schools (Raychaudhuri et al., 2010). In line with this, Hansen and Mastekaasa (2006) argued that according to the cultural capital theory one could expect students from families who are closest to the academic culture to have greatest success. A similar view is held by Kolicic (2006) on academic performance and scientific involvement of final year medical students coming from urban and rural backgrounds and concludes that students from urban backgrounds had significantly better academic and research indicators than those from rural and re-

mote backgrounds.

The other independent variable is former school background, which was conceptualized as location of the former school (urban or rural); ownership of former school (public or private) academic status of the former school and financial status of the former school is linked to academic performance of students. In light of this, students from high-class schools are likely to perform well because they attended those schools (Sentamu, 2003 & Kweisga, 2002). Thus, the type of school a student attends is likely to contribute to their future learning and academic performance.

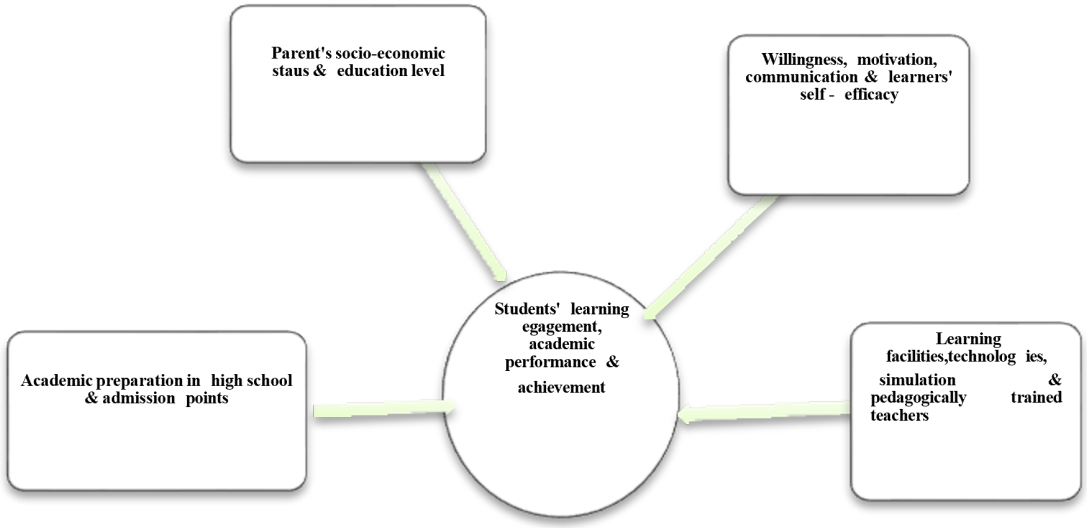


Figure 2: Models showing dynamic factors contributing to students' learning and academic performance

2 Research problem

The current educational market seems to pose new dominating expectation about the roles and practices of higher education institutions in producing high quality work force equipped with necessary market oriented practical skills (Leu, 2000). The graduates' profiles to be attained in terms of desired skills, knowledge and understanding, social and economic needs of the country are at the heart of quality assurance process. Quality demands quality to accomplish the mission scrutinizing the echelon of higher education institutions' students' learning from knowledge acquisition to knowledge application (Amare, 2009). Economic growth and development are unthinkable without having skilled citizens come out of competitive type of education provided by universities in knowledge-based era. When Ethiopia is moving to stand among middle income countries and contributes to the achievement of 2030 programs, education takes the leading focus. For instance, the practices of SDG-3 good health and well-being, and SDG-4 ensuring inclusive and equitable quality education (UNESCO, 2019) are priority areas in the development of Ethiopia.

In order to overcome deep rooted problems of health workforces following efforts were exerted to achieve highly agreed up on MDGs (United Nations, 2015). Ethiopia has implemented the globally planned MDGs and GTP to stand among middle income countries by 2015 and 2020 respectively (i.e. improving maternal health by 66.67% and reducing children mortality by 33.33%, and combating tropical diseases, HIV/AIDS and TB) are some of the "mottos" for which health professionals were working. Educational preparation of health science students, who contribute primarily towards the health of the community,

needs unquestioned attention underlying improving the health of the society (Sunshine and Lawrence, 2015). With this intention, producing competent health professionals in higher education institutions is the best instrument to full fill the gaps with respect to quantity and quality of health professionals in our country. Thus, higher education learning institution's mission completion through combined effects of teaching-learning, research and innovation created large magnitude of entities towards organizational performance (M. Girma and Akliu, 2023).

Academic success has a great influence on a student's self-esteem, motivation, and perseverance in higher education. Unlikely, poor academic performance results in unacceptable levels of attrition reduced graduates (outputs) and increased cost of education. Likewise, in the Ethiopian context, Amare and Temechen (2002) pointed out that the profile of graduates from different educational programs has been under attack by employers and researchers and hence, the problem-solving graduates were rarely observed. Similarly, the qualitative exploration was administered to identify factors that affect academic performances of students and generated number of factors such as psychosocial factors, environmental and conditions of the areas (Valli and Santhi, 2014). This study had not addressed and reflected the roles of inputs and processes in bringing outputs (academic performance). Educators and researchers have been interested in identifying and understanding the variables that contribute to academic excellence because students' academic performance has always been a topic of interest for educators. Therefore, the proportion of graduates with academic success and won the competences (knowledge, skills, abilities and attitudes) decline from time to time because of dynamics associated to quality of educational inputs including teacher professional and pedagogical competencies, process associated to methods of teaching and assessment, and outputs linked to student's learning engagement in classrooms and academic performance (M. G. Girma, 2022).

