Total Student Workload: Implications of the European Credit Transfer and Accumulation System for an Integrated, Problem-Based Medical Curriculum

Emad Nosair
Department of Basic Medical Sciences-Anatomy, College of Medicine, University of Sharjah, P.O. Box: 27272 Sharjah, UAE, emadnosair@sharjah.ac.ae

Hossam Hamdy
Chancellor of Gulf Medical University and Professor of Surgery and Medical Education, Ajman, UAE

Follow this and additional works at: https://hpe.researchcommons.org/journal

Part of the Health and Physical Education Commons

Recommended Citation
DOI: 10.1016/j.hpe.2017.01.002
Available at: https://hpe.researchcommons.org/journal/vol3/iss2/6

This Original Research Reports is brought to you for free and open access by Health Professions Education. It has been accepted for inclusion in Health Professions Education by an authorized editor of Health Professions Education.
Total Student Workload: Implications of the European Credit Transfer and Accumulation System for an Integrated, Problem-Based Medical Curriculum

Emad Nosair\textsuperscript{a,}\textsuperscript{*}, Hossam Hamdy\textsuperscript{b}

\textsuperscript{a}Department of Basic Medical Sciences-Anatomy, College of Medicine, University of Sharjah, P.O. Box: 27272 Sharjah, UAE
\textsuperscript{b}Chancellor of Gulf Medical University and Professor of Surgery and Medical Education, Ajman, UAE

Received 28 April 2016; received in revised form 8 January 2017; accepted 9 January 2017
Available online 14 January 2017

Abstract

Purpose: How much time students spent on unstructured self-study activities in problem-based learning is not clear. The study addressed this issue by (1) identifying the nature of students’ unstructured learning activities in a problem-based medical curriculum, (2) measuring the unstructured student workload per week and per semester, and (3) assigning European Credit Transfer and Accumulation System units to the medical problem-based modules based on calculating the total student workload.

Method: Nineteen undergraduate medical students in the pre-clerkship phase were enrolled in the study. Data about the nature of unstructured learning activities and the amount of time spent on them were collected through focus group interviews (n = 19); and a log diary method (n = 13) describing their unstructured educational activities over one week. A response evaluation model and a thematic description approach were employed for data collection and data analysis respectively.

Results: A broad variations of unstructured learning activities were identified. The unstructured student workload ranged from 33 to 41 h/wk., while the total student workload was 63/58 h/wk. for years 2 and 3 respectively. The total student workload in a 15-week semester was 945 h in year 2 and 870 h in year 3, which equates with about 34 and 31 European Credit Transfer and Accumulation System per semester for years 2 and 3, respectively.

Discussion: Measuring student total workload in a problem-based program is important for evading the associated overload, and improving the quality of teaching and learning. Calculating student workload in an integrated problem-based curriculum is a challenge. Total student workload is the foundation for determination of the European Credit Transfer and Accumulation System units. Measuring unstructured student workload (or “out-of-class” learning time) is an important component of total student workload. Assigning the European Credit Transfer and Accumulation System to problem-based programs improves its quality assurance, and has educational, curricular, and organizational impact. Therefore, student workload in such programs should be regularity monitored and evaluated.

© 2017 King Saud bin AbdulAziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Credit system; European Credit Transfer and Accumulation System; PBL; Student workload
1. Introduction

The American credit hour system has been used for more than 100 years for measuring the student workload (SWL), faculty workload, tuition, costs of the program, and funding. It was originally developed by the Carnegie Institute to develop a formula which calculates how much a school teacher teaches to justify giving him a pension.1,2 This formula states that one hour of teaching in a classroom per week, for a total of 15 weeks, is equal to one credit hour. It is still the gold standard metric in academic institutions all over the world.3,4

All what the credit hour system describes is “time” spent by a teacher teaching in a “class room”5. This description has no relation with the quality of teaching, or with the students’ learning activities. Regarding the latter, it suggests that for each five hours of teaching that the student receives, two hours of out-of-classroom work must be added.5,6

Although the American credit hour system includes students’ activity to some extent, it is not a measure of the actual effort exerted by learners.1 With the introduction of curricula that emphasize the importance of student’ self-directed learning,7 this credit hour system begins to fall short. The advent of new educational approaches such as problem-based learning (PBL),8–10 and the growing advancements in educational technology, e.g., distance education and remote learning are additional challenges that make the credit hour system a barrier to innovation in teaching and learning.11 In addition, changes in the curricula itself, e.g., the move from discipline-oriented curricula to integrated curricula, also make it difficult to apply the American credit hour system.

