



Class-time utilization in business schools in Tunisia



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ABSTRACT

Tunisian Universities, like many other universities in the developing countries, do not adopt any textbooks and rather rely on classrooms as the main learning resource for the students. This study is concerned with observing what is going on inside the classrooms of five business schools. The collected data, relating to 75 randomly selected classes, show that the instructors are utilizing on average less than 55% of the time of the lecture for teaching purposes. From their side, the students recorded an attendance rate lower than 34%. The rate drops to 20% when excluding the students engaged in extraneous activities. These incredible figures raise serious questions about the academic learning of the students.

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1. Introduction

Economists have always highlighted the vital role of education in boosting economic growth and development. According to the [World Bank \(2000\)](#), education can be considered, thanks to its crucial impact, the most important investment when it comes to human resources. [Peck and McGuiness \(2003\)](#) assert that education and knowledge have been the foremost incentive and foundation for successful economic development in most developed countries. [Akkari \(2004\)](#) endorses that investment in knowledge is a critical factor in economic expansion as education is a primary component in any development strategy. [Abdessalem \(2011\)](#) states that the role of education does not simply consist in providing skills for economic growth but also in offering a powerful tool for social development as it can help bridge social gaps and ameliorate health and living standards. [McGrath \(2013\)](#) affirms a humanistic and holistic vision of education as essential to personal and socioeconomic development. [Sayed and Ahmed \(2015\)](#) establish that all the reports and public discussions agree that education should be core to any future development framework and that education quality is central to education change and transformation.

Higher education institutions particularly play the major role of acquiring and transmitting knowledge. In such countries as the United States and Germany the university and the industry work together to achieve sustainable development through the transfer of technology and the promotion of talents and ideas ([German Center for Research and Innovation, 2012](#)). [Zhou and Vaccaro \(2010\)](#) point out that successful economic development relies heavily on a vibrant and progressive system of higher education. Higher education is indispensable for development; it is the foundation upholding much of the economic and social well-being, and it is a vital tool for enhancing economic productivity and ensuring social cohesion ([World Bank, 2000](#)). Statistical evidence from many developed countries confirms that education in general and higher education in particular contribute to the corroboration and sustainability of development ([Issa and Siddiek, 2012](#)). Higher education and scholarly research play a leading role in enhancing comprehensive development and rapid growth that are necessary for all nations dealing with the effect of globalization ([Benavot and Gad, 2004](#)). Higher education may be considered an empowerment tool when it comes to participation in the global economy, promoting innovation, bolstering social mobility, and creating democratic and innovative leadership and citizenry ([World Bank, 2011](#)).

Tunisia, a North African country with a population of eleven million people ([Countries of the World, 2015](#)), is probably one of the few developing countries that grasped the lesson about the importance of education. Indeed, it has given top priority to education since its independence from France in 1956. It has been

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spending around 20% of its state budget and 7% of its gross domestic product in education (OIT, 2013; MHESR, 2013). All levels of education (including higher education) are free and guaranteed for all students. School enrollment rate for children aged between 6 and 16 years has reached 93.4% in 2012 (OIT, 2013). Tunisia was considered at some point in time one of the success stories as its education performance index (combining net enrollment rate, gender equity and school completion rate) ranked 20 places above its income ranking (Akkari, 2004). Quality has been a major concern in the Tunisian educational system; in order to qualify for University, students are required to spend at least thirteen years in elementary, middle and secondary schools (which represents at least one year more than most countries in the world), in addition to passing a national exam, called baccalaureate, where the pass rate rarely exceeds 60% (OIT, 2013).

The Tunisian educational system heavily depends on the French scheme. The Arabization effort incorporated in the 1970s has decreased the use of the French language in the elementary and middle levels (the first nine grades) but not in the secondary and higher education levels. The language was not a constraint for the Ministry of Education in producing a full range of textbooks covering all course subjects for pre-university students. However, it was impossible for the Ministry of Higher Education to do the same considering the large number of the courses, their varieties and the rapid change of their contents from year to year (especially in such fields as computer science, engineering and business). University students in Tunisia have to rely on handouts and class-notes rather than on textbooks; and instructors have to prepare from scratch their course materials (texts, slides, homework, exams ...). In such a system, where the listening during the lectures overweighs the reading at home, the learning gained by the students highly depends on the effectiveness of both the teacher and the students in utilizing the time of the lecture.

