OPEN ACCESS

MULUNGUSHI UNIVERSITY MULTIDISCIPLINARY JOURNAL (MUMJ)

Mulungushi University Multidisciplinary Journal
ISSN : 2958-3926
Vol. 4 No. 1

https://research.mu.ac.zm/research/index.php/mu

Course difficulty and a remedy to low progression rate among undergraduate medical students at the University of Zambia

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ARTICLE HISTORY Received 20 May 2023; Accepted 19 July 2023

ABSTRACT

This study investigated the relationship between level of difficulty of courses and course organisation, pace of the course and time allocated to the course among undergraduate medical students at the University of Zambia's School of Medicine. An explanatory sequential research design was used for data collection and data were gathered using a survey instrument, focus group discussions, document analysis and interviews with key informants. The quantitative data from the first set were analysed using descriptive and inferential statistics while the qualitative data from the second set were analysed using the constant comparative method. The analysis showed that for the course organisation, the value of the test statistics was 42.1 with degrees of freedom (df) for the test at 20 and corresponding p-value at $p < .005$ of .003. The results showed that there was no statistical significance difference of the course organisation on level of difficulty. This meant that the course organisation affected level of difficulty. Course concepts were not taught in depth, resulting in student perceptions that the courses were difficult. Most courses' workload in the School of Medicine were heavy with little time allocated to them and taught at a faster speed. The findings point to the urgent need to review the course content to align it with the time allocated. In addition, courses should be rearranged in order to fit well in the curriculum. Some of the courses might require repackaging to reduce on half courses and also remove concepts which might lack applicability.

Keywords: Course organization, difficulty, delivery, course time allocation

INTRODUCTION

Tertiary education prepares a learner for industry. Every learner's desire is to complete and join would be market in the field of study. Therefore, learners plan that within a particular duration of study they would be done. There are different factors which can lead to learners fail. One of the major causes is the way courses are organised. Course organisation assists faculty in presenting their lessons in a format which is accurate and reflects the quality instruction provision. This helps students to be focused and work hard to reach the goals of the institution (Becker and Luthar, 2010). Slotta and Linn (2009) explained that all curriculum designers should do more study on how to allocate enough time to courses designed by taking into consideration the content to be covered and the type of instruction to be used. This means identifying and articulating the proper sequence and pacing of the content in the course they are given to teach. This is in agreement with Kane, Rockoff & Staiger (2006) assertion that the level of understanding of the course content contributes to student Grade Point Average (GPA). This is in agreement with what Triola (2006) also proposed that course materials which have no applicability to the close environment contributes to low students GPA.

In the Medical under study for the period 2009 to 2014, the examination attrition rates was

as shown in the table below for the stated programmes.

Table 1.0 Examination Attrition Rates (%) from 2008 to 2014

PROGRAMME	**2009**	**2010**	**2011**	**2013**	**2014**
BSc Env. Health	0.00	6.25	8.75	4.00	14.7
BSc Physiotherapy	20.00	21.50	6.50	25.0	10.0
BSc Bio Sciences	4.33	12.30	6.00	19.0	41.0
BSc Pharmarcy	15.50	12.00	15.00	18.0	29.0
BSc Nursing Sciences	11.50	10.00	12.00	20.0	7.50
MB ChB	30.00	14.00	17.00	12.0	30.0
Average	**13.55**	**12.68**	**10.88**	**16.33**	**22.03**

Source: Filed data, 2018

Smith (2009) stated that if the examination attrition rates are more than 10%, there is need for investigation in order to come up with strategies of improving quality of education thus the reason this study was done. One of the factors that can lead to a course being difficult or programme being a challenge should be the way the curriculum was developed. In general, curriculum should emphasize covering concepts in depth so as to bring the understanding in the learners rather than covering a broad of concepts without much explanation as the later does not stress skills development as well as knowledge acquisition (Smith, 2009). In all content areas, Oziga (2007) stated that curriculum should be based on clearly defined learning outcomes and these outcomes should be grade-level appropriate and properly sequenced. Daka (2019) and Daka and Changwe (2020) stressed that before teaching any lesson, a responsible teacher should have the question in the mind of 'what would be the best sequence for presenting this instruction?' Sequencing of instruction refers to the systematic planning and logical organization of the teaching activities (such as content and teaching methods) of a lesson in such a way as to help the learners achieve the intended learning goals. In the medical school, students first cover Pre – medicals courses then medical courses which are both theoretical and later the skills courses. In curriculum development in higher learning institution, there is also need to involve the lecturers who teach the particular courses in curriculum design as they would be comfortable to teach what they designed. To be most effective, quality content must be imbedded in a context of quality processes (Feller, 2006). All in all, there is great need to relate the content to what the industry offers so as to reduce a mismatch in skills and knowledge between what was acquired in the university and what is on the job market.