In the Ethiopian context, there were few studies done on problems of students' profiles such as learning engagements, academic performances and achievements at higher education institutions (e.g. Amare, 2009; Amare and Temechen, 2002; M. G. Girma, 2022; National Examination Agency, 2007; L. Wariyo and Asgedom, 2021). The mentioned studies revealed the profiles of graduates such as learning engagements, academic performances and achievements of students surrounded by number of factors, of which factors associated to inputs-processes-outputs are perplexing paradoxes. However, as far as the knowledge's of the researchers were concerned, no study has been conducted on the current issue in the study area.

2.1 Research questions

1. What major in-campus and off-campus dynamic forces are affecting undergraduate health science student's learning engagement, performance and achievement?
2. To what extent are undergraduate health science students ready to learn competently to improve their participation, academic performance and achievement?
   (a) What are the impacts of admission criteria, SES, former school, family education, age, sex and competences in campus on student's learning, performance and achievement?
   (b) What does the current level of student's learning participation, performance and achievement looks-like?
3. To what extent are educational facilities accessible to run instructional process effectively and promote learning, academic performance and achievement of undergraduate health science students?
4. To what extent are instructors competent in their subject matter knowledge and pedagogical skills to carry out teaching-learning process effectively?

5. To what extents are the teaching-learning process (course coverage, students' attendance, teaching strategies, assessment techniques, workshops, libraries and laboratories) occurred to advance students' learning?

2.2 Objectives

Based on the stated problem, the study has the following objectives. These are to:

1. Identify major in-campus and out-campus dynamic forces affecting undergraduate health science student's learning engagement, performance and achievement.
2. Pinpoint the exact status of undergraduate health science students' learning participation, academic performance and achievement.
3. Evaluate the application of different pedagogical strategies in instructional processes with respect to students' academic performance and achievement
4. Examine the responsibilities of instructors, school directors and department heads in light of advancing learning participation, academic performance and achievement of students.
5. Evaluate the competences (knowledge, skills & attitudes) of the health science students with respect to their future duties.

2.3 Significance

The study has policy, social, academic and practical significance to improve and maintain quality of education for-and-against the established standards and indicators depending on IPO system model. This conceptually broad and depth study is essential to improve quality of teachers at the center of educational system and contributes to inclusive and equitable quality of teaching-learning process and contributes to producing competent and skillful learners and a source for future research.

3 Research Methods

3.1 Research design

A mixed method with embedded (QUAN+qual) mixed design were employed with the intention of getting necessary information about in-campus and off-campus dynamic forces affecting learning participation, academic performance and achievement of undergraduate health science students. The design is considered embedded because quantitative data results are explained further with the qualitative data (Creswell, 2014). The mixed method is an approach to inquiry involving collecting both quantitative and qualitative data, and integrating the two forms of data and using distinct designs that may involve philosophical assumptions and theoretical frameworks. Hence, Creswell and David (2018) stated that mixed design assists researchers to collect both numerical and non-numerical data, analyze, interpret and give meaning for deeper understanding of the research problem simultaneously.

3.2 Sources of data

The primary sources were school directors, department heads, instructors, technicians and students whereas the secondary sources of data were instructional materials and CGPA of students, ensures data triangulation and enrichment (Creswell and David, 2018). Thus, the primary and secondary data were collected regarding in-campus and off-campus factors affecting academic performance and achievement of undergraduate health science students.

3.3 Samples and sampling techniques

College of Medicine and Health Science in Hawassa University was selected using purposive sampling technique because of experiences and professional background of the researchers. The researchers determined a sample size for the large target population (e.g. students) using Cochran (1977) to decide the numbers of representative sample students. n

$$= \frac{N}{1 + N(e)2}; \text{n} = \text{required sample size}, \text{N} = \text{Total}$$

Population size = 237, CI = Level of confidence interval 95%, e = Margin of error = 0.05%, n = 148 students.

Table 1: Population and sample size of the study by departments (n = 238)

Department Units	Students	Instructor		Coordinator		Lab-technicians	
		N	n	N	n	N	n
Clinical Nursing	45	3	1	2	3	1	5
Midwifery	37	2	6	1	5	1	0
Optometry	16	1	0	1	0	6	2
Environmental Health	19	1	2	1	1	7	2
Public Health	65	3	5	2	2	1	5
Pharmacy	28	1	9	1	0	6	1
Medical Laboratory	27	1	5	1	0	7	2
Total	**237**	**14**	**8**	**10**	**16**	**6**	**15**

Note: N = Population, n = Sample selected

3.4 Data collection tools

The data collection tools were questionnaires, focus group discussion, observation and document analysis. Creswell and David (2018) stated that employing multiple data collection instruments help the researchers to combine and strengthen inadequacies and keep triangulation of data. The researchers preferred questionnaires because it is easier to handle and simple for respondents to answer within short period of time (Koul, 2008). The researchers believed that instructors and senior students could easily understand the concept and objectives of the study. Thus, 5-point likert scale closed-ended questionnaires, unstructured interview and focus group discussion guiding questions, document examination coded sheet and observation checklist were prepared in English because it is a medium of instruction in HEIs.