Like almost every other country in the region, most universities and higher education institutions in Tunisia are state institutions, funded and financed quasi totally by the government (Kazem, 1992). In trying to maximize the learning of the students, the Ministry of Higher Education allocated a large number of classroom hours for most of the programs offered by the Tunisian Universities. For example, the students majoring in the business administration field are typically required to attend more than 30 classroom hours per week. This study aims at investigating the extent to which the classrooms are playing their assumed role in the discipline of business administration, which represents one of the most important disciplines counting for about 15% of the total number of students (MHESR, 2013, 2014).

The paper is organized in five sections. The next section provides a review of the related literature. The third section, which describes the methodology, shows how we used a direct observation approach to provide a snapshot of the proceedings of the classes in five business schools and record what is going on inside their closed classrooms. The results are presented and discussed in the fourth section. The last section concludes the paper with some recommendations for further research.

2. Related literature

There is abundant literature on time utilization analysis. Much of it is related to health care applications. Ben-Ayed and Al-Abbasi (2002) studied the time utilization of outpatient department in a Saudi public hospital. Westbrook et al. (2011) investigated the time that nurses spend with patients, in individual tasks and with other health care providers. Webster et al. (2011) estimated the time needed by the nursing staff to manage the unoccupied beds in a hospital. Talati et al. (2015) analyzed the time utilization and

cancellations of scheduled cases in the operation theater complex of a tertiary care teaching institute.

Some other works are concerned with social and work perspectives. Peters and Haldeman (1987) studied the time spent by school-age children for household work in single-parent, two-parent-one-earner and two-parent-two-earner families. Tschan et al. (2004) investigated the time spent by professionals in private social interactions at work versus the time they spend in their task-related interactions.

The analysis of time utilization in education has been the subject of a number of researches. Sanford and Evertson (1983) observed how class time is used in junior high classes and studied the relationship between class-time use and student achievement, behavior and attitude. Hollowood et al. (1995) looked into the use of time in an inclusive school serving students with mild to profound disabilities. Nonis et al. (2006) explored what business and marketing students are doing with their time; their examination was not limited to study and work but also included other activities such as entertainment. Horng et al. (2009) highlighted the relationship between the time principals spend on different types of activities and school outcomes. Vannest and Hagan-Burke (2010) studied how special education teachers distribute their time across such activities as academic instruction, non-academic instruction, assessment and support. Cook et al. (2015) observed five teachers in grades 3 to 6 in the pilot year of the Indiana Science Initiative program intended to reform science education.

The examination of the relationship between time and student outcomes became a subject of interest by several studies as time is the scarce resource in schools, and the organization of time may well be the most important variable in academic achievement (Aronson et al., 1998). Time in education can be called *educational time* or *teaching time*; the two terms are synonyms. Many researchers found that there is a strong relationship between the time spent in education and the student learning (Borg, 1980; Cotton, 1989; Karweit, 1985; Fisher et al., 1981). Time is by far one of the most prominent requisites for achievement, and its correlation with learning has been consistently proven in educational research (Gettinger, 1995).

Educational time often refers to allocated time, engaged time or academic learning time (Brown and Saks, 1986; Borg, 1980; Cotton, 1989; Fisher et al., 1981; Fredrick and Walberg, 1980). As per Cotton (1989), *allocated time* is the amount of time assigned for an activity or event; more specifically it refers to: (i) school time (the amount of time spent in school), (ii) classroom time (the amount of time spent in classrooms not counting lunch, recess, time spent changing classes, etc.), or (iii) instructional time (the classroom time used in teaching students a specific type of knowledge, concepts, and skills related to school subjects, excluding routine procedural measures, transitions, and discipline). *Engaged time* is the total amount of time actually spent in learning activities (Fisher et al., 1981). Carroll (1963) found that engaged time is an important component of the time-learning relationship. It has more effect on learning than does allocated time because it addresses the importance of student-teacher and student-curriculum interaction, which are both important factors in improving learning (Karweit and Salvin, 1981). *Academic learning time* is the amount of time students spend on actual tasks involving novice data, i.e. the period during which a targeted concept correlates with a student's motivation to learn and results in actual learning (Aronson et al., 1998). To improve the learning for students some studies look into extending the allocated time, while others focus on engaged time or academic learning time (Aronson et al., 1998). Several researchers including Marvin and Stuck (1982); Noonan (2007) have determined that: (i) There is a small positive relationship between the amount of allocated time

and student achievement. (ii) There is a positive relationship between engaged time and student achievement. (iii) There is a strong positive relationship between academic learning time and student achievement.