Alternative educational credit frameworks have been evolving as a replacement for the traditional model. McDaniel1 suggested reframing the existing academic credit by making the “level of students’ effort” rather than the “contact hours” as the foundation of the suggested credit system. Such change will free faculty and educational designers to be more innovative. Watkins and Schlosser12,13 suggested using the Capabilities-Based Educational Equivalency units, which focus on the attained knowledge and skills of learners as a standardized measure of educational achievement based on taxonomies rather than on time in the classroom.

Among these innovative credit hour systems is the European Credit Transfer and Accumulation System (ECTS),14 which is a numerical descriptive value of qualification expressed in terms of SWL. It is defined as “the number of working hours typically required to complete the learning activities of course units in order to achieve their expected learning outcomes”.14 In this system, the total SWL comprises two components; first, the structured SWL which is the scheduled teacher-contact hours interventions; and, the unstructured SWL (USWL) which is the time spent by students in their own self-study, completing course assignments, and preparing for all types of exams, e.g. assessment workload.14,15 It has been considered as an essential description of the educational qualification recommended in the European Higher Education Area as a key element of the Bologna and Europeans Framework Qualifications16,17 in terms of total SWL.18 It proposes that one ECTS credit corresponds to 25–30 h of total student working, and each 30-week academic year should meet 60 ECTS.19 As an agreed requirement, 1500–1800 h of total SWL are necessary in a full academic year, or about 50–60 h. of total SWL/per week.14

Although previous literatures stressed the importance of measuring the actual SWL in every course and university degree, it, however, has not been given high enough priority among issues discussed in higher education.5 In practice, much of the calculation of the SWL of a course has been done by guesswork rather than by any more rational or scientific way. In integrated curricula, with PBL as one of the main strategies of learning, measuring SWL or faculty workload is problematic. The structured component of the SWL is easy to calculate from the activities organized and offered by the program during every week. What is not known and difficult to measure is the unstructured, independent student learning component, inside the college, at home or even at ‘Starbucks’.

The aim of this study was to; 1) identify the nature of student unstructured learning activities, (2) measure the USWL per week and per semester, and (3) apply the data obtained from measurement of the USWL to collaborate the total SWL in terms of ECTS units.

2. Methods

2.1. Participants

This study was conducted at the College of Medicine, University of Sharjah, UAE. The medical program adopts a competency-based and integrated curriculum, and is of six years duration. It is organized around three phases; phase I is the foundation year, phase II is the three-year pre-clerkship phase, and phase III is the two-year clerkship phase. PBL is one of the main learning strategies used in the pre-clerkship phase. The study focused on the second
Year one students were excluded from the study as they are considered relatively novice and lacks full adaptation to the PBL environment. Furthermore, the senior students in the clinical phase were also excluded due to their different educational setting than the standard PBL environment.

Students were invited to contribute in the study on a volunteer base. The total number participated was nineteen students; eleven from year two and eight from year three; seven were males and twelve were females.

2.2. Instruments

A mixed method was used to investigate the nature of the unstructured students learning activities, and the time spent on these activities. The first method used was a semi-structured focus group interviews as a starting point for understanding student's insight, perception and factors which may influence their workload. The distributed interview questionnaire (Appendix A) was formed of seven questions; two on students’ perception and the meanings of workload: “What does SWL mean for you?” and “What are the factors which may influence it?” Two questions were on students’ favorite study places outside the class “where”, and the preferred time of the day “when”. Two questions were on students’ preferred style of the unstructured learning; e.g. is it individually or in a small group; and the students’ use of e-learning. The last question was about the average time spent per day on learning outside of the structured activities during both weekdays and weekends “how long”.