3.5 Validity and reliability

The validity of data collection instruments were checked by expert reviewers and a pilot test was conducted on none sample respondents to ensure the reliability of instruments. The collected data were calculated using Chronbach alpha and resulted in reliability coefficient, .853 and .861 for instructors and students, respectively (p is significant at $\alpha > 80$). Based on comments of reviewers and calculated figures, clarification and modification were made on few items of questionnaires. Finally, after final data analysis, the reliability coefficients were again calculated and were .878 and .867 for instructors and students respectively.

3.6 Methods of data analysis

Creswell (2014) states that mixed method help to achieve what is termed triangulation where comparison between different databases could be made for better effect. Mixing of the two types of data, qualitative and quantitative is made at the interpretation or discussion to actually merge the data. This means to transform one type of data to the other type and compare the results of two databases side by side in a discussion. The data collected through questionnaires were analyzed using appropriate descriptive and inferential statistics such as frequency, percentage, average mean, standard deviation and two-tailed t-test using SPSS-26. The qualitative data obtained through interviews, FGD and document analyses were organized and analyzed using NVivo-14.

3.7 Ethical practices

Ethical approval for this study was obtained from CMHS to avoid the research misconduct because harm is narrated in the context of institutional characteristics, policies, procedures, guidelines and work environment (Petousi and Sifaki, 2020). Before distributing the instruments to the participants for data collection, permission was sought from education administration offices.

4 Results

4.1 Demographic characteristics of respondents

A total of 238 participants: 214 participants were engaged in filling out questionnaires, 9 participants were engaged in interview and 15 discussants were participated focus group discussion.

Table 2 shows that 61 (68%) of the sampled academic staffs, 107 (72%) of Undergraduate students were males whereas 29 (32%) of academic staffs and 41(28%) of undergraduate students were females. Therefore, there is slightly low participation of females compared to their male counter parts. Regarding qualification of academic staffs, 55 (61%) of instructors were MSc degree holders whereas 34 (38%) of them were PhD holders. Thus, the educational qualification of teaching staffs was below the essential required minimum standard (Ministry of Education, 2018). Low qualification of teaching staffs appears unlikely to conduct instructional process effectively. This calls for inferior quality of education because teachers' professional development and educational qualification have paramount importance to promote quality of education. However, 69 (76%) of academic staffs have 11-20 years teaching experiences which is promising in improving quality of

education which helps to enhance students' academic performance. However, 15 (17%) instructors have 5-10 years teaching experiences which have significant impact in handicapping learning engagement, academic performance and achievement of students. All of the academic staffs are full-time workers which is good to give attention to the competences of students.

Table 2: Demographic characteristics of respondents (n = 238)

Variables	**Characteristic**	**Academic Staffs**		**Students**	
		F	%	F	%
Sex	Male	61	68	107	72
	Female	29	32	41	28
	Total	90	100	148	100
Qualification	Ass. Professors	3	4	All are 4th year students	
	MSc	55	61		
	BSc	1	1		
Work Experiences	5-10	15	17	All are 4th year students	
	11-15	34	38		
	16-20	4	4		
	≥21 years	6	7		
	Total	90	100		
Terms of Employment	Full-time	90	100	All are regular 4th year students	
	Total	90	100		

Table 3: Relationships between demographic profiles & academic performances of students

Demographic Variables	**Instructors**		**Student**		**t-test**	**p-value**
	M1	SD1	M2	SD2		
Gender	4.0	0.52	3.41	1.38	1.52	.712
Age	2.8	0.59	2.55	0.59	2.10	.214
Family SES	4.1	0.43	3.92	0.42	7.21	.000
Family education level	3.2	0.39	3.78	0.39	6.84	.000
Residential areas of students	2.1	0.55	1.85	0.61	1.55	.141
Students' admission points	3.4	0.44	3.21	0.53	9.18	.000
Medium of instruction	3.2	0.42	3.55	0.44	1.19	.237

Table 3 shows the average mean of items 1, 2, 5, 7 and 8 were above the expected ideal mean (3.00) which remarks that the relationships between the variables. The statistically significance differences between the views of respondents by the t-values at (1.70, 1.94, 1.55, 1.96 & 1.19) respectively are greater than alpha value ($p > .05$). This shows that there are statistically significant differences between the opinions of the two categories of respondents. On the other hand, the average mean values of items 3, 4 & 6 were above the expected ideal mean which reflects the existence of strong relationships between the variables. The statistically significance differences between the views of respondents by the t-values at (7.21, 6.84 & 9.18) respectively are less than alpha value ($p < .05$). This shows that there are statistically significant differences between the opinions of the two categories of respondents. Therefore, these are serious factors that affect students' learning engagement, academic performance and achievement. In addition, the teams of group focus discussants stated that Table 4 shows the average mean values of item 1 was above the expected ideal mean which remarks that the participation of students in problem-based learning and their motivation to learn from professional practices and projects were encouraging. There is no a statistically significance difference between the views of respondents by the t-values at (1.88) is greater than alpha value ($p > 0.05$). This

shows that there is no a statistically significant difference between the opinions of the two categories of respondents. The average mean values of items 5, 6 and 10 were above the ideal average mean by instructors and below the ideal average mean by students. This shows that teachers ensure instructors' willingness to capacitate their students through different projects and conduct researches to rank students' academic performances were encouraging. But students responded that they were not satisfied with instructors' willingness. The significance difference between the views of respondents by the t-values at (7.71, 4.29 & 6.58) are less than the alpha value ($p < 0.05$). This shows that there are statistically significant differences between the opinions of the two categories of respondents. On the contrary, the average mean values of items 2, 3, 4, 7, 8 & 9 were below expected ideal mean (3) which reflects that students' attend classrooms regularly and motivated to learn from the experiences of health professionals. The significance difference between the views of respondents by the t-values at (2.34, 1.24, 1.38, 1.67, .238 & 1.44) are greater than alpha value ($p > 0.05$). This shows that there are no statistically significant differences between the opinions of the two categories of respondents.

