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Approaches and conceptions of learning among physiotherapy students in the University of Ghana

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Abstract

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Background: Approaches and conceptions of learning are important descriptors of learning. Deep, strategic, and surface approaches are the three different approaches adopted by students. The approaches and conceptions of learning of physiotherapy students in Ghana appears to be unknown**.** The study aimed at determining the study approaches and conceptions of learning among physiotherapy students.
Methods: This cross-sectional study involved 101 physiotherapy students who were purposively recruited from levels 100 to 400. Approaches to learning were assessed using the Approaches and Study Skills Inventory (ASSIST) and conceptions of learning were measured using the Conceptions of Learning Inventory (CLI) which identified six conceptions of learning. Spearman's correlation was used to test association between the approaches and conceptions of learning of the participants.
Results: Of the 101 participants, 21 (20.8%), 29 (24%), 37 (30.6%) and 14 (11.6%) were first, second, third- and fourth-year students. A statistically significant difference existed between the strategic and deep approaches (p-value = 0.000), as well as, deep and the surface approaches (p-value= 0.004) of the participants. No significant relationship existed between the approaches of learning and conceptions of learning of the participants. However, deep approach was directly correlated with the conception of seeing learning as a duty only (Rho = 0.02).
Conclusion: Majority of physiotherapy students at University of Ghana adopt strategic approach to learning and conceived learning as remembering, using and understanding materials being learnt in class. The conceptions of learning did not have any influence on the learning approaches of most students.

Keywords: *Learning approaches, conceptions of learning, learning styles, study approach*

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INTRODUCTION

Learning is defined as a process that brings together cognitive, emotional and environmental influences and experience for acquiring, enhancing and or making changes in one's knowledge, skills, values and world views [1]. In order to promote quality learning, educators need to understand how students approach learning [2]. Three primary learning approaches exist namely surface, strategic and deep learning approaches [3]. The deep approach is associated with an intention to comprehend, analyse and generate new ideas [4]. Students who use a surface approach tend not to have the primary intention of becoming interested in and of understanding the subject matter, in contrast, the surface approach is driven by acquiring grades, or the qualification needed for the next level rather than understanding [5]. The strategic or achieving approach is that approach which students are said to take when they wish to achieve positive outcomes in terms of obtaining a pass or better in the subject [6]. Medical students tend to adopt deep and strategic approaches more often, with the surface learning approach being less common [7]. Strategic learning can involve a blend of both deep and surface learning strategies, depending on the specific tasks or goals [3]. However, the impact of problem-based learning on students' deep and surface learning approaches varies depending on the contextual factors of the learning environment [8].

Conceptions of learning are complex constructs which incorporate a number of components including beliefs about the nature of learning, beliefs about how one knows whether learning has taken place, and knowledge of factors that affect learning [9]. Health students' conceptions of learning are shaped by prior knowledge, experiences, and beliefs about the learning process [10]. These factors play a significant role in influencing how students' approach and engage with their education in the health field [10]. Kember et al., [11] reported that nursing students' conceptions of competence were shaped by their prior knowledge and experiences. They highlighted the significant impact of these factors on how nursing students perceive their own abilities and approach learning [11]. The 3P Model of student learning [12] identifies students' conceptions of learning as one of the factors that influence the approach to learning students adopt in a specific situation. Learning approaches of students is dependent on the kind of conceptions they have about their learning [13]. Clinton [14] defined conceptions of teaching and learning among health students as their beliefs about preferred teaching methods, learning processes, and the roles of teachers and learners in the educational context.

The learning activities of students are made up of their learning approaches' conceptions and learning styles [15]. The idea of individualized learning styles originated in the 1970's and has greatly influenced education [16]. Although individuals express preferences for receiving information, using learning styles in education has shown validity[17 & 18]. Proponents of the use of the learning styles in education recommend that teachers assess the learning styles in education of their students and adapt their classroom methods to best fit each student's learning [19].