The distinction between time-quantity and time-quality is an issue that has been singled out by a number of studies in the area of education systems in developing countries. Reimers (1993), who conducted a study in Pakistan, found that unlike instructional time, the effective use of time was a more accurate predictor of student achievement. Research works based on the Philippines (Tan et al., 1997) and Ethiopia (Verwimp, 1999) also concluded that the quality of classroom time, especially when accompanied by more student-oriented teacher behavior, had a significant impact on learning processes and resulted in higher achievement levels. Armitage et al. (2008) examined the influence of active learning methods and found that instructional time significantly affects student performance.

Lockheed and Verspoor (1991) raised the issues concerning the variance between the official, intended instructional time and the actual patterns of time implementation in local schools and classrooms, as well as the factors affecting this variance, in developing countries. Abadzi (2007) reports that in Ghana, where implementation of the official curriculum is mandatory, a large number of school teachers in the rural areas do not follow the assigned weekly timetable distribution. Dia (2003) reports that in countries including Gambia and Burkina Faso textbooks are often hard to find, and much of the class time may be used writing out lessons and problems on the board; in Burkina-Faso, a minimum of 16% of the official allocated time is used for in-class examinations, breaks, and writing lessons and problems on the board due to the scarcity of textbooks. UNESCO reports suggest that teachers with poor training may not possess enough knowledge to determine which activities result in efficient time use or why this concept matters altogether (Attar, 2001; Njie, 2001).

Abadzi (2007), who assessed instructional time loss in pre-college schools for four countries, namely Ghana, Morocco, Tunisia, and the Brazilian state of Pernambuco, conveys that Tunisia has the most efficient time use with students who are engaged in learning about 78% of the allotted time. In Ghana, however, students were engaged for only 39% of the time, in Pernambuco 63% of the time, and in Morocco 71% of the learning time. Once computed into the number of days that are effectively available for learning, the losses were huge. For example, out of the 197 days officially available to Ghanaian students only 76.3 days were devoted to learning tasks, whereas 148.1 of the 190 days officially available were devoted to learning tasks for Tunisian students. In effect, Tunisian students get twice as much of the intended classroom time as Ghanaian students.

The good performance of Tunisia in pre-college education does not seem to extend to the higher education level. Koubâa et al. (2010), who evaluated the existing leadership practices in 19 Tunisian higher education institutions (representing 10% of the total number of Tunisian higher education institutions, hosting 12% of the Tunisian students, and enclosing 85% of the higher education disciplines offered in Tunisia), concluded that 94% of the higher education leaders in Tunisia lack the resolve to get involved in setting the mission statements of their institutions, fail to review their process management system and to maintain strong partnerships. In addition, they are unable to communicate with stakeholders or even recognize them. The study also reveals that 89% of those leaders are not familiar with such concepts as mission and vision. Belhaj et al. (2013), who conducted a study on the teaching process in Tunisian business schools, revealed several weaknesses including the existence of useless courses, duplication of concepts in more than one course, problems in the examination system, lack of student motivation, deficiency in collaboration

among the teaching process stakeholders, and absence of performance measurement.

3. Methodology

Resource utilization is the total time spent on value-added activities in a given process divided by the total available time. In this research, class-time utilization is defined as the proportion of allocated classroom time spent on instructional activities. The research uses the observation method to measure class-time utilization in five Tunisian business schools. This section includes a description of the methodology used. Attention is focused on the target population, the sample and the data collection method.

3.1. Target population

This study focuses on investigating the utilization of time at the business schools located in the second largest city in Tunisia, namely Sfax. The Province of Sfax is eventually the leading province in education in the country; it usually has the highest pass rate and the highest number of laureates in the national high-school-diploma exam (African Manager, 2014 and La Presse, 2013). Sfax hosts five business schools: (i) the College of Economics and Management, (ii) the Higher Institute of Industrial Management, (iii) the Institute of Higher Studies in Commerce, (iv) the Higher Institute of Business Administration, and (v) the Higher School of Commerce. We refer to these schools as BS1, BS2, BS3, BS4, and BS5, respectively.