For verification of the data obtained from the focus group interviews, a second method of self-administered log diaries (Appendix B) was used over one week. It was used for student self-reporting on their educational activities, mainly outside the class and their duration. Students were asked to record all their learning activities along with the approximate amount of time in hours spent on their independent/unstructured studies within this week including the weekends.

2.3. Procedure

Two focus group meetings (1.5 h each) were conducted; the first meeting was with year three students (n = 8), while the second meeting was with year two students (n = 11). At the beginning of each meeting, the purposes of the interview and key questions were explained, and the informed consents were signed by all participants. The meetings were audiotaped with permission of the participants. The researcher’s role in the meetings was to facilitate the discussion, to encourage students to participate and interact. Moreover, only 13 log diaries were returned and analyzed (five from year two and eight from year three students).

The total SWL per week was calculated by adding the structured SWL, obtained from the documented weekly timetables of the module, plus the USWL” per week obtained from the focus group interviews and log diaries. The total SWL, expressed in hours, was converted into ECTS points by dividing the total SWL by 28, as “One ECTS = 25–30 working hours”.

2.4. Data analysis

The response evaluation model and thematic description approach were employed for data collection and data analysis respectively. Data from focus group meetings were transcribed verbatim and all participants were given the opportunity to review and edit the transcript. The recorded tapes were transformed manually into text statements according to the students’ own words, and then thematically sorted. Additionally, data collected from the one-week log diaries were analyzed and sorted manually into structured and unstructured learning activities and their durations. Microsoft Excel was used for calculating the averages, standard deviation and the figures.

The Ethics and Research Committee, College of Medicine, University of Sharjah, UAE has been approved the study.

3. Results

3.1. Results of focus group interviews

Three themes emerged from the focus groups interviews:

Theme 1: Students perception of meanings of workload

Students defined their workload as the number of hours or the amount of effort required for studying, or for achieving their goals.

“It is about how many hours I need to digest the information I am not sure I understood, but I have learnt that day.”
“It is how much activities related to the university work in college and at home.”
“Everything I have to do in order to achieve/ reach my goals “everything”, not only education.”

Others were more concerned about the quality of information needed to be deeply covered for their own satisfaction.

“Not only quantity of hours but about the quality of information I want to gain, and what I have to cover and achieve.”

Regarding the factors affecting student workload perception, students stated that they feel overloaded when they are under stress especially before exams. Others mentioned that their personal and social life issues, their own learning style, difficulty of subjects, and teachers’ way of presentation rather than the amount of knowledge covered. Deadlines for assignments and methods of assessment were important factors affecting their workload perception:

“It is not only the number of hours that I study, but how long I feel psychologically (under pressure) to reach a certain level of understanding of a subject”, the mental state, stress and personal issues of a student affect your feeling of workload.”

Students made some suggestions for reducing their feeling of overloaded, e.g., more motivation from teachers, to be more engaged in the learning activities, giving more quizzes, comfortable distribution of assignments throughout the course, and improving the way of instructions during contact-teaching classes. Finally, clear vision about the content and process of assessments helped diminishing their academic overload.

“I think I need more motivation from teachers in order to break the process of boring repetition.”
“Teachers should assign lectures for explaining complex issues, not to waste time in points that could be memorized by students themselves.”

Some teachers surprise us with questions in the exams not highlighted or stressed on during their teaching classes.”