Consequences of difficult courses

When a course or programme is difficult, then most of the students fail in such courses ending up being excluded from the learning institution. When students fail, then their tuition fees are also lost. An institution like the University of Zambia is impacted through the loss of tuition fees. Therefore, when a student drops out the institution loses tuition revenue. Moody (2004; 205) stated that, 'the costs for development, delivery and assessment, as well as lost tuition revenue, result in wasted expenditures for the institution and years for students.'

In addition, the affected students experience occupational and monetary consequences for their attrition. From students perspectives, dropping out impacts short and long term financial matters. In the short term, the student loses money on the tuition spent to attend classes. In the long term, the student

limits the lifetime coming potential and job opportunities which ultimately affect quality of life. The personal shame and social stigma of dropping out are also part of the consequences which most learning institutions do not consider.

The question is 'what determines the level of difficulty of course or programme and what is a remedy to this situation?' How come some courses are manageable why other are more challenging? How come the same students perform very well in other courses but fail in other courses? No systematic study has been done in this area from the University of Zambia so far. This study was therefore carried out to solve this puzzle and help the educators in finding a lasting solution to this.

Objectives of the study

In order to respond to the purpose of the study, the following research questions were framed;

1. How are courses and programmes organised at the Medical school of the University of Zambia?
2. How is the pace of teaching the courses at the Medical school of the University of Zambia?
3. How much time is allocated to the courses at the University of Zambia?

Theoretical framework

This study was based on Cognitive learning theory where the Bloom Taxonomy is used. In this theory, skills learnt progress from the easy ones to more difficulty ones. In this case, the curriculum developer must have in mind that a learner plays an active role in seeking ways to understand and process information received. In this line, it means that the concepts presented to the learner should be well sequenced and related. In addition, the time allocated to the course must be adequate and the pace of delivery should be at the level to give room to the learners to assimilate and understand before moving to other concepts. This is because unlike behaviourism learning theory, cognitive learning theory states that information processing is governed by an internal process (Schunk, 2005). There is therefore need for enough time to be given to the learners to process the information given.

LITERATURE REVIEW

Course organisation in Medical Institutions

In order to sharpen the focus of higher education onto student learning outcomes, it is important to go beyond traditional structures and methods but do a paradigm shift in educational philosophy and practice. The traditional type of curriculum design focuses on the teacher's input and on assessment in terms of how well the students absorb the materials taught. A departure from this traditional paradigm is very important so that we focus on the student-centered approach where the emphasis is on what the students are expected to be able to do at the end of the learning experience. Such shift from teacher delivery to student learning is in line with the theory of constructive alignment (Biggs and Tang, 2007). This theory puts, learning as product of the student's activities and experiences, rather than the lecturer's. It is important that the learning outcomes, the teaching and learning activities, and the assessment all be aligned. Aligning these three elements will ensure compatibility and consistency where the desirable learning outcomes agree with the teaching and learning activities and the assessment tasks in a coherent manner. When the three elements are working in synergy, the learning outcomes are in fact driving the curriculum design. This approach focuses on what knowledge students have actually acquired, and the abilities developed. And the fundamental role of assessment in this approach is mostly to monitor, confirm and improve student learning. The question is 'does the School of Medicine use this approach or assessments are there to eliminate learners on the basis of failure to produce what is expected by the lecturers?'
Biggs and Tang (2007) suggested Outcomes-based teaching and learning (OBTL) as a convenient and practical way of maintaining standards and of improving teaching. This is so, as standards are stated up front and teaching is tuned to best meet them, assessment being the means of checking how well they have been met. The content to be taught must be in line with what has been stated in the outcomes. Outcomes-based education (OBE) has been used in quite different ways but has been used mostly for enhancing teaching and learning. It has further been argued by Biggs and Tang (2007) that in addition to OBTL, there in need to use Constructive alignment in teaching where teaching/learning activities are systematically aligned according to learning activities required in the outcomes.

The way the curriculum is developed has the highest effect on the level of difficulty of the course or programme. This includes; the pace at which the course is being taught, time allocated to the course, practical activities

included in the course and the relevance or applicability of the course. Kane, Rockoff & Staiger (2006) stated that the level understanding of the course content by the students contributes to level of difficulty of the course. Biggs and Tang (2007) and Black, Harrison, Lee, Marshall & Wiliam (2004) also proposed that the poorly structured course and if it has no applicability to the close environment contributes to whether the course is difficult or not.