Table 4: Willingness and motivation of the instructor, students and management bodies

Items	**Instr**
	M1
Students attend the classroom regularly	3.54
Students participate in problem-based learning	2.82
Students' motivation to learn from professional practices and projects	2.67
Students' willingness and inspiration to learn from reading materials	2.57
Instructors' willingness to capacitate their students through different projects	3.58
Instructors' commitment to make students enthusiastic professionals	2.75
Instructors' willingness to improve pedagogical knowledge through HDP training	2.88
Management bodies' motivation to fulfill reading materials	2.95
Management bodies' motivation to fulfill computers and internet services	2.79
Management bodies' commitment to initiate academic staffs to conduct research projects	3.86

In addition, one of the interviewees suggested that 'I think students learn more from projects, field experiences and experiential learning if and only if they have motivation and commitment. However, I assume that instructors and department coordinators show less commitment to make students enthusiastic professionals on top of student's less interest to learn from different instructional materials. I am sure that instructors should carefully design problem-based learning to their students' (IW-3, 14 April 2021).

Moreover, the document examination (eg. instructional plan, HDP portfolios) result shows that the management bodies initiate academic staffs to conduct research projects and implement problem-based learning to improve instructional processes and give community services though there was no participatory action research practices to improve classroom pedagogical strategies (Document Examination, April, 2021).

Table 5: Competences (knowledge, skills or abilities) of students

Items	Instructor	
	M1	SD1
Students' academic background knowledge	2.94	0.56
Students' quality in their subject matter knowledge	2.74	0.52
Students' knowledge about the apparatuses and instruments of the skills laboratory	2.88	0.48
Students' abilities to undertake professional projects	2.94	0.45
Students' communication and understand the subject matter	2.64	0.84
Students' computer skills to grasp new information	2.85	0.53
Students' skills to transform theories into practice	2.89	0.56
Students' interest to practice professional projects	2.78	0.56
Students' skills in using apparatus and instruments in skills laboratory	2.85	0.54

Table 5 shows that the average means of items 4 and 5 were rated above and below the ideal average mean (3) by instructors and students. There are no significant differences between the views of respondents by the t-values at (1.99 & 1.84) were greater than the alpha value ($p > 0.05$). This shows that there are no significant differences between the opinions of the two categories of respondents. On the other hand, items 1, 2, 3, 6, 7, 8 & 9 were rated above and below the ideal means. There are significant differences between the categories of respondents by the t-values at (2.15, 13.98, 11.69, 11.28, 2.17, 13.74 & 10.95) were less than the alpha value ($p < .05$).

Furthermore, one of the interviewees suggested that student's quality in subject matter knowledge and skills are determined by how much they learned using different instructional materials and styles. The interviewee said: "I believe that students' knowledge and skills associated to laboratory apparatus, skills and interests to practice professional practice in laboratory or via problem-based project are indisputable to ensure quality of science learning. However, students' efforts and practices to develop professional competencies and skills required in the 21st century are not encouraging. I think it is encouraging to motivate teachers and students to work differentiated instruction and different learning styles and strategies" (IW4, 24 April, 2022).

...The document analysis finding ensures that the evaluation of instructional planning indicated that although some teachers use various teaching methodologies, the majority lack competencies pedagogy, and hence some are participating in fragmented HDP training program (Document Review, March, 2021).

On the other hand, one of the focus group discussions stated that

I myself as a department head is not satisfied with the application of active learning strategies in classrooms to ensure two-way communication while transforming scientific theories into practice via laboratory, problem-based projects, experiential learning and HDP training (D7)....I (D9) further stated that the practice of active learning and continuous assessment were fragmented from time to time because of lack of continuous training' (FGD-2, 18 March 2021).

Table 6: Qualities of educational inputs

Items	Instructors		Students		Sig(2-taile
	M1	SD1	M2	SD2	
Instructors to student ratio is around 1:30	2.70	0.58	2.80	0.48	1.79
Computer to student ratio is around 1:25	2.85	0.52	2.80	0.52	1.64
Lab-technician to student ratio is 1:15	2.66	0.54	2.80	0.54	2.09
Course materials to students ratio is 1:1	3.85	0.49	3.50	0.58	1.37
Full time/part-time instructors ratio: 70:30	4.54	0.14	3.90	0.28	0.49
Qualification PhD/specialist: MSC/generalist ratio: 25:75	2.68	0.44	2.80	0.52	1.68
Adequate clinical sites for apparent ship	2.82	0.59	2.60	0.57	0.76
Enough rooms for simulation training	3.43	0.41	3.90	0.29	1.97

Table 6 shows the average mean of items 1, 2, 3, 6 & 7 were rated below the expected ideal mean by instructors and students. There are no statistically significant differences between the views of respondents by the t-values at ($p > .05$). On the other hand, 4, 5 & 8 were rated above the expected ideal mean by instructors and students. There are no significant differences between the views of respondents by the t-values at ($p > .05$).