The study is limited to the city of Sfax because it is sponsored by the University of Sfax. Nevertheless, there are good reasons to believe that the results are extendable to the rest of Tunisia. The first reason is the large number of business schools (5 out of 19; i.e. 26.3%) and the large number of business students (8928 out of 37,336; i.e. 23.9%) in the city of Sfax as compared to the entire country (University of Sfax, 2015). The second reason is that all the business schools throughout Tunisia are run by the Ministry of Higher Education; in addition to a number of varying tasks, the Ministry assumes the responsibility of the recruitment, promotion and remuneration of faculty members and administrative staff, the admission of students, the institution of universities and colleges, the assignment of academic degrees to colleges, the design of curricula and even the detailed course descriptions. The third reason is the analysis of variance that will be presented in Subsection 4.3; if the behavior of the teachers and the students does not vary from one school to another within the city of Sfax (despite the variation in the quality of students among these schools), it is likely that similar behavior will be experienced in the other business schools of the country.

All business schools in Tunisia have two types of classes: lectures and discussions. The lectures are usually large classes often meeting in amphitheatres where students are expected to listen and take notes without much interaction with the teacher. The discussions, however, are small classes usually meeting in small classrooms where students are expected to ask questions and be involved in such activities as project presentations, case discussions and problem solving. Each class meeting whether lecture or discussion and whether occurring once, twice, or three times a week, represents an individual of our target population; e.g. assuming 12 teaching weeks per semester, a course taught 3 times a week represents 36 individuals (3 times 12) in the target population of the semester while a course taught once a week represents only 12 individuals. The data collected from the five schools show that there are more than 25,000 class meetings per semester for the five of them. It is worth mentioning that the study was limited to the undergraduate level.

3.2. Sample

As it was impossible to observe all the class meetings at the five business schools we had to rely on sampling. Each observation in the sample covers a class in one of the rooms of one of the business schools at one of the time slots (a time slot is the time at which a class can be scheduled) on one of the teaching days in one of the teaching weeks in one of the semesters. All the observations were carried out during the same semester. However for the sample to be as representative as possible the observations were spread over all the teaching days of the week and all the teaching weeks of the semester; this is because the interest of the students in the class varies from a weekday to another and from one week to another. As shown in Table 1, the business schools teach all the days of the week except Sunday (all day), Saturday afternoon, and Wednesday afternoon. Each of the 4 full days includes 6 possible time slots while each of the 2 half-days includes only 3 slots; i.e. during every single week each room in each school can be utilized for 30 different class meetings (which corresponds to 45 h since each meeting lasts 1.5 h).

It was initially decided to have twelve observation days equally distributed among the six teaching days (each teaching day being observed twice) with a single school being visited on each observation day for all the time slots of that day (which means that the number of observations is three on Wednesdays and Saturday and six on the other teaching days). Since the number of time slots is thirty for the six teaching days, the initial number of observations was sixty. As shown in the first four columns of Table 2, the sixty observations were distributed among the business schools proportionally to their sizes, with the requirement that each number be a multiple of 3, (which is the minimum number of observations per day). For example, the number of observations for BS1 is supposed to be $60 \times 44\% = 26.4$, which is rounded to 27 to be a multiple of 3. However, to avoid single-day visits to BS4 and BS5 it was decided to increase the number of visits by 3 for all schools ending up with a total of 75 observations (see the last column of Table 2).

The increase of the number of observations to 75 required increasing the number of visit days to fifteen instead of twelve, thereby increasing the number of visit days to two instead of one for three teaching weeks; the three additional days were decided to be one at the beginning of the week (Monday or Tuesday), one in the middle of the week (Wednesday or Thursday) and one at the end of the week (chosen in such a way to have exactly two full days and one half day). The days selected randomly turned out to be Monday (beginning of the week); Wednesday (half day in the middle of the week) and Friday (full day at the end of the week) and the three weeks that were selected to be visited twice turned out to be the 6th, 9th and 12th weeks. Table 3 shows the distribution of the 75 observations among the five business schools, the six teaching days and the twelve teaching weeks. The visits to BS1 were performed every other week with the weekday of each visit being the following weekday of the previous one (e.g. if the observation day for this week is Wednesday it will be Thursday for the next visit taking place in two weeks). The days and the weeks of the visits assigned to the other schools were selected randomly from the days and weeks not yet assigned.

Table 1
Time slots and teaching hours in the business schools.

Teaching day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
Time slots	6	6	3	6	6	3	30
Teaching hours	9	9	4.5	9	9	4.5	45

Table 2
The distribution of the observations among the five business schools.