One of the questions which need to be asked is whether the courses are developed following the normal processes of curriculum development where needs assessment is done. If so, how often have they been reviewed and after how long? How interlinked are the concepts from one level to another? With the introduction of technology in teaching and the issues of online teaching, how has it been used or integrated? Sarfraz, Daka, Zubair and Sarfraz (2022) proposed a blended approach to learning so as to improve understanding of concepts which might not be understood through online methods. However, Mirchandani, Lynch & Hamilton (2001) advised a framework for the effective use of technology in teaching especially when designing new curricula. In the framework, the authors proposed some thoughts when designing a course or new programme. Some of the ideas include;

1. **Technology does not teach students, effective teachers do:** In some cases, lecturers just use power point slides without explanation. This has been found as ineffective use of technology in teaching (Kane, Rockoff & Staiger 2006). The study done by Sarfraz, Daka, Zubair, Sarfraz, Mahboob and Khan (2022) in one of the Pakistan Medical College found that some lecturers who only used PowerPoint were not as effective as compared to those who added the use of Prezi.
2. **Technology should not drive the course --- instead, the desired outcomes of the course and needs of the participants should be the deciding factors:** As the use of technology increases in teaching, it is important to have in mind that what determines the method to use is the desired outcome in our curriculum. There are some topics which might not need the use of technology but might need to go on sight and have a physical analysis of the subject under study. This is also in agreement to what Sarfraz, Daka, Zubair and Sarfraz (2022) discovered and recommended in the study on the viability of blended learning especially in medical schools.

Swail (2004) emphasised that it is of primary importance for continuous process of curriculum reviews. This process should in fact become a mainstream component of curriculum development. Especially in terms of science, medicine, and nursing, academic content must reflect the current dynamics of industry practice to be worthwhile and effective (Kuhn, 2006). Mirchandani *et al* (2001) further advised that to prepare students for employment in science, in the near future, it follows that science, medicine, and nursing curricula must relate not only to current industry trends and practices but also to anticipated practices and procedures (for example, cutting-edge technology and research).

Learning institutions should develop an integrated process of curriculum review to ensure that all pieces of the curriculum are up –to date and relevant to society's needs (Black *et al,* 2004). At many universities, individual faculty members are left in isolation to decide what to include in a course syllabus, leaving much to be desired in terms of quality control. This issue is of great relevance, considering that most faculties have little or no background in learning theory or educational practice (Biggs and Tang, 2011). Therefore, a systemic and cyclical review process that allows faculty to review all curricula on a rotating basis helps control the content delivered in classes.

The study investigated how the review of curricula is done in the school and how new lecturers are oriented by the departments when employed. The study tried to find out the gaps that might be there between curriculum development and curriculum delivery.

Pace of the courses

Pace of the course referred to the time taken by the lecturers to explain concepts to students during classes. Pacing is the skill of creating a perception that a class is moving at just the right speed for students. Generally, this will mean that the lesson appears to unfold more quickly. Daka (2019) pointed out in his study among medical students in Zambia that students see any change as an indicator or marker which helps them gauge the speed of a lesson's progress. This meant that the lecturers in these programmes were fast in teaching and students could not match the pace of teaching of the lecturers. This left students with less understanding. This could

have resulted into more students failing the courses and some who passed might have had low GPA. Determine how much time you'll have.

Studies have been done by some scholars on how the pace can be monitored so as to help students get the understanding and follow. Daka and Changwe (2020) proposed that lecturers need to set learning targets in their planning. This helps to teach according to the targets set within the stipulated time. Daka, Banda and Namafe (2020) further added that the educator must plan actions and words for the teaching point. This will help pause the lesson to explain more on the points of reference. In such a way Sarfraz, Daka, Zubair, Sarfraz, Mahboob and Khan (2022) pointed out that this will help learners assimilate the concepts well. Sarfraz, Daka, Zubair and Sarfraz (2022) in their study on the viability of blended learning emphasised that the lecturer should plan the lesson activities. The researchers stated that in doing this, consideration must be taken about readiness levels of learners and relevance of the activities.

Changwe, Mwanza, Daka and Ng'onomo (2023) cautioned that in order for pacing to be of acceptable level, the changing topics too often must be avoided to reduce creating confusion in a classroom and be distracting to students. The authors proposed that it is important that the lecturers stay with topic but change instructional strategies to bring about understanding. Furthermore, Daka, Mugala, Mulenga – Hagane and Kalimaposo (2022) voiced out in their study on academic flawas in the face of Covid – 19 that one best-practice method for teachers to improve pacing by breaking up their classroom instruction, is to make the breaks between the various activities very clear to students. There is need to ensure that that activities begin and end crisply and clearly, rather than melding together, can have a positive effect on pacing. This is because beginnings and endings are perceived by students as reference points in a lesson, or markers, making sure that they are clear to students helps them sense that the lesson is "moving along" and gives them a positive sense of pace.

Time Allocation

One of the major consideration during curriculum development is the time that is allocated to topics to be covered in a course. Chickering and Gamson (1987; 1) suggest that "time plus energy equals learning". For concepts to be covered in depth, there is need to allocate enough time to each topic in the syllabus. It is also vital that lecturers have the skill of managing the time allocated to the topics. This is what Chickering and Gamson (2007) stated later in their study that time management is a critical attribute for students and professionals. If the lecturer reports to class late, it will result to non-completion of the topics in the course and the near future students might also not be time consumes at places of work. The variables cover the issue of managing time while handling the course and keeping time when lecturing. In this study, time management was assessed under course management to assess whether courses are allocated enough time in the School of Medicine. The study also assessed the pace at which the courses are covered.