In addition, one of the interviewees suggested that

I know that there are attempts of fulfilling educational inputs but it does not fit to the quality standards and indicators of ETA/HERQA. The ratios of educational inputs to students are very large to provide appropriate services to students. The number of instructors is large enough and best qualification to ensure quality of the teaching and learning process' (IW-1, 19 April 2021).

The document examination and observation the educational inputs such as computer, laboratory equipment and clinical sites are optimum. However, the number of students is large compared to the existing human and material resources, and contradicts with the indicators of ministry of education road map policy document (Document Examination, April, 2021).

...Similarly, the observation results show that

Table 7: Qualities of instructional processes

Items	
Instructors cover curriculum contents in quantity and quality on time	3
Instructors use various active learning methods in classrooms	2
Instructors use performance-based assessment techniques to assess students' competences	2
Instructors demonstrate practical activities in clinical site/lab skills for students	3
Instructors make enough preparation of lesson	3
Instructors have excess time to give technical support, standardized and feedbacks to students	2
Instructors use appropriate medium of instruction	3
Instructors take simulation training as educators of health care	3
Instructors adjust tutorial supports to overcome instructional problems	2

Table 7 shows the average mean of items 1, 4, 5, 7 & 8 were rated above the expected ideal mean by instructors and students. There are no significant differences between the views of respondents by the t-values at (1.32, .789, .898 & 1.35) were less than the alpha value ($p < 0.05$). This shows that there are no statistically significant differences between the opinions of the two categories of respondents. On other hand, the average

mean of items 2, 3, 6 & 9 were rated below the ideal average mean by instructors and students. There are no significant differences between the views of respondents by the t-values at (2.07, 1.96, 1.45, 1.35 & 6.78) greater than the alpha value ($p > .05$). This shows that there are no statistically significant differences between the opinions of the two categories of respondents. Therefore, these are serious factors that affect students' learning participation, academic performance and achievement.

.... In addition, the document analysis shows that

There are efforts and willingness to implement various active learning strategies, performance-based assessment and effective classroom management techniques (D-2). ... D-4 stated that however do gaps of understandings and skills in practices such as tutorial classes because of shortage of time, weak understand through English as medium of instruction and lack of continuous simulation training... Moreover, D-1 stated that there were serious problems with respect to sizes of clinical sites and number of students it accommodates for practical trainings and willingness of hospitals' and clinics' professionals to support the would be health professionals' (IW-8, 27 March, 2021)

it is evidenced that assessment strategies were implemented (50% continuous assessment: 50% summative assessment) and there are problems of utilizing performance-based learning (PBL) and performance-based assessment (PBA). Furthermore, the discussants of FGD stated that

Table 8: Qualities of services of support staffs

Items	Instructors		Students		Sig (2-tailed) test	p-value
	M1	SD1	M2	SD2		
Up-to-date library digital	3.0	0.42	3.0	0.56	2.87	.55
Well-equipped skill-labs	2.88	0.57	2.6	0.59	1.72	.68747
Pedagogical center	2.57	0.82	2.5	0.53	0.98	.87158
Computers and internet services	2.88	0.45	2.5	0.57	1.86	.43542
Guidance and counseling services	2.75	0.59	2.5	0.56	2.15	.18725
Enough workshop (simulation) centers	2.97	0.48	2.8	0.47	1.46	.98785

Table 8 shows the average means of item 1 was rated the ideal average mean by instructors and students to address that there is up-to-date library. There is no a statistically significant difference between the views of respondents by the t-values at 2.87 is greater than alpha value ($p > .05$). On the other hand, the average mean values of items 2-6 were rated below the ideal mean (3.00) by instructors and students that underlined that there are no statistically significant differences between the views of respondents by the t-values at (1.71, .987, 1.86, 2.15 & 1.46) are greater than the alpha value ($p > .05$).

Additionally, one of the interviewees discussed that

I think the service of support staffs partially helps the teaching learning process although some limitations are vividly seen. I am sure that we have best library, laboratory and simulation centers computer and weak internet services. Attention was not given for pedagogical centers, guidance and counseling services' (IW-10, 25 March 2021)

...It was also evidenced from observation that the support staff services related to simulation, guidance and services, internet services and pedagogical services were partially seen although there are attempts to improve some services (Observation, March, 2021)

Table 9: Qualities and quantities of curricular materials

Items	Instructors		Students		Sig(2-tailed)	p-value
	M1	SD1	M2	SD2		
Competence based curriculum	3.23	0.53	3.62	0.32	2.80	.325
There are sufficient course guides	3.24	0.41	3.53	0.51	1.45	.747
Different audio-visual materials	3.23	0.39	3.24	0.31	1.89	.542
Up-to-date books	2.95	0.51	2.64	0.51	1.68	.544
Enough abstracts, journals	2.5	0.48	2.7	0.52	1.93	.917
Professional practical training	2.8	0.46	2.6	0.53	1.17	.899
Materials required quality standards	3.23	0.39	3.81	0.41	1.19	.780

Table 9 shows the average means of items 1, 2, 3, 8 & 9 were rated above the ideal mean by instructors and students. There are no statistically significant difference between the views of respondents by the t-values at (2.80, 1.45, 1.89, 1.19 & 2.56) are greater than alpha value $>$ 0.05. This shows that there are no significant differences between the opinions of the two categories of respondents. On the other hand, the average mean values of items 4, 5, 6 & 7 are rated below the ideal mean by instructors and students that there are no statistically significant differences between the views of respondents. Therefore, these are serious factors that affect students' learning, academic performance and achievement.