Business school	Number of students	Percentage of students (%)	Distribution of the 60 observations	Distribution of the 75 observations
BS1	5,625	44	27 (40%)	30 (40%)
BS2	2,629	21	12 (20%)	15 (20%)
BS3	1,854	15	9 (15%)	12 (16%)
BS4	1,343	11	6 (10%)	9 (12%)
BS5	1,316	9	6 (10%)	9 (12%)
Total	12,758	100	60 (100%)	75 (100%)

Table 3
Sample of visit days.

Week	Day	Business school	Time slots
1	Monday	BS1	6
2	Tuesday	BS3	6
3	Wednesday	BS1	3
4	Thursday	BS2	6
5	Friday	BS1	6
6	Wednesday	BS2	3
	Saturday	BS5	3
7	Monday	BS4	6
8	Tuesday	BS1	6
9	Monday	BS2	6
	Wednesday	BS4	3
10	Thursday	BS1	6
11	Friday	BS5	6
12	Friday	BS3	6
	Saturday	BS1	3
Total			75

The last step in the selection of the sample was the selection of the classroom of the observation. The classes to be visited have been selected randomly from all the classes of the business school. The probability to select the class is equal to the number of students registered in this class divided by the total number of students registered in all the classes in the school taking place at the same time slot. We calculate for each room the relative and cumulative frequencies and then we withdraw a random number (between 0 and 1); the selected room is the one whose cumulative frequency is equal to or immediately higher than the withdrawn random number. This means that if there are only two classrooms, the one with the higher number of students is the more likely to be selected; but if half of the students are in one large classroom and the other half are distributed in several small classrooms, the probability of selecting the large classroom is equal to that of selecting one of the small classrooms. Table 4 provides all the classes at BS1 during the first time slot (8:00 to 9:30) of the first day of the week (Monday). The total number of students registered in all the classes in this case is 851; the probability to withdraw the tenth room (number 33) is equal to $84/851 = 0.0987074$. This room is selected whenever the random number belongs to the interval [0.360752; 0.4594595], with 0.360752 and 0.4594595 being the cumulative frequencies of the two rooms 31 and 33, respectively; this applies when the selected number is 0.4 for example. If the withdrawn random number is 0.99 the selected room is A4.

Table 4
Selection of the room in BS1 for the first time slot on monday.

Room	Number of students	Relative frequency	Cumulative frequency	Room	Number of students	Relative frequency	Cumulative frequency
12	64	0.07520564	0.07520564	36	91	0.106933	0.6333725
13	13	0.01527615	0.09048179	42	21	0.02467685	0.6580493
14	36	0.04230317	0.132785	46	21	0.02467685	0.6827262
16	19	0.02232667	0.1551116	49	24	0.02820211	0.7109283
17	22	0.02585194	0.1809636	50	21	0.02467685	0.7356052
18	22	0.02585194	0.2068155	60	18	0.02115159	0.7567568
19	19	0.02232667	0.2291422	7	20	0.02350176	0.7802585
20	25	0.0293772	0.2585194	8	11	0.01292597	0.7931845
31	87	0.1022327	0.360752	A2	101	0.1186839	0.9118685
33	84	0.0987074	0.4594595	A4	75	0.08813161	1
35	57	0.06698003	0.5264395				

3.3. Data collection

Primary data are usually collected using either communication (questioning respondents) or observation (observing them). While the communication methods are more versatile, quicker and less costly, the observation methods are more objective and more accurate (Churchill, 1991). Observation methods are commonly used in behavioral and social sciences (in addition to health applications). All the works on time utilization (first three paragraphs of the Related Literature section) are based on observation.

Greener and Martelli (2015) distinguish between two types of observation research methods: the overt method (where the observed individuals know that they are being observed) and the covert method (where the observed individuals don't know that they are being observed). They also distinguish between the different roles that can be played by the participant observer; such roles vary from complete participant to complete observer. Churchill (1991) adds another categorization of data collection methods, namely the direct (human) methods versus the indirect (mechanical) ones. In this study, we use direct, covert observation with the role of the observer being focused primarily on the observation at the detriment of the participation; the observer enters anonymously the classroom as a passive student, who avoids any type of interaction with the instructor or the other students.