Even though research has emphasised the enduring nature of informal knowledge, the type of teaching experiences by students may influence the way in which they conceive learning and their personal constructs of themselves as learners [20]. Grinnell & Unrau [21] identified two major perspectives on learning: quantitative (focused on acquisition and accumulation of content) and qualitative (focused on understanding and meaning-making through connecting new material with prior knowledge). In practice-based courses, such as physiotherapy, students typically begin with a limited prior knowledge and understanding of the nature of the field of practice. Factors that influence clinical learning of students are roles and attributes of the clinical instructor, facilities at the health setting as well as the teaching and learning activities [22].

Despite the enduring nature of informal knowledge, there appears to be a gap in understanding learning approaches among physiotherapy students in Ghana. This study's aim was to identify the learning approaches and conceptions of learning among physiotherapy students at the University of Ghana.

MATERIALS AND METHODS

Study design

This cross-sectional study involved physiotherapy students of the School of Biomedical and Allied Health Sciences (Korle Bu and Legon Campuses) of the University of Ghana. One hundred and one participants recruited from levels 100 through to 400 (first to fourth year) were recruited using purposive sampling because the study aimed to target a specific group of individuals (i.e., physiotherapy students).

Inclusive criteria were undergraduate physiotherapy students at the School of Biomedical and Allied Health Sciences, University of Ghana.

Study design and participants

This cross-sectional study involved physiotherapy students of the School of Biomedical and Allied Health Sciences (Korle Bu and Legon Campuses) of the University of Ghana. One hundred and one participants recruited from levels 100 through to 400 (first to fourth year) were recruited using purposive sampling because the study aimed to target a specific group of individuals (i.e., physiotherapy students). Inclusive criteria were undergraduate physiotherapy students at the School of Biomedical and Allied Health Sciences, University of Ghana.

Data collection tool

The Approaches and Study Skills Inventory for Students (ASSIST) (Appendix I) derived from the combination of studies by Marton & Saljo [23] and Entwisle & Ramsden [24] was used to measure the approaches to learning by participants. Students responded to items on a 1 - 5 scale (5 being the highest and 1 the lowest score) on the ASSIST. Sub-scale scores were formed by adding together the responses on the items in each sub-scale. Scores on the three main approaches were created by adding together the sub-scale scores which contribute to each approach.

The Conceptions of Learning Inventory (Appendix II) was used to assess students' conceptions of learning. The conceptions of learning inventory (CLI) identify 6 conceptions which are, learning as; gaining information (INFO); remembering, using, and understanding information (RUU); a duty (DUTY); personal change (PERS); a process not bound by time or place (PROC) and social competence (SOC). The initial validation of the Conceptions of Learning Inventory (CLI) demonstrated reliability for the six factors [25]. In the exploratory sample, the reliability ranged from 0.65 to 0.83, while in the validation sample, it ranged from 0.50 to 0.86. The internal consistency reliability index, as measured by Cronbach's alpha, yielded a mean value of 0.74 [25].

Data collection procedure

After permission was sought from heads of departments and an informed consent form was signed, clear and explicit instructions were provided to the students on how to respond to questions related to teacher training and specialty. Emphasis was placed on the need for accurate and honest responses, and the questions were ensured to be easy to understand. The students were assured that responses would be treated confidentially, and identities would remain anonymous throughout the study. Copies of the questionnaires were given to participants to complete (self-administered) which took approximately 30 minutes. Majority of students were however engaged at the lecture halls. To reach students who were absent, the research team visited them in the hostels. The visits were coordinated by the class representatives for completion of questionnaires. Questionnaires were promptly collected from students who completed them during the interaction. Those unable to do so were given a two-week window to fill out the questionnaires and return the completed questionnaires to either the researchers or the class representatives. Weekly text messages were sent to participants as a form of reminder. After the specified period, the questionnaires were retrieved. Data was collected over a 6-week period (May to June 2015).

Data collection and analysis

Data analysis was performed using the Statistical Package for Social Sciences (SPSS Version 22). Mean and Standard deviations were calculated for the approaches of learning of each class. Spearman's correlation was used to determine the relationship between the study approaches among the various levels in order to assess the strength and direction of association between variables, without implying causation. Spearman's correlation was also used to determine the relationship between the study approaches and conceptions of learning among the students. Significance of the statistical test was set at α=0.05.