Moreover, one of the interviewees explained that currently, the quality and quantity of curricular materials (books, journals, syllabi, audio-visual and equipment) for health science are the focus of attention to improve the quality of would be health professionals. Therefore, as long as instructors carefully design and implement the teaching learning process, students will get curricular materials to the standards and indicators either in university or online' (IW5, 21 April, 2021).

....The document analysis finding shows that there are significant differences among students in their learning and academic performance across the department units. This indicates that students were evaluated differently according to their field of studies and capabilities. Therefore, the document analysis remarks that the majority of graduates lack the creativity and adaptability. They miss to bring originality, insight and superior critical and reflective abilities. Similarly, there were significant differences between male and female students' participation and academic performance across health science departments. The majority, 162 (46%) of students are at threshold level of performance (2.00-3.24) although students admitted to health science have relatively better admission points. However, 112 (32%) are at the modal level of performances (3.24-3.49) and 81 (22%) are top level of performances (3.50-4.00) respectively. Therefore, this document analysis remarks that the majority of graduates lack creativity and adaptability. They miss to bring originality, insight and superior critical and reflective abilities (Document Review, March 2021).

5 Discussion

The educational qualification of academic staff of the sample respondents is less than the required minimum standard set by /MoE/ETAE to give instruction at degree level i.e. at least 50% PhD, 50% M.A/M.Sc (Ministry of Education, 2018). This calls for inferior quality of education because teachers' professional development and educational qualification have paramount importance to promote quality of education. Similarly, the findings show that there are strong relationships between gender, family SES & education level, students' admission points, medium of instruction, previous high school, and

students' academic performances and achievements. Therefore, these are serious factors that affect students' academic performances and achievements. Although instructors' willingness and commitment to capacitate their students through different projects and conduct researches to rank students' academic performance, the participation of students in problem-based learning, motivation to learn from professional practices and projects were not convincing. Instructors' willingness and commitment to capacitate their students through different projects and attempts to improve their pedagogical knowledge through HDP training were not as such motivating. In addition, the study remarks that although management bodies' commitments to initiate academic staffs to conduct research projects & improvements of instructional processes to enhance students' academic performances were encouraging, their motivation and commitment to fulfill reading materials, computers and internet services were not encouraging. The competences (knowledge, skills or abilities) of students in light of academic background knowledge, subject matter knowledge and knowledge about the apparatuses and instruments and skills in the laboratory were not promising. Likewise, the abilities to undertake professional projects, language abilities to communicate and understand the subject matter and skills to transform theories into practice were not to the point to enhance health science students' learning and academic performance. Similarly, the opportunities to and qualities of educational inputs, the course materials to students' ratio, full time to part-time instructors' ratio and rooms for simulation training, instructor-to-students' ratio, computer-to-student ratio, lab technician-to-student ratio, instructors' qualification PhD/specialist: MSC/generalist and adequacy of clinical sites for apparent ship were below the required standards set by MoE. These are dynamic factors affecting teaching-learning process directly, and students' learning engagement, academic performance and achievement indirectly.

The findings of the study shows that there were strong efforts of instructors to cover curriculum contents in quantity and quality on time, demonstrate practical activities in clinical sites/lab skills and takes simulation training as educators of health care. However, the application of various active learning methods, performance based-assessment techniques, various classroom management techniques to check students' attendance, checking theoretical and practical understanding of students, giving technical supports, standardized and structural feedbacks to students were not satisfactory. The findings of the study mirrors out that the qualities support staff services are poor except that there is well equipped and up-to-date library. However, the study underlines that the presence of available and well-equipped skill-labs, support staffs for pedagogical center, sufficient number of computers and internet services, support staffs for guidance and counseling services and enough simulation centers were not encouraging. The accessibility of competence-based curriculum, different audio-visual materials, and quality standards of the curse materials, independent thinking and problem-solving are encouraging, the integration of theory and practice, up-to-date multiple copies of reference books, abstracts, journals and opportunities to participate in professional practical training were not convincing. However, the past and current assessment systems of HEIs show lack accurate understanding of graduates' competence, and relation with prior measures (Likisa, 2018).

The findings from document analysis and observation indicate that there were differences among students' academic performances across their department units. This indicates that students were evaluated differently according to their field of studies and capabilities regardless of the common criterion-referenced grading system. The Analysis shows that there were a statistically significant difference between males and females students' participation and academic performances across health science departments. The majority of students are at threshold level of performance even though students admitted to health science have relatively better admission points. However, some are at the modal level of performances and some are top level of performances. Therefore, this document analysis remarks that the majority of graduates lack creativity and adaptability. They miss

to bring originality, insight and superior critical and reflective abilities. although the lack of resources, large class size, shortage of instructional time, inadequate support, grade inflation, limited prediction power, lack of instructional materials, instructors' negative perception, lack of knowledge and skill in assessment, and large content of courses are the major factors for proper implementation and quality of assessment in HEIs (Moges, 2018; L. G. Wariyo and Kelbago, 2020).