RESEARCH DESIGN AND METHODOLOGY

It is necessary to explain the philosophical research framework that formed the foundation of the study as this is crucial to understanding the overall perspective from which the study is designed and carried out. The two paradigms (positivism and interpretivism) influence the perception of the distinctions between qualitative and quantitative research. Quantitative research rests upon the positivist assumptions while qualitative research rests upon interpretivism assumptions. This study employed different data gathering methods, both in the qualitative and quantitative paradigms.

In this study, mixed method research design was used. This study used the explanatory sequential design mixed methods in a diagnostic way. In explanatory sequential design the researcher begins by conducting a quantitative phase and follows up with qualitative phase on specific results for the purpose of explaining the initial results in depth (Subedi, 2016) and it is due to this focus on explaining results that is reflected in the design name.

The purpose of this design is to use a qualitative strand to explain initial quantitative results (Creswell and Clark, 2011). This design is most useful when the researcher wants to assess trends and relationships with quantitative data and also be able to explain the phenomenon leading to the trends. Therefore, using this design the researcher hoped to explain why some courses or programmes seem to more difficult than the other. The data collected was then analysed from one paradigm and later the other. For instance, in this study, the researcher first collected the quantitative data

and analysed it and later collected the qualitative data and analysed it and later did the interpretation. The basic rationale for this design was that one data collection paradigm supplies strengths to offset the weaknesses of the other paradigm and provided a complete understanding of the research problem. In this case, the data collected from the quantitative method was verified and triangulated with the data from the qualitative methods.

The target population for this study were all undergraduate students in the School of Medicine of the University of Zambia, Assistant Dean (General), Heads of Department (HODs), lecturers and Laboratory Technicians of the school. Some of those students formed the study sample, because they were all participating in learning. The study was conducted from the School of Medicine of the University of Zambia. The study population included all students who volunteered to participate in the study, the Assistant Dean (General), the sampled HODs, sampled lecturers and sampled Laboratory Technicians.

The sample of 800 respondents in the School of Medicine for all years of study and programmes were targeted. 16 of these were key informants to the study, 784 were students studying in different programmes except for those doing Nursing programme as these were used in the pilot study. The sample size was all students in the stated programmes, 3 Heads of Department and 3 Sampled Laboratory Technicians from different departments.

In this study, census method was used to reduce sampling errors and also to provide a true measure of the population. In addition, the data collected form this study could be obtained for future studies by the Medical School and UNZA. This method is has an advantage over partial enumeration method as detailed information about the small sub – groups within the population is more likely to be collected (Flowers, Weisz & White, 2005). Purposive sampling was used only to select key informants to the study. During the period under study, three (3) different Assistant Deans (General) served in this office and the researcher chose the one who was in the office at the start of the study she was aware of the whole study programme. In the case of HODs, lecturers and Laboratory technicians were sampled after the survey questionnaires were administered so as to do some follow - up questions from the issues raised from the responses of the students. In addition, lecturers were selected across programmes so as to collect diverse views on the subject under study. The questionnaires were used to source information from the students while the in –depth interviews were used on key informants. In addition, focus group discussions were used on students also to seek more clarity on issues raised in the questionnaires. Documents analysis was done which included finding the Grade Point Averages (GPAs) and examination failure rates for the past examination results.

Throughout the research, ethical principles relating to issues of informed consent, non-deception and confidentiality of participants were strictly to be adhered to. Participation in this study was based on informed consent and on voluntary basis, with right of withdrawal at any time (Bryman, 2004). Further, the names of the participants were withheld in order to protect their confidentiality. Participants also had a right to decide when, where, to whom, and to what extent their attitudes would be revealed. Information was given anonymously to ensure privacy. Before the study commenced, the tools were discussed by the School of Medicine Board of Studies to seek clearance from the school. The data collection tools and the proposal were then presented to the University of Zambia Biomedical Research Ethics Committee

This study began with descriptive statistics to see what correlation existed between level of difficulty of courses and the time allocated to courses and pace of the course delivery at the Medical School of the University of Zambia. After determining the correlation, there was need to find out if those variables were the causes or not. Then inferential statistics were used to provide measures of how data supported the hypothesis and if data was generalizable beyond what was tested. To do this, Chi- Square was used using the computer software SPSS.

For qualitative data, once all data was transcribed, the researcher did all the analysis manually. This was done first by using the open coding which involved reading through the data carefully and taking note of the themes. Secondly, axial coding was used to see how the identified themes were related so that the major categories could be identified. Then the final selective coding was done to bring together the themes identified in the data to determine how they were related together. The related themes were later used in the structure of the results presentation

and discussion of results chapters supported with appropriate verbatim quotes. During the data analysis, the researcher searched for patterns of data which was later interpreted.

FINDINGS

The findings were in response to the research questions of the study. There was 86% response rate form the questionnaires and 100% for the interviews.

Course and programme organisation

From the findings using the instruments used in the study, the following sub – themes evolved on the above them.