RESULTS

Of the 121 students recruited all of them completed the questionnaires, representing 100% response rate. Twenty-one (20.8%), 29 (24%), 37 (30.6%) and 14 (11.6%) were from levels 100, 200, 300 and 400 respectively.

Study approaches of physiotherapy students in levels 100, 200, 300 and 400.

Table I shows the distribution of study approaches among physiotherapy students. Overall mean strategic approach score was the highest (78.73± 9.92) while individual mean scores for all levels remained the highest. The mean value of the deep approach for all levels was moderate while surface approach showed the least mean

scores as depicted in Table 1.

Table 1: Participants' demographic characteristics

	Level 100 Mean± SD	Level 200 Mean± SD	Level 300 Mean± SD	Level 400 Mean± SD
Deep	66.90± 9.32	68.31± 8.42	64.32± 8.23	68.14±7.53
Strategic	80.10± 8.23	80.34± 10.61	76.16± 10.00	80.07±6.58
Surface	48.76± 7.69	48.22± 8 .13	48.22± 8.13	48.50±6.58

SD: Standard deviation

There was no significant difference between the study approaches of levels 100, and 200 for deep, (p = 0.58), levels 100 and 300 for strategic (p = 0.61) and levels 100 and 400 for surface (p = 0.92) as indicated in Table 2. There was no significant difference between the study approaches of levels 200 and 300 (p = 0.58) for deep, levels 200 and 400 (p = 0.92) for strategic as well as levels 300 and 400 (p= 0.30) for surface as indicated in Table 3.

Table 2: Comparison of study approaches among level 100, 200, 300 and 400.

Study Approach	Level 100 Mean	S.D	Level 200 Mean	S.D	P-value
Deep	66.90	9.32	68.31	8.42	0.58
Strategic	80.10	8.23	80.34	10.61	0.93
Surface	48.76	7.69	48.22	8.13	0.37

Study Approach	Level 100 Mean	S.D	Level 300 Mean	S.D	P-value
Deep	66.90	9.32	64.32	8.23	0.28
Strategic	80.10	8.23	76.16	10.00	0.61
Surface	48.76	7.69	48.22	8.13	0.80

Study Approach	Level 100 Mean	S.D	Level 400 Mean	S.D	P-value
Deep	66.90	9.32	68.14	7.53	0.67
Strategic	80.10	8.23	80.07	6.58	0.99
Surface	48.76	7.69	48.50	6.58	0.92

Table 3: Comparison of study approaches among level 200, 300 and 400.

Study Approach	Level 200 Mean	S.D	Level 300 Mean	S.D	P-value
Deep	68.31	8.42	64.32	8.23	0.58
Strategic	80.34	10.61	76.16	10.00	0.11
Surface	48.22	8.13	48.22	8.13	0.19

Study Approach	Level 200 Mean	S.D	Level 400 Mean	S.D	P-value
Deep	68.31	8.42	68.14	7.53	0.95
Strategic	80.34	10.61	80.07	6.58	0.92
Surface	48.22	8.13	48.50	6.58	0.34

Study Approach	Level 300 Mean	S.D	Level 400 Mean	S.D	P-value
Deep	64.32	8.23	68.14	7.53	0.13
Strategic	76.16	10.00	80.07	6.58	0.11
Surface	48.22	8.13	48.50	6.58	0.90

There was a statistically significant difference between strategic and deep (p = 0.000) as well as deep and the surface (p = 0.004) approaches of students as shown in Table 4.

Table 4: Relationship between the various approaches used by the different levels

	Strategic Approach	Surface Approach
(Spearman's rho)	0.630	0.282
Deep Approach		
P-value	**0.000***	**0.004***

Conceptions of learning among the physiotherapy students

The mean value for students' conception of remembering learning materials ranked highest (39.50± 5.91) and the conception of seeing learning as a duty the lowest (13.10± 2.12) as depicted Table 5

.