6 Conclusions

The university teaching and learning process are scholarly activities and professions which draws high level performance and expertise in relevant professional experiences together with highly developed communication and interpersonal skills. The effectiveness of teaching-learning, research and innovation rendered academic staffs which participate in an integrated teaching-learning, research, innovative actions and community services to improve academic performance (M. Girma and Akliu, 2023). Although there were many attempts to enhance students' academic competences and performance, the in-campus, off-campus and other extraneous factors are affecting academic performance and achievement of undergraduate health science students in many multi-dimensions. The data collected through questionnaires and document analyses were organized, tabulated and analyzed quantitatively and those collected through interview, FGD and observation were narrated by mixing up with themes. Some demographic factors such as gender, family education level & SES, quality of previous high school, student's admission point and medium of instruction play significant roles in determining students' academic performance directly or indirectly. Furthermore, willingness, motivation, commitment and competences (knowledge, skills and abilities) of students themselves, instructors and management bodies with respect to enhancing academic performance and achievement were identified as crucial factors that affect learning and academic performances of students. Moreover, opportunities and qualities to educational inputs, educational process, services delivered by support staffs, quantities and qualities of curriculum materials were the most determinant factors affecting quality of learning, academic performance and achievement of undergraduate health science students.

7 Recommendations

Although the academic staff is high teaching experienced full-time workers and doing problem-solving research and disseminating research outputs, the qualifications of academic staffs unfavorably met minimum standard set by MoE. Therefore, it is imperative to recommend that improving chances of scholarship for academic staffs will in turn helps to improve health science students' learning, academic performance and achievement. For the improvement of students' learning engagement, academic performance and achievement, special mechanisms should be created to improve demographic characteristics of students such as gender, SES and educational level of the family, medium of instruction, quality of previous high school and students' admission points as they showed strong relationship with academic competences and performances. The study evidenced that the willingness and motivation shown by students to participate in problem-based learning, their motivation to learn from professional practices and projects, and their willingness and motivation to learn from reading materials were unfavorable. Hence, the CMHS management and administration bodies had better device research-based structural mechanisms on how to improve the willingness and motivation of students in order to make them top performing health professionals to solve the health problems of the society at large.

In addition, instructors' willingness and commitment to capacitate their students through different projects, to conduct researches to rank students' academic performances and to improve their classroom pedagogical skills through HDP training were not motivating. There should be an ongoing program of pedagogic training for instructors to enable them develop effective teaching and learning skills. It is essential to establish and strengthen well developed pedagogical center charged with developing pedagogical skills and supporting teaching of academic staff of CMHS to improve students' competences and performances. The management of CMHS had better improve their willingness, motivation and commitment of fulfilling reading materials, computers and internet services. The academic staff of CMHS should take the responsibility to design effective programs in producing competent professional practitioners/graduates who possess relevant discipline specific skills, abilities and general and adaptable knowledge base academic background on the subject matter and about the apparatuses and instruments of the skills laboratory, computer skills to grasp new information and interest to practice professional projects to improve undergraduate health students' learning, academic performance and competencies. Likely, students should better develop the culture of experiential learning and design strategies to improve their abilities to undertake professional projects, language abilities to communicate and understand the subject matter and skills to transform theories into practice were not to the point to enhance health science students' learning participation, academic performance and achievement.

The provision of adequate learning resources is an essential factor for both students and academic staff in the teaching and learning processes. So that CMHS administration should fulfill instructors to student ratio, computer to student ratio, lab-technician to student ratio, instructors' qualification PhD/specialist: MSC/generalist ratio, counseling and guidance services, pedagogical center services, computer and internet services, and availability of clinical sites for apparent ship through devising different strategies according to the minimum required standards set by MoE to improve academic performances of students. Therefore, the college had better have an on-going evaluation of its physical and technological resources in light of its vision, mission, current needs and plans of the future. The instructional process is the heart of quality of education & hence, administration, instructors and students should work hand-in-hand to improve students' academic performance and achievement. Accordingly: (i). Instructors should be advised to integrate theory and practice, and provide necessary opportunities to students that enable them to participate in professional practical training. (ii). Teaching staff of CMHS need to appreciate the principles of student-centered learning and the management bodies need to allocate budgets to invest on Introduction of modern equipment such as computerized presentation such as power point, modeling, videos & electronics performance system (EPS). (iii). Diversified learner-centered methods of teaching should be utilized more frequently by introducing pedagogical training to instructors, standardizing class size and the teaching loads of instructors. (iv). Teachers should provide students with opportunities to be involved in the structuring of their own learning experiences, encourage them to control of their own learning, develop their confidence by setting assignments which are challenging and relevance to the subject aims, providing constructive and timely feedback, develop students' analytical and critical thinking skills by providing different learning experiences to improve their academic performance and achievement. Finally, management bodies, instructors and students should work cooperatively and enthusiastically develop graduates at top level of performance with full creativity, originality adaptability, insight and superior critical and reflective abilities to solve health problems.

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Data Availability

Data can be made available on the behavior of the request

Declaration of interests' statement

The author declare no competing interests.