Courses which were unnecessary for the Programme

The respondents suggested that some of the courses in different programmes has concepts which were not necessary and had no application to the field of study. In Human Physiology (PGY 2020) under B. Pharm programme, the students cited that this course has some details which are unnecessary for the degree programme. The lecturers in the course confirmed this and stated that they were in the process of reviewing the whole course. Some respondents commented also that the pharmacology component in the Introduction to Biomedical Sciences (BMS 2015) course need to be reviewed as it is too detailed for this programme. Students during focus group discussion cited that

> *Some concepts in this course could be removed and leave concepts which were applicable to the programme. One of the causes might be the fact that in some cases new lecturers were not given the whole curriculum resulting into other teaching staff including things not in the syllabus.*

This was evident from some responses of lecturers during interviews saying,

> *Some academic staff are not oriented by Heads of Department when they are employed. In addition, they are not availed with the whole curriculum of the department and the school so that staff is aware of what is offered in other departments.*

In some cases, students stated that in some courses some concepts which were taught were outdated and had lost their relevance. One of the courses was Pharmaceutics I (PMY 2020) in the B. Pharm programme where students cited that,

> *Some topics in these courses are out dated and there are too many non-scientific principles.*

This is evident from the number of students who failed in this course and the overall GPA. This course had highest examination attrition rates of 27.08% in this programme and was taken as a killer course during that academic year. It must be that the students lost interest in the course after realising that the information in the course was outdated. This affected their altitude towards this course during their studies.

The other respondents from the Programme of BSc Environment cited that,

> *The pharmacology which is taught in Environmental Health does not relate to the field.*

Courses put in a wrong year

The other issue which came out of the students' responses apart from the issue of having unnecessary courses in a particular programme was that some courses or concepts in the some courses were wrongly put in a particular year. The respondents in their responses had an opinion that some courses were not well sequenced and were put in a wrong year thereby affecting the Course Management in the School of Medicine.
The respondents from Bachelor of Biomedical Sciences cited that

> *The Research Methodology (BMS 4415) should be taught a year before the research project. This will help students have the understanding of research before they do the actual research. Currently this is done in the same year for research and there no time to understand the concepts.*

It was also proposed by respondents from Bachelor of Pharmacy who were in the 5th year that Pharmaceutics IV (PMY 5040) and Pharmacy Practice Professional (PMY 5430) should be removed from the 5th year to at 4th year and 3rd year respectively. The arguments were that,

> *PMY 5040 had similar concepts as with PMY 4030: Pharmaceutics III and that some topics were repeated. In addition, the students also argued that PMY 5430 had very close concepts as in PMY 3410: Pharmacy Practice Foundation.*

One discussant from the FGD said that,

> *In Pharmaceutics IV (PMY 5040) and Pharmacy Practice Professional (PMY 5430) the concepts and materials in these courses are repeated, it will be better merge the two courses and make one. In the same programme of Bachelor of Pharmacy and same 5th year of study, the respondents from the survey questionnaire stated that Clinical Pharmacology (PMY 5230) and Clinical Pharmacy and Therapeutics (PMY 5710) have similar concepts and the two can be made into one course.*

From Bachelor of Science and Environmental Health Programmes, respondents stated that,

> *The topics in Inspection of Premises and Reporting (EHS 4535) are mostly a repetition of what was covered in the past years in other courses like Planned Development and Building Services (EHS 3520) and Principles of Building Design and Construction (EHS 2510).*

The respondents in BSc Biomed cited that

> *The programme has too many half courses at 4th year as compared to other programmes making it difficult for us to manage to study during the final examination.*

The respondents added that

> *The worst part was that when all the examinations of these nine half courses were written at the end of the academic year. How do you really master and understand as you prepare for final examination?*

Respondents proposed that courses be combined into full courses in order to come up with four and half courses which were to be manageable. However, when the researcher had an interview with the department, the department justified that many half courses are as a result of the different concepts dealt with in different courses.

During discussions in groups, discussants cited that,

> *Medical Physiology (PGY 2040) in Bachelor of Biomedical Sciences and Basic and Applied Physiology (PGY 3010) in Bachelor of Science in Human Biology were too detailed and some concepts were unnecessary and have no application.*

The results showed that in Medical Physiotherapy (PGY 2040) there were 12 fail cases out of 32 students representing 37.5% and in Basic and Applied Physiology (PGY 3010), 35 failed out of 167 candidates representing 20.9% examination attrition rates.

In Human Physiology (PGY 2020), the respondents cited that,

> *The course PHY 2020 is too detailed failing to isolate things which are necessary from those which are not. When the course were not clear and loaded with a lot of concepts students failed to understand and this contributed to high failure rates of students.*

In this course, 39.58% of Bachelor of Pharmacy second year students failed representing 19 out of 48 students.

Pace and time allocation to the courses

Pace of the Course

Pace of the course referred to the time taken by the lecturers to explain concepts to students during classes. The same analysis using bar charts was used to differentiate the various programmes on the pace of the course. This variable was investigated in order to check how it contributed to the level of difficulty of the courses in the School of Medicine. The bar chart (Figure 1) below shows how the respondents from different programmes perceived the pace of the course.