Table 5: Conceptions of learning among the physiotherapy students

Conceptions	INFO	RUU	DUTY	PERS	PROC	SOC
Mean± SD	20.34± 3.54	39.50± 5.91	13.10± 2.12	35.35± 5.44	13.46± 2.24	16.58± 3.53

KEY- INFO: Learning as gaining information. **RUU:** Learning as remembering, using and understanding. **DUTY**: Learning as a duty. **PERS**: Learning as a personal change. **PROC**: Learning as a process (not bound by place or time or context). **SOC**: Learning as developing social competence

Correlation between approaches and conceptions of learning.

Table 6 shows that deep approach correlated with the conception of seeing learning as a duty (Rho = 0.02) but not statistically significant (p=0.82), while strategic approach and conception of seeing learning as a duty and learning as a source of gaining information also correlated significantly (p<0.05).

Conceptions		Deep
INFO	R	0.60
	p-value	0.55
RUU	R	0.13
	p-value	0.19
DUTY	R	0.02
	p-value	0.82
PERS	R	0.17
	p-value	0.09
SOC	R	0.15
	p-value	0.14
PROC	R	0.06
	p-value	0.54

KEY- INFO: Learning as gaining information. **RUU:** L
DUTY: Learning as a duty. **PERS**: Learning as a person
place or time or context). **SOC**: Learning as developing so

DISCUSSION

Health professionals must possess a solid foundation of knowledge, the capacity to think critically, and the ability to apply their knowledge successfully in a variety of clinical settings due to the complex and dynamic nature of the health care sector [26]. Research suggests that health students tend to favour the deep approach to learning because they intrinsically value knowing the topic thoroughly and applying it to their future clinical practice [4, 27, 28, 29]. However, of the three study approaches (deep, strategic and surface), physiotherapy students were found to adopt strategic approach in this study. A possible reason for the difference in findings may be the curriculum structure and content within the physiotherapy programme at University of Ghana. The curriculum which is probably heavy on course loads per semester may emphasize the need for a strategic approach, aligning with the specific skills and competencies required in the field. This emphasis can shape students' learning approaches. Furthermore, the predominant motivation for students who adopt the strategic-learning approach is achievement of high grades. The preferred strategic approach could be because of the workload which is a determinant of learning approach [30]. The physiotherapy curriculum for clinical year students (third and fourth years) at University of Ghana is a blend of clinical rotations and lectures five days a week. This may lend credence for adopting the strategic learning approach as students strive to get better grades and avoid having to retake the test and repeat the class. There was no significant correlation among the levels of physiotherapy students and their preferred learning approaches in this study which is similar to the findings about a study among different levels of students in universities in the United Kingdom [31]. The academic demands across different levels in both the physiotherapy programme in the University of Ghana and the UK universities might be similar enough not to significantly alter preferred learning approaches. Consistency in demands could lead to consistent learning approach preferences.

Overall, our results align with the six conceptions of learning (understanding, personal change, social competence, continuous, gaining information and duty) among physiotherapy students of the University of Ghana which were similar to those identified by Purdie & Hattie [25] among participants in Australian, Malaysian and American Universities. Globalization and the exchange of educational practices might have led to the convergence of learning conceptions. Modern educational approaches, regardless of location, may emphasize similar learning outcomes and objectives, hence the similarities in results. In addition, The educational systems globally might be striving towards similar educational goals, fostering the development of similar conceptions of learning among students, irrespective of their location.

Despite potential limitations, the Conceptions of Learning Inventory (CLI) developed by Purdie and Hattie [25], is extensively employed due to its suitability for assessing conceptions of learning from various viewpoints. Distinguishing between factors that contribute to a superficial conception versus a deeper conception is challenging within the questionnaire. However, it is generally understood that the factor of "gaining information (INFO)" aligns with a more superficial conception, while factors such as "remembering, using, and understanding information (RUU)" and "personal change (PERS)" are associated with a deeper conception [25].