Theme 2: Independent learning activities “How I learn”

Students mentioned that they depend on several resources to cover the PBL objectives, e.g. teachers’ presentations, textbooks, recorded audio or video tapes, or their own handouts and summaries. They spend a quite extensive time in preparing for, their part to be presented in the second session of the PBL tutorials, literature review, answering mini-PBLs, and on making concept maps. In addition, they work on the portfolio, the community-based research project. Much time is spent for preparing for formative exams, and mostly for the final summative exams. Preparing for examination usually starts two weeks before the finals, while others prefer to start earlier in small daily revision sessions. Students use e-books rather than paper books. They found that YouTube videos were useful for clinical skills and 3D anatomy programs. “Scholar websites” were used for literature search. Facebook and Webpages were helpful for explaining complex content and for answering questions in groups learning. Most of them spent about one to two hours daily on e-learning. Although two students stated that all their individual studies are by e-learning.

Theme 3: Learning and studying phases “Where I study”

Most students agreed that studying in the PBL classrooms is better than in dorms or at home. Library is preferred by many students only for individual learning, but not for group studying. Their opinions markedly varied regarding their preference of studying in the dorm or at home. They feel the PBL classrooms are as “home” for them. Some students study with commuting to and from the college. Others enjoy studying in coffee shops and cafeteria alone or in groups. Few students cannot study at all anywhere except at home.

“I like studying at home more than in the dorm because of distraction, having laundry and cleaning in the dorm.”

“I have a noisy family, and I spend the weekends for family affairs only, not for studying.”

Fig. 1. The unstructured students learning activities as identified by focus group discussions with 19 students.
Another student interfered “But distraction in the dorm could be controlled, but not at home.”

Regarding studying individually or in groups, several students preferred studying alone especially when confronted with new content material, and in preparation for the final exams. Others find group studying useful when teamwork is required for completing an educational task, or when they need to fill the gaps in their knowledge. Studying in groups was preferred for revision, before exams, and for stimulating discussions, answering questions and solving problems. One student mentioned that:

“About 90% of my study is within groups; it is the only way to retain what I studied for long-term memorization, provided having competitive serious group of peers.”

Fig. 1 summarizes the variable nature of independent students learning activities as identified by focus group meetings.

The interviewed students approved that they spend about 4–6 h per day during weekdays in independent studying, in addition to about 5–6 h per a weekend day. Therefore, the overall USWL is about 33–35 h/wk. Table 1 shows the detailed USWL, as derived from students’ focus group interviews, and that most of student self-directed learning took place after the college timing.

<table>
<thead>
<tr>
<th>Time</th>
<th>Venue</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekdays</td>
<td>Before the college timing (6:30–8:30 am)</td>
<td>In the dorms or transportation</td>
</tr>
<tr>
<td></td>
<td>During the college timing (8:30–4:30 pm)</td>
<td>In the classrooms or the library</td>
</tr>
<tr>
<td></td>
<td>After the college timing (4:30–12:00 midnight)</td>
<td>In the classrooms, library, dorms, home, or in coffee shops</td>
</tr>
<tr>
<td>Weekend days</td>
<td>NA</td>
<td>At home or dorm</td>
</tr>
<tr>
<td>Sum of unstructured SWL (h)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1
The unstructured SWL, as derived from students focus group interviews (n=19).

<table>
<thead>
<tr>
<th>Time</th>
<th>Venue</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekdays</td>
<td>Before the college timing (6:30–8:30 am)</td>
<td>In the dorms or transportation</td>
</tr>
<tr>
<td></td>
<td>During the college timing (8:30–4:30 pm)</td>
<td>In the classrooms or the library</td>
</tr>
<tr>
<td></td>
<td>After the college timing (4:30–12:00 midnight)</td>
<td>In the classrooms, library, dorms, home, or in coffee shops</td>
</tr>
<tr>
<td>Weekend days</td>
<td>NA</td>
<td>At home or dorm</td>
</tr>
<tr>
<td>Sum of unstructured SWL (h)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2
The unstructured SWL/h as derived from the log diaries in a mid-semester week (n=13).

<table>
<thead>
<tr>
<th>Student ID &amp; academic year</th>
<th>Student academic performance</th>
<th>Sun.</th>
<th>Mon.</th>
<th>Tue.</th>
<th>Wed.</th>
<th>Thur.</th>
<th>Weekend days</th>
<th>Total [h/wk.] (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, Y2</td>
<td>C</td>
<td>10</td>
<td>8</td>
<td>1.5</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>6.5</td>
</tr>
<tr>
<td>2, Y2</td>
<td>A</td>
<td>8.5</td>
<td>8.5</td>
<td>6</td>
<td>4.5</td>
<td>2</td>
<td>7.5</td>
<td>9</td>
</tr>
<tr>
<td>3, Y2</td>
<td>A</td>
<td>7</td>
<td>7.5</td>
<td>4.5</td>
<td>6</td>
<td>3.5</td>
<td>8</td>
<td>8.5</td>
</tr>
<tr>
<td>4, Y2</td>
<td>B</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>4.5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>5, Y2</td>
<td>B</td>
<td>6.5</td>
<td>6.5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Average Y2</td>
<td></td>
<td>7.2</td>
<td>6.5</td>
<td>3.2</td>
<td>4.9</td>
<td>4.2</td>
<td>6.3</td>
<td>8.2</td>
</tr>
<tr>
<td>1, Y3</td>
<td>C</td>
<td>8.5</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>3.5</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>2, Y3</td>
<td>B</td>
<td>4.5</td>
<td>4</td>
<td>4.5</td>
<td>0.5</td>
<td>5</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>3, Y3</td>
<td>A</td>
<td>8.5</td>
<td>5.5</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5.5</td>
<td>4</td>
</tr>
<tr>
<td>4, Y3</td>
<td>A</td>
<td>5</td>
<td>6.5</td>
<td>3.5</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td>5, Y3</td>
<td>A</td>
<td>5</td>
<td>5.5</td>
<td>5</td>
<td>6.5</td>
<td>4</td>
<td>2</td>
<td>5.5</td>
</tr>
<tr>
<td>6, Y3</td>
<td>C</td>
<td>4.5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>7, Y3</td>
<td>C</td>
<td>6</td>
<td>6</td>
<td>5.5</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>8, Y3</td>
<td>B</td>
<td>4</td>
<td>3.5</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Average Y3</td>
<td></td>
<td>5.75</td>
<td>5.5</td>
<td>5.2</td>
<td>3.9</td>
<td>3.7</td>
<td>4.8</td>
<td>4.4</td>
</tr>
<tr>
<td>Total Average</td>
<td></td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3
The total SWL in hours per week, in years 2 and 3 during the examined mid-semester weeks.

<table>
<thead>
<tr>
<th>Student workload (h/wk.)</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Structured SWL</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>2) Unstructured SWL</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>Total SWL</td>
<td>63</td>
<td>58</td>
</tr>
</tbody>
</table>

*Based on results of the log diaries.

Another student interfered “But distraction in the dorm could be controlled, but not at home.”
Group studying was mainly for practical anatomy labs, and for meetings of the community-based research groups.

### 3.2. Log diaries analysis

Table 2 reveals that the calculated USWL from all log diaries (n=13) ranged from 4.0–6.0 (average 5.0) h per day during weekdays; 5.0–6.0 h per day during weekends; and the overall USWL per week ranged from 19.0–47.0 (average 36.0) h. For year two students (n=5), it ranged from 3.2–7.2 (average 5.2) h per day during weekdays; 6.3–8.2 (average 7.3) h per day during weekends; and the overall USWL per week ranged from 28.5–47.0 (average 40.5) h. For year three students (n=8), it ranged from 3.7–5.8 (average 4.8) h per day during weekdays; 4.4–4.8 (average 4.6) h per day during weekends; and the overall unstructured SWL per week ranged from 19.0–43.0 (average 33.3) h.

### 3.3. Calculating the total students workload and implementing ECTS

Table 3 displays the student workload per week in years two and three during the examined mid-semester week. The structured SWL/wk. was obtained from the course catalog timetables of the relevant weeks. The average USWL/wk. as identified by the findings from the focus group interviews was (33–35 h), and from log diaries (36 h); however, the results of the log diaries will be considered in our calculations. The total SWL/wk. was calculated by adding the structured and USWLs.

The total SWL in hours as measured in the whole 15-week semester in years two and three is displayed in Fig. 2. To meet the standards of ECTS guidelines, the comfortable total SWL should lie within 750–900 h/15-week semester. Dividing the total SWL by 28 will give the equivalent ECTS units which equate about 30 ECTS per semester. The current results revealed that the total SWL in the whole 15-week semester, based on the measured total SWL/week, was higher in year two (945 h) than that of year three (870 h). Therefore, the total SWL in year three lies within the reasonable standards of ECTS, while total SWL in year two exceeds its maximum limit. Based on that, the ECTS units allocated to the examined semesters were 34 and 31 ECTS per semester for years two and three respectively (Fig. 2).

### 4. Discussion

Measuring the quality of education is problematic. What to measure, how, by whom and when are a few of many questions which need to be answered, and are not stable across educational programs. The American credit hour system as a unit of measurement focuses more on teachers and structured activities offered by the program. It is difficult to apply in an integrated curriculum which uses PBL or other student-centered learning strategies.

Although, ECTS has in its genes the DNA of the American credit hour system, it better suits the modern moves towards student-centered learning. Credits provide little information on their own. They become more practical and useful when they are linked to both ‘learning outcomes' and ‘levels' of study that provide further information on the complexity and depth of learning. ECTS is not predominantly about the amount/volume of learning as expressed by credit points, but an important feature of ECTS are the learning outcomes required to be ultimately achieved and verified by assessment. By assigning ECTS, learning outcomes is essentially used to describe the content of program components, while in the American programs; the use of learning outcomes is not common. Instead, the components are generally described through curricula/teaching inputs such as the topics to be studied in a course. In the ECTS, the amount/volume of learning as measured by credit points includes all study time (workload) both in an out of a classroom or laboratory setting that is typically needed to reach the required learning outcomes. In the American credits, however, the amount of learning is measured only by the contact time in a classroom or laboratory. Moreover, using ECTS facilitates recognition of the different types of learning, e.g. informal, non-formal, distance learning, vocational education, life-long and training. It also enhances mobility of students and transferability of credits within and between institutions, national systems and internationally.

Programs which use ECTS, and are asked to equate these courses with credit bearing courses, they divide
ECTS unit by two ‘60 ECTS/year’ = 30 credit hours. This is too simplistic and ignores the rationale of the ECTS and the concept of total SWL’.

This study investigated students’ perception of student workload, factors influencing different students’ activities outside the classroom, and calculated the time spent on these activities. Using two methods of data collection focus group and log-diary increased the credibility of measurements and the generated data.

The information obtained from the focus group interviews and log diaries revealed a broad variations of students’ habits and ways of studying. Furthermore, different modes of independent learning behaviors, regarding preferred venues, timings and means of studying. Students described many factors with affects their perception of workload, e.g. personal and social life issues, interest in the subject, learning style, and the difficulty of the content material. These opinions are congruent with the findings of Kember, who stated that student perception of workload is not correlated with the actual workload in terms of hours. The study identified interacting intrinsic and extrinsic, academic and environmental factors which could shape their perception of workload.

The current study has been implemented in the mid-term weeks of a system module in the pre-clerkship phase of the curriculum. It did not measure the amount of SWL which is related to assessment. Students indicated that studying in groups is preferred when they need to fill the gaps in their knowledge and when they need motivation, especially in subjects which seem not interesting for them. They also stated that study groups stimulate peer discussions, answering questions and solving problems. Moreover, studying in groups enhanced knowledge retention, and was useful for revisions and practicing questions before exams. One of students mentioned that:

“About 90% of my study is within group; it is the only way to retain what I studied for long-term memorization, provided having competitive serious group.”

Other students believed that studying in an isolated environment is necessary for better concentration, and that study groups might waste their time if not properly organized or controlled, or including members with dissimilar learning goals. Collaborative teamwork and collegial relationship are essential practices in PBL environment. The interviewed students confirmed that teamwork is invaluable for completing their course assignments when the task responsibilities needed to be divided.

The results analyzed from the log diaries verified almost all the results collected from the focus group interviews regarding the preferred venues, timings and other behaviors of studying. The unstructured SWL generated from the log diaries was about 36 h/wk.; which verifies what was distilled from the focus group interviews, e.g. 33–35 h/wk.

The results of the present work revealed that, the total SWL in years two and three of an integrated, modular curriculum in the pre-clerkship phase, having PBL as a main learning strategy was 945 and 870 h per 15-week semester, respectively. It is evident that the total SWL of year two exceeds the maximum limit recommended by ECTS standard guidelines. According to ECTS guidelines, 60 ECTS are required for a full 30-week academic year; which equates about two ECTS per week. Considering one ECTS equals 20–30 h of total SWL, the recommended reasonable total SWL/wk. should lie between 50–60 h/wk. The current study showed that the calculated total SWL in year two was 63 h/wk. The heavy workload in year two might be attributed to the complex content of cardiovascular module and the overwhelming assignments of community-based research in comparison to year three. Students overload could be rectified by improving the teaching style and by making the in-class interventions more guiding, engaging and motivating. Dahlin et al. recommended reducing the course content especially in early stages of implementing the PBL program.

The study has some limitations, e.g. the small sample of the included students, the short period of study ‘two weeks’, excluding students’ activities during examination periods, and limiting the study to the pre-clerkship phase of the curriculum. Several questions need to be answered. How students learning behaviors change during examinations time? What is the total SWL in the clerkship phase of the curriculum? And how students learn? How to measure faculty teaching load while using the ECTS as a metric in the pre-clerkship and clerkship phases of a medical program? The study supports using the ECTS system as a metric for an integrated, non-credit bearing program in which students-centered learning is the prevailing learning method. The quality of educational program cannot be quantified by a credit hour system which was developed at the end of the 19th century. There is a need to revisit the metric of measurements not only in medical programs but also in higher education in general.

Disclosure

- Ethical approval: Ethical approval has been granted by the Ethics and Research Committee, College of Medicine, University of Shrajah, UAE for research
involving human subjects (23 September 2014, reference number is DFCM/23/09/14/094).

- Funding: None.
- There is no conflict of interests.

Acknowledgments

The authors are thankful to the students of years 2 and 3 who attended and actively participated in the interviews; and for their keenness to complete the log diaries.

Appendix A

Focus Group Interview Key Questions:
1. What does student workload mean to you?
2. Can you describe what affects your understanding of student workload?
3. What are your favorite places for studying?
4. What are your favorite timings for studying?
5. When and why you may prefer to study on your own or in small group?
6. What is your experience with e-learning?
7. What is your average time of studying/day in both weekdays and weekends?

Appendix B

Log Diary Form
Medical Students Workload, Part II: “Unstructured Learning Activities”
Student’s Name: (Type)
Academic Year: (Type)
Unit/module: (Type)
Semester: (Type)

This example shows how to fill the required tables. You may types whatever activity or location according to your real experience. Examples shown here are not obligatory, just examples……

EXAMPLE:

Tuesday xxxxx

<table>
<thead>
<tr>
<th>Description of learning activity (examples)</th>
<th>Location</th>
<th>Self or group learning (two or more)</th>
<th>Time (in hours)</th>
</tr>
</thead>
</table>

References

27. Woods DR. Problem-Based Learning: how to gain the most from PBL. Waterdown; 1994.
33. Karjalainen A, Alha K, Jutila S. Give me time to think: determining student workload in higher education; has been written as part of the project titled “Five years, two degrees”, funded by the Ministry of Education, 2004–2006. Finland: Oulu University Press; 2006.

Emad Nosair is an Assistant Professor of Anatomical Sciences at the Department of Basic Medical Sciences, College of Medicine, University of Sharjah, UAE. Hossam Hamdy is the Chancellor of Gulf Medical University and Professor of Surgery and Medical Education, Ajman, UAE.