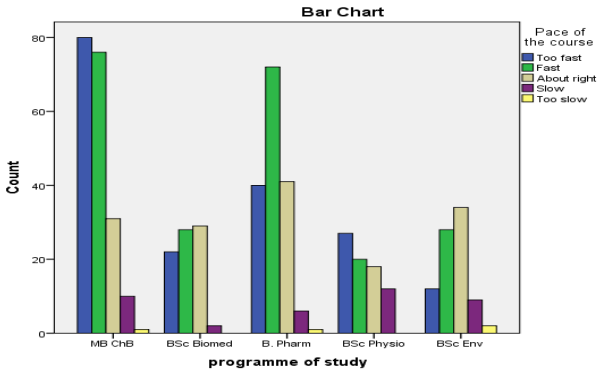

Figure 1: Student perception of Pace of the Courses

(Source: Field data, 2018)

In the figure above, it showed that in MB ChB, BSc Physio and B. Pharm programmes, the respondents perceived that the pace in the teaching of the courses were fast as the curve is skewed toward fast. This meant that the lecturers in these programmes were fast in teaching and students could not match the

pace of teaching of the lecturers. This left students with less understanding. This could have resulted into more students failing the courses thereby rating the course as difficult. One of the courses in MB ChB which was cited as *too fast* was *Neurosciences (PGY 4110).* More than one third (32.17%) failed in 2018 academic year representing 37 of 115 students failed the examination and for those who passed, most of them had an average of C+ grade.

In addition, respondents stated that the *'lecturers in Basic and Applied Physiology (PGY 3010) do not provide deeper understanding of the concepts in the course and do not answer questions for clarification purposes from the students'.* This course was in MB ChB programme and the same course was taught at a faster rate and students were left with little understanding.

In BSc Biomed and BSc Env programmes, the respondents perceived that the pace of the teaching of the courses was about right (engaged students while teaching). This meant that lecturers were on the average at the right pace in teaching and helped students with understanding in these programmes. This was evident where there were no failures in this programme as compared to other programmes.

Time spent on the course

The respondents were asked how they perceived the time spent on the course in the School of Medicine at the University of Zambia. This variable was investigated in order to check how it contributes to the courses being difficult. The Chart below shows how the students responded. The Bar chart represents the count of the respondents in the Y- axis against time spent on the course in the X – axis. The Figure 2 above shows how the respondents from different programmes perceived the time spent on the course.

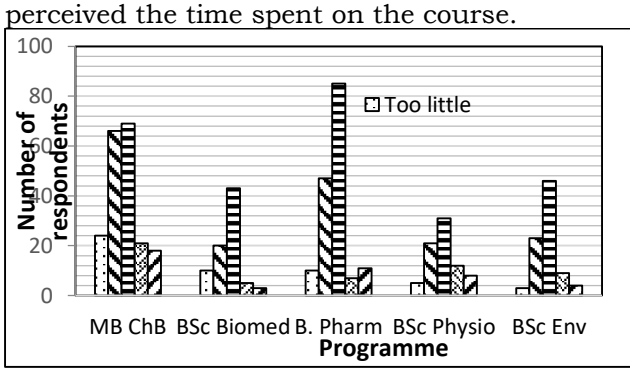

Figure 2: Student Perception of Time Spent On the Course

(Source: Field data, 2018)

The Figure above shows that time spent on the courses in all programmes is on average about right. Almost in all programmes, there was a perception that enough time was spent on the courses. It could also be seen that BSc Physio and BSc Env programmes, very few respondents stated that the time spent on courses was little. For MB ChB and BSc Biomed programmes, the curve is skewed towards too little time spent on the courses. If little time was spent on the course then it was expected that students did not do well in the courses.

For courses which were considered to be light and where lecturers spent enough time, the students performed very well. One such course was Community Medicine (DPH 6024). In this course only 0.90% of the students failed. Some respondents stated that Internal Medicine Clerkship I (MED 5010) course *was less time is allocated to Radiology and Dermatology parts.* This means that during course development there was less consideration of the concepts to be covered in Radiology and Dermatology. As a result lecturers in these components do not have enough time to complete their parts leaving students with unclear understanding. Some lecturers stated that *some courses were too bulk such that time management by some lecturers is a challenge.*

In HAN 3010, the respondents cited that,

> *The lecturer in HAN 3010 course mostly comes an hour or more late for lectures'. So how do we expect to finish the content in this course?*

When a follow up was made by the researcher as to why the lecturer go to class an hour late, the department cited that *'they were understaffed and the lecturer moves from one class to another thereby failing to keep time'.*

Chi – Square analysis of the Students' Perceptions on causes of level of difficulty of Courses

The other analysis done was the use of Chi-Square statistic. This was used to establish the relationship between level of course/programme difficulty the factors (course or programme organisation and pace and time spent on courses) under study. The analysis from the SPSS showed that for the course/programme organisation, the value of the test statistics was 42.1 with degrees of freedom (df) for the test at 20 and corresponding p-value at $p < .005$ of .003 as shown in Table 2. The results showed that there was no statistical significance difference

of the course/programme organisation on level of difficulty. This meant that the course/programme organisation affected level of difficulty.