The aim of classroom observation is to measure the proportion of the class time spent by the teacher and the students in instructional activities. The involvement of the teacher is measured by one of the following four statuses: (i) The teacher is involved and is involving students, i.e. the teacher is interacting with students through such activities as presenting notions, explaining concepts, asking students questions and answering their questions. (ii) The teacher is engaged in instructional activities but his teaching methods are distracting to students; examples include reading for students, dictating for them and presenting concepts that don't make much sense to them. (iii) The students are working on their own while the teacher is engaged in non-instructional activities; this can be the case when the teacher lets the students in a discussion class present their work (problem solving, case analysis, or group project) without being significant involved, or when he/she assigns, during the lecture class, a case or a problem and leaves the students work on it on their own for some time while he/she is performing personal activities unrelated to the lecture. (iv) The teacher and the students are all engaged in non-instructional activities (such as a conversation about a social or a sports event). We assumed that the level of class-time utilization is 100% at the first status, 67% at the second status, 33% at the third status and 0% at the fourth status.

The utilization of the classroom time for the students is measured by their attendance; when a lecture is scheduled for 100 students while only 60 students attend it, the students in this case are wasting 40% of the time assigned to them. However, even if a student is physically present there is no guarantee that he/she is taking advantage of the class unless he/she is mentally present. Physical presence is a necessary condition for a student to utilize the time of the lecture but it is not a sufficient one; in addition to being physically present the student has to be engaged in the instructional activities conducted during the class. In this study we assumed that a student is mentally present as long as he/she is not clearly engaged in a non-instructional activity (socializing, being busy with the cell phone, doing the homework of a different course ...).

In this study, the observer, who is one of the researchers, goes to the selected room a few minutes before the start of the class and continuously collects during the 90 min of the class the following three types of data: (i) the teaching status (as explained above), (ii) the number of students who are physically present, and (iii) the number of students who are mentally present. Fig. 1 shows the tool that was used to collect each of the three types of data. The data are updated on average every 5 min or when there is a change in the status of the class (including a new arrival, a new departure, a change in the teaching status, and a change in the number of students distracted). The figure provides an example that illustrates the collection of the three types of data for a 42 student class (Room 13 in BS1).

The upper part of the figure illustrates the following teacher-related events (with each cell corresponding to 5 min): (i) the teacher wasted the first 25 min (shown in the first 5 cells) as she came 15 min late (status 4) and she spent the following 10 min socializing with students (status 4), (ii) she spent the following 30 min dictating some concepts (status 2), (iii) she spent the following 20 min discussing with the students the concepts she has dictated (status 1), and (iv) she left 15 min before time (status 4). The middle part of the figure illustrates the following student-related events: (i) Only two students were on time, (ii) During the first 40 min 3 new students showed up every 5 min, (iii) All students left when the instructor announced the end of the class (15 min before time), and (iv) two students left 5 min before the teacher. The bottom part of the figure illustrates the mental presence of the students: (i) All the students were mentally absent during the first 25 and the last 15 min as the teacher was not involved in any instructional activities, (ii) Three students, who came 40 min late, were continuously socializing with each other and never paid attention to the teacher; those students left only at the end of the lecture, (iii) All the other students were paying attention to the teacher.

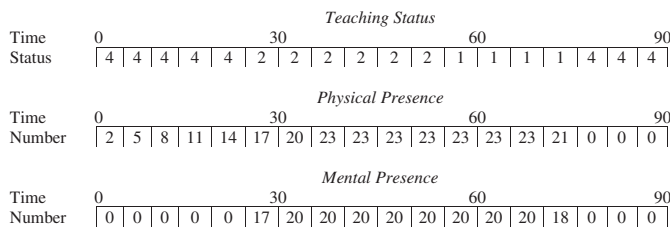


Fig. 1. Example of data collection for Room 13 in BS1 (42 students).

Hammer et al. (2009) ascertain that observational studies are subject to possible sources of error that may bias their results; such sources include the nature and design of the study, the information bias, the measurement procedure and the human investigator (the method heavily relies on the ability of the researcher to observe and act). Cooper and Schindler (2014) also discuss several research limitations for the method; the ones that apply to our case are: (i) the corresponding high cost, (ii) the subjectivity of the prospective inferences made by the observer, and (iii) the ethical issues raised when concealing the true role of the observer.

Because of the high cost of the method it was not possible to assign more than one observer for this project, which may affect the accuracy of the data collected especially for the classes with a large number of students and/or frequent events. The second limitation applies especially to the measurement of the mentally absent students. To cope with these two limitations, the observer was given clear instructions to provide “best-case” values; if in doubt whether the number of students present is 40 or 44, she assumes 44; if in doubt whether a student is socializing or talking about what has been taught by the teacher, she assumes that he/she is talking about what has been taught by the teacher; if in doubt whether the student is doing homework of a different course or copying from his/her peer what was dictated, she assumes that he/she is copying from his/her peer what was dictated. Nevertheless, despite all our efforts to decrease type 1 error, we cannot claim that such an error never occurred.

The third limitation related to our study is its concealment aspect; we had to adopt the covert observation because the teacher and the students may behave differently when they know that they are being observed. However, this type of observation for this particular study means observing people not only without their approval but even without their knowledge. There was serious concern about the ethical and legal aspects of entering a classroom secretly to record what is going on inside. The problem was discussed with the President of the University who judged that the study is concerned with observing the process rather than the individuals, and therefore does not violate the privacy of the people observed; he kindly issued a formal approval for the observations. From their side, the researchers vowed not to disclose the names of the teachers and students observed for the sake of safeguarding their dignity and personal comfort. With such measures neither the observation nor the resulting report harmed the people observed. Not a single complaint was reported.

4. Results

The study was initially intended to find out the differences and the similarities in the utilization of teaching time among the five business schools in the city of Sfax. The results obtained went beyond the initial objective to raise serious concerns about the academic learning of these students in Sfax, in Tunisia and in other developing countries.

4.1. Notation

We use lower-case letters to denote given data (either assumed or provided) and we use capital letters to denote obtained data (either collected from the observation or calculated using the appropriate formulas):

n_j is the number of students registered in the j th business school; j varies from 1 to 5. These numbers are provided in the second column of Table 2.

n_{ij} is the number of students registered in the i th class observed in the j th business school; when $j = 1$ i varies from 1 to 30; when $j = 2$ i varies from 1 to 15, when $j = 3$ i varies from 1 to 12, and when $j = 4$ or 5 i varies from 1 to 9. These numbers are provided in the third row of Table 5; this column shows that the size of classes selected varies from very small to very large with an average of 53.8 students and a median of 44 students. Notice that the value of n_{ij} depends on the class randomly selected; therefore n_j is not necessarily equal to $\sum_i n_{ij}$.

u^k is the class-time utilization corresponding to the k th type of teaching involvement. As explained in Subsection 3.3 we assumed that $u^1 = 100\%$, $u^2 = 67\%$, $u^3 = 33\%$, and $u^4 = 0\%$.

T_{ij}^k is the proportion of time that the i th class observed in the j th business school spends in the k th type of teaching involvement; k varies from 1 to 4. Referring to the example shown in Fig. 1, $T_{ij}^1 = 20/90 = 22.22\%$; $T_{ij}^2 = 30/90 = 33.33\%$; $T_{ij}^3 = 0/90 = 0\%$; and $T_{ij}^4 = 40/90 = 44.44\%$.

P_{ij}^{1l} is the proportion of time that the i th class observed in the j th business school spends with l students physically present; l varies from 0 to n_{ij} . Referring to the same example in Fig. 1, $P_{ij}^{1,0} = 15/90 = 16.67\%$; $P_{ij}^{1,2} = P_{ij}^{1,5} = P_{ij}^{1,8} = P_{ij}^{1,11} = P_{ij}^{1,14} = P_{ij}^{1,17} = P_{ij}^{1,20} = P_{ij}^{1,21} = 5/90 = 5.56\%$; and $P_{ij}^{1,23} = 35/90 = 38.89\%$.

P_{ij}^{2l} is the proportion of time that the i th class observed in the j th business school spends with l students mentally and physically present; l varies from 0 to n_{ij} . Referring to the same example in Fig. 1, $P_{ij}^{2,0} = P_{ij}^{2,20} = 40/90 = 44.44\%$; and $P_{ij}^{2,17} = P_{ij}^{2,18} = 5/90 = 5.56\%$. Notice that P_{ij}^{2l} can never be higher than P_{ij}^{1l} .

4.2. Calculations

U_{ij}^T is the average teacher-time utilization in the i th class of the j th business school. U_{ij}^T is calculated as follows:

$$U_{ij}^T = \sum_{k=1,4} u^k T_{ij}^k.$$

Continuing with the same example illustrated by Fig. 1 (Room 13 in BS1) $U_{ij}^T = 100\% \times 22.22\% + 67\% \times 33.33\% + 33\% \times 0\% + 0\% \times 44.44\% = 44.44\%$. The values of U_{ij}^T for the visited rooms are shown in the fourth column of Table 5.