References

Al-Balushi, K. (2017). They feel that they have a voice and their voice is heard: Towards participatory forms of teachers' in oman.

Ali, N., et al. (2009). The factors influencing students' performance at university of technology mara kedah, malaysia. *Canadian Research & Development Center of Sciences and Cultures*, *3*(4), 326–337.

Amare, A. (2009). From knowledge acquisition to knowledge application: The case of curriculum inquiry in ethiopia. *Proceedings of the 1st International Conference on Educational Research for Development*, *1*(1), 411–445.

Amare, A., & Temechen, E. (2002). Education in ethiopia developmental perspective. *The Ethiopian Journal of Education*, *2*(2), 21–30.

Amin, H. (2005). Social science research: Conception, methodology and analysis. *Makerere University Press*.

Barnett, R. (1997). *Higher education: A critical business*. Open University Press.

Bloom, D. E., Canning, D., & Chan, K. (2005). *Higher education and economic development in africa*. World Bank.

Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley; Sons.

Creswell, J. W. (2014). *Research design: Qualitative and mixed approaches* (4th ed.). Sage Publication.

Creswell, J. W., & David, C. J. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications, Inc.

Dills, A. K. (2006). Trends in the relationship between socioeconomic status and academic achievement.

Egert, F., Fukkink, R. G., & Eckhardt, A. G. (2018). Impact of in-service professional development programs for early childhood teachers on quality ratings and child outcomes: A meta-analysis. *Review of Educational Research*, *88*(3), 401–433.

Geiser, S., & Santelices, M. V. (2007). Validity of high-school grades in predicting student success beyond the freshman year. *Center for Studies in Higher Education*.

Girma, M., & Akliu, Y. (2023). Effectiveness of teaching-learning, research and innovative actions in hawassa university, ethiopia. *Cogent Education*, *10*(1), 1–21.

Girma, M. G. (2022). The effects of teachers' professional and pedagogical competencies on implementing cooperative learning and enhancing students' learning engagement and outcomes in science: Practices and changes. *Cogent Education*, *9*(1), 1–22.

Hansen, M. N., & Mastekaasa, A. (2006). Social origins and academic performance at university. *European Sociological Review*, *22*(3), 277–291.

Kipkebut, D. J. (2010). Organizational commitment and job satisfaction in higher education institutions.

Kolicic, I. (2006). Academic performance and scientific involvement of final year medical students coming from urban and rural backgrounds. *Rural and Remote Health*, *6*(2), 530.

Koul, L. (2008). *Methodology of educational research* (3rd ed.). Vikas Publishing Agency.

Kurt, S. (2020). Kolb's experiential learning theory and learning styles. *Educational Technology*.
Kweisga, F. (2002). School factors and academic performance.
Leu, E. (2000). *Quality of education: A review of the literature*. BESO Project.
Likisa, K. D. (2018). Challenges and prospects of competency-based education: The case of adama science and technology university alumni students and hawassa tvet college, adama, ethiopia. *The Journal of Competency-Based Education*, *3*(2), 129–141.
Mense, E. (2018). The impact of globalization and technology on higher education.
Ministry of Education. (2018). *Ethiopian education development roadmap: An integrated executive summary* (tech. rep.). MoE. Addis Ababa, Ethiopia.
Moges, B. (2018). The implementations and challenges of assessment practices for students' learning in public selected universities, ethiopia. *Universal Journal of Educational Research*, *6*(12), 2789–2806.
National Examination Agency. (2007). *National examination agency report* (tech. rep.). Ministry of Education. Addis Ababa.
Petousi, V., & Sifaki, E. (2020). Contextualizing harm in the framework of research misconduct: Findings from a discourse analysis of scientific publications. *International Journal of Sustainable Development*, *23*(3/4), 149–174.
Raychaudhuri, A., et al. (2010). Factors affecting student's academic performance: A case study in agartala municipal council area. *Bangladesh E-Journal of Sociology*, *7*(2), 52–69.
Rommel, L. (2004). On-the-job training of the bs information technology program of leyte normal university, tacloban city: An assessment. *International Journal of Education and Research*, *2*(3), 17–35.
Sentamu, N. P. (2003). Relationship between school environment and academic performance.
Shavelson, A. (1987). *Indicative system for monitoring mathematics and science education* (tech. rep.). RAND Corporation.
Sunshine, B. A., & Lawrence, C. (2015). Factors affecting the academic performance of the student nurses of bsu. *International Journal of Nursing Science*, *5*(2), 60–65.
UNESCO. (2019). *Beyond commitments: How countries implement sdg4* (tech. rep.). Global Education Monitoring Report. Paris, France.
United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development* (tech. rep.). UN.
Valli, J., & Santhi, B. (2014). Factors contributing to academic performance of students in a tertiary institution in singapore. *American Journal of Educational Research*, *2*(9), 752–758.
Wariyo, L., & Asgedom, A. (2021). Promoting effects of abilities while enhancing probability of college success: A moderation role of higher education. *Journal on Efficiency and Responsibility in Education and Science*, *14*(2), 101–117.
Wariyo, L. G., & Kelbago, R. A. (2020). Applying grade inflation adjustment mechanism in an ethiopian university: Differences in nominal and real grades.
Waters, T. J., & Marzano, R. J. (2006). *School district leadership that works: The effect of superintendent leadership on student achievement*. Mid-continent Research for Education; Learning.