The Chi-Square statistics on the relationship between pace of the course and level of difficulty showed that there was statistical significant difference at ρ < 0.005 for the pace of the course, the value of the test statistics was 61.6 with degrees of freedom (df) for the test at 16 and corresponding p-value at ρ < .005 of .000. The results showed that there was no statistical significance difference of the pace of the course.

Table 2: Chi Square values for factor leading to level of difficulty for courses/programmes

Characteristics	N	Pearson Chi Square value	df	Sig
Organisation of courses/programmes	601	42.1	20	.003
Pace of the course	601	61.6	16	.000
Time spent on the course	601	33.0	16	.007

*Significant at ρ < .005 *(Source: Field data 2018)*

The other characteristic was time spent on the course in order to establish if there was any relationship between level of difficulty of courses/programmes and the time spent on the course. The analysis from the SPSS showed that for the time spent on the course, the value of the test statistics was 33.029 with degrees of freedom (df) for the test at 16 and corresponding p-value at p < .005 of .007. The two characteristics showed there was statistical significance difference on level of difficulty of courses/programmes.

DISCUSSION OF FINDINGS

The discussion of findings were based on the factors under study. These factors were on curriculum development (organisation of courses/programmes), pace of the courses and time spent on the courses. These were very important variables that could affected the level of difficulty of the courses in the School of Medicine. Thus, the institution should come up with the course workload which should relate to the time spent on the course.

Course/programme organisation

Course/programme organisation was the first research question to be answered in this study. In this study, when asked how the undergraduate courses are managed in the School of Medicine of the University of Zambia, the students stated that the course workload and the pace of the courses was very fast. The interpretation being that despite the course being heavy the time spent on it is less. This means that the perception of students over the course workload is that almost all courses require more time to cover the topics. This means more hours needed to be allocated per week for the courses or reducing the content in order to have expected credit hours for each course. For example, in Internal Medicine Clerkship I (MED 5010), there was need to increase time allocated to Radiology component. In this course, the students have a challenge of assimilating the concepts within the stipulated time just.

Liu, Chen, Bash, Wierman, Gmach, Wang & Hyser (2014) explained that workload is an estimate of the amount of work needed for an average student to earn an average grade. Course grades are based on the quality of the work submitted. The course workload for every student at the University of Zambia is 12 Credits per year as minimum. This means that each course is allocated three lecture hours per week. Most of school of Medicine courses have clinical experiences and laboratory work which add up to many more hours leaving the student with little time to study as compared to those who just do theoretical courses. This is different from those students who just do theoretical courses without laboratory work as they spent more time study. The situation becomes worse

in cases where students take overload of courses and where departments demand students to do more courses within a year or semester as a curriculum requirement.

The other courses cited as too heavy in course workload were considered difficult. In these courses, there were high failure rates some of these courses include; Human Physiology (PGY 2020) in Bachelor of Pharmacy with 39.5% failure rate, Human Physiology (PGY 2030) in Bachelor of Sciences in Physiotherapy with 40% fail and Medical Physiotherapy (PGY 2040) there were 12 37.5% fail cases with most of them getting C+ grades. The study therefore showed that course level of difficulty of courses/programmes was affected by organisation of courses/programmes. This was because in most cases lecturers did not cover all topics in the syllabus as outlined in each course. This became a challenge when students were examined in the examination on what they were not guided.

In addition, the study also revealed that in some study programmes there were too many half courses making it hard for students to effectively study well and manage to pass the examination with high grades. It could either be better for these half courses to be examined in the mid of the academic year while the other half course at the end of the year. This would reduce the load of studying many concepts at the same time. In this case it is important that similar half courses should be put into one to make a full course.

Michael (2007) proposed two major reasons as to why content of any course seem difficult to the students. These are:

1. The nature of the discipline and how it relates to other fields
2. How it is studied and how experts think and communicate about it.

It was also cited in Pathology and Microbiology (PTM 3010) course that some conditions in Pathology has no application in Physiotherapy making this component be more irrelevant and lead students to lose interest in it. PTM 3010 is the only course at 3rd year in the year when study was carried out where some students failed but all students passed in other 3rd year courses. During Curriculum reviews, it would be worth noting that the components which do not apply to some fields should be removed and be replaced with relevant concepts related to physiotherapy.

The study also revealed that some concepts taught in some courses did not relate to the field of the study. The pharmacology taught in Environmental Health did not relate to the field of Environment Health. It was also seen that some concepts in Pharmaceutics I (PMY 2110) were outdated and lacked scientific principles. The worst was General Introduction to Biomedical Sciences (BMS 2110) where most students failed in this course in the year under study and students commented that the course did not make sense and its value or importance was not known to BSc Biomed programme.

In Immunology and General Microbiology (PTM 3015), the study revealed there was lack of in-depth explanation with no lecture schedule provided to the students. In this course, students did not even have an idea of the course contents which were to be covered. In addition, in Research Methodology (BMS 4415), the study revealed that the lecturer did not demonstrate the understanding of the content especially statistics analysis and tests thereby discouraging students.

Pace of the course

Michael (2007) emphasised that students perceive courses to be difficult if they cannot understand the content in the course or if the concepts cannot easily be applied. In this study, there were various reasons as to why the stated courses were perceived as difficulty. In this study, in Basic and Applied Physiology (PGY 3010), students cited the course to be too hard to understand as the lecturer was too fast during lectures where concepts were not even explained in detail. This is evident in the year under which this study was carried out; there was 20.9% (35 candidates) failure rate in PGY 3010. This demonstrated poor management of courses as students stated that the course was poorly coordinated. When the students have a good understanding of the content, they are able to pass in the course. This is in agreement with Cherif, Movahedzadeh, Adams and Dunning (2013) who stated that if students have a good understanding of the content being taught they are able to apply the concepts even in the examination and pass the course. Therefore, faculties have a role of demonstrating the management of the courses in such a way that they teach at a pace that can bring understanding.

The study also revealed the courses in other programmes the courses were perceived difficult due to lack of understanding of the

concepts by the students in the course. The study showed that students bemoaned lack of explanation and poor management of courses as factors leading low to GPA and high examination attrition rates. For example, in General Pharmacognosy (PMY 3310) which had 15% failure rate also had similar challenges of poor management of the course and lack detailed explanation by lecturers of the course content.
It is however noted in this study that some courses which seem to be difficulty had concepts which are not related to the programme and have no applicability to the close environment. This is in agreement with what Triola (2006) also proposed that course materials which have no applicability to the close environment contributes to high student failure rate.

Time spent on the courses

Slotta and Linn (2009) explained that all curriculum designers should do more study to allocate enough time to courses designed. Slotta and Linn (2009) went further to state that new courses need a three to five year time for review so that time allocated to the course is assessed and adjusted if need be. Marzano and Pickering (2016) also added that an effective educator is a good curriculum designer. This means identifying and articulating the proper sequence and pacing of the content in the course they are given to teach. This was in agreement with this study where in courses where there was good organisation of lectures, students found such courses as manageable.

In General Pharmacology (PGY 3220), the students did very well in the year under study. In this course, the students mentioned that the lecturer took enough time in class to explain concepts. In this course, the study revealed high commitment from the lecturers and proper coordination. In the above highlighted course the study revealed that lecturer was mostly available to help students and clarify points which were not clear in the lecturers.

From the findings above, it is confirmed that there is an association between level of difficulty of the courses and how courses are organised, pace at which they are taught and the time allocated to the courses. In order to address this challenge, the medical school needs to work on the course organisation, time allocated to teach the courses and the pace at which courses are taught. In addition, the courses of high level of difficulty and taught at a faster pace had high number of failures result to many students to fail. This is in agreement with Kane (2006) assertion that the level of understanding of the course content contributes to student performance.

On the part of lecturers, the findings in this study indicated that some lecturers who had challenges with course management and teaching and learning activities were those who were not guided by the department in curriculum issues and teaching and learning culture of the school. The study revealed that there is no formal induction process in the school. An induction programme is the process used within many institutions to welcome new employees and prepare them for their new role. It helps in the effective integration of the employee into the organisation (Bradt and Vonnegut, 2009). Induction process should meet interaction needs that exist among the new employees (Alvenfors, 2010). An induction programme is an important process for bringing staff into an organisation. It provides an introduction to the working environment and the set-up of the employee within the organisation. The process will cover the employer and employee rights and the terms and conditions of employment. As a priority the induction programme must cover any legal and compliance requirements for working at the institution. In this study, findings revealed that lecturers are just given course outlines and allocated classes.

CONCLUSION

With regard to correlation between level of course difficulty and course/programme organisation, pace of the course and time allocate to the course, the conclusion made was is that most courses' workload in the School of Medicine were heavy with little time allocated to them and taught at a faster speed. The students perceived courses to be difficult because lecturers did not explain concepts in depth. This left students with little understanding. In addition, some courses/programmes were not were organised. Therefore, the more the students perceived some courses to be difficult, the lower their Grade Point Average in those courses and the higher the failure rates in the courses/programme.

The study therefore recommended the following;

1. In programmes where there are a lot of half courses, it would be better if some of

these are combined into one full course in order to reduce the examination load for the students and the number of assessments to be done during the year.
2. There is need to review some course contents. In some courses there is need to either make them full courses or remove some topics from some which are not applicable. This recommendation arises from the finding that some topics in some courses had no or little application and this led to low students' academic performance.
3. Courses should be rearranged in order to fit well in the curriculum. Some of the courses require repackaging. The above recommendation relates to the findings that courses which are arranged in the order of concepts brought about more understanding to students and contributed to high students GPA.

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