U_{ij}^{S1} is the average student-time utilization in the i th class of the j th business school based on physical presence. It is calculated as follows:

$$U_{ij}^{S1} = \sum_l \frac{l}{n_{ij}} P_{ij}^{1l}$$

For the same example illustrated in Fig. 1 (Room 13 in BS1), $U_{ij}^{S1} = 0/42 \times 16.67\% + 2 + 5 + 8 + 11 + 14 + 17 + 20 + 21/42 \times 5.56\% + 23/42 \times 38.89\% = 14.39/42 = 34.26\%$. The values of U_{ij}^{S1} are shown in the fifth column of Table 5.

Table 5
Class time-utilization.

<i>j</i>	<i>i</i>	<i>n_{ij}</i>	<i>U_{ij}^T</i> (%)	<i>U_{ij}^{S1}</i> (%)	<i>U_{ij}^{S2}</i> (%)	<i>j</i>	<i>i</i>	<i>n_{ij}</i>	<i>U_{ij}^T</i> (%)	<i>U_{ij}^{S1}</i> (%)	<i>U_{ij}^{S2}</i> (%)
1	1	12	83	69	33	2	9	47	56	26	13
1	2	20	65	58	32	2	10	47	0	0	0
1	3	23	46	86	26	2	11	54	57	31	15
1	4	15	56	74	28	2	12	13	46	78	46
1	5	25	72	56	30	2	13	54	63	40	19
1	6	84	63	38	29	2	14	84	52	32	15
1	7	16	59	69	40	2	15	144	57	17	8
1	8	46	63	8	4	3	1	123	72	20	20
1	9	16	46	68	38	3	2	21	72	56	33
1	10	30	46	73	56	3	3	55	83	38	22
1	11	34	46	32	20	3	4	123	61	9	7
1	12	21	56	71	50	3	5	81	46	11	8
1	13	42	44	34	26	3	6	81	56	13	14
1	14	23	80	73	53	3	7	26	57	56	36
1	15	17	69	66	51	3	8	23	59	65	17
1	16	54	0	0	0	3	9	31	56	38	10
1	17	46	72	22	13	3	10	30	61	31	28
1	18	24	59	37	19	3	11	24	46	62	34
1	19	28	0	0	0	3	12	75	0	0	0
1	20	27	61	58	29	4	1	54	35	31	18
1	21	11	0	0	0	4	2	18	0	0	0
1	22	96	62	30	15	4	3	19	56	72	25
1	23	27	59	53	44	4	4	72	0	0	0
1	24	73	69	34	22	4	5	20	57	54	40
1	25	97	0	0	0	4	6	16	63	56	36
1	26	48	59	60	40	4	7	54	76	64	54
1	27	75	59	40	29	4	8	92	70	48	22
1	28	50	63	46	1	4	9	131	72	37	22
1	29	19	59	19	12	5	1	132	70	41	31
1	30	87	56	13	9	5	2	136	0	0	0
2	1	12	63	55	31	5	3	121	54	40	24
2	2	20	67	36	15	5	4	121	35	21	10
2	3	23	56	34	18	5	5	155	44	22	15
2	4	15	52	36	10	5	6	127	0	0	0
2	5	25	59	25	14	5	7	159	61	10	6
2	6	84	81	67	52	5	8	9	72	86	8
2	7	16	52	70	24	5	9	27	67	61	37
2	8	46	54	113	19						

U_{ij}^{S2} is the average student-time utilization in the *i*th class of the *j*th business school based on mental presence. It is calculated as follows:

$$U_{ij}^{S2} = \sum_l \frac{l}{n_{ij}} p_{ij}^{2l}$$

For the same example (Room 13 in BS1), $U_{ij}^{S2} = (0 + 20)/42 \times 44.44\% + (17 + 18)/42 \times 5.56\% = 10.83/42 = 25.79\%$. The values of U_{ij}^{S2} are shown in the sixth column of Table 5.

U_j^T is the average teacher-time utilization in the *j*th business school. U_j^T is calculated as follows:

$$U_j^T = \frac{\sum_i n_{ij} U_{ij}^T}{\sum_i n_{ij}}$$

The values of U_j^T are shown in the third column of Table 6. The calculation for BS1, for