Deeper conceptions (learning as remembering and understanding and learning as a personal change) do not predict academic performance and do not relate to achievement. Deep and surface conceptions have a weak relationship with achievement, perhaps because individual learning approaches and conceptions depend on the learning environment [32]. The conceptions of understanding and gaining information are conceptions that tap into the content and process aspect of learning, both of which are particularly susceptible to changes in tasks demands. Learning as a duty as conceived by a few physiotherapy students is made up of factors relating to external motivations for

learning and strategic components. Together, these components suggest that existence of a learning pattern as reported by Pintrich [33] is associated with low levels of academic achievement. Students in health sciences programmes have different conceptions of learning compared to students in non-health sciences programmes such as experimental sciences, arts and humanities, and social sciences which has implications for enhancing the learning process of health sciences students [34]. When health sciences students are aware of their own conceptions of learning, they are better able to regulate their learning behaviour in any programme in health sciences.

The relationship between the approaches to learning and conceptions of learning among health students is complex and multifaceted. Research suggests that health sciences students who adopt a deep approach to learning tend to have conceptions aligned with active learning and knowledge construction, whereas those with a surface approach often hold conceptions that reflect a passive view of learning, emphasizing memorization and reproduction rather than deep comprehension [27].

The current study did not show a significant association between the deep approach and the conceptions of learning except the conception of seeing learning as a duty. This conception is positively related to the surface approach. However, some studies [35 & 36] showed a significant relationship between students' conceptions of learning and their approaches to learning. Variation in the characteristics or size of the samples in the current study compared to the referenced studies may contribute to differing results. Differences in demographics, academic levels, or educational backgrounds could impact how students approach learning and perceive it as a duty. Huang [35] reported that Taiwan university students who had a deep approach to learning tend to have a more sophisticated conception of learning than those who had a surface approach to learning. Dart [36] also showed that among Australian students, those who held qualitative and experiential conceptions of learning were inclined to adopt deep approaches to learning, while students with quantitative conceptions of learning tended to employ surface approaches. A possible reason why the current study did not find any relationship between deep approaches and any of the conceptions of learning may be due to the presence of diverse learning styles and preferences among the health sciences student sample which can lead to an inconsistent relationship between a deep learning approach and specific conceptions of learning within the group. In addition, the learning environment and instructional methods employed within the health sciences programme, as well as, individual experiences can influence the way students approach learning and develop conceptions of learning.

Students' approaches to studying in higher education may be related to their conceptions of learning as reported by Vermunt [37]. Evidence of changes in students' conception over an entire degree programme does not seem to abound. Morris & Meyer [38] reported that there was no relationship between approaches and conceptions of learning among first- and second-year physiotherapy students. Similar results were obtained for the physiotherapy students at the University of Ghana in this study. These findings suggest that students' conceptions of learning are relatively stable. It is plausible that students in the first and second years of the physiotherapy programme may had relatively stable conceptions of learning during this period, resulting in consistent findings across the studies. In addition, the studies employed comparable methodologies, assessment tools, and analytical approaches, which could explain the similarities in findings of the relationship between approaches and conceptions of learning.

Contrary to submissions by Vermunt [37], conceptions of learning would fit the notion of learning approaches as relatively consistent preferences for adopting learning processes respective of the task presented. While these frameworks provide a theoretical basis for understanding the relationship between approaches and conceptions of learning, it's important to note that individual students may vary in their approaches and conceptions. Factors such as prior educational experiences, personal motivations, and contextual influences can also play a role in how students' approach and conceptualize learning.

CONCLUSION

A significant relationship was found between the strategic study approach and the perception of learning as a duty. In addition, there was no difference between the approaches and conceptions of learning at the different levels of study for physiotherapy students. Overall, this study enriches our understanding of how physiotherapy students approach learning, offering valuable implications for educational strategies and interventions to enhance the learning experience in this field. Further studies

could be conducted to determine the influence of the adopted approaches to learning among physiotherapy students on their academic achievements.

DECLARATION

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Author contribution SI and JQ contributed to the study design. SI and SK collected data. SI and JQ cleaned and analysed the data obtained. JQ and SK sourced and reviewed relevant literature. SI, JQ and SK wrote and reviewed the manuscript for important intellectual content, revised the draft and approved the final version for submission.

Ethics Ethics approval was sought and obtained from the Ethics and Protocol Review Committee of the School of Biomedical and Allied Health Sciences, University of Ghana

Competing interests There were no competing interests from all authors in this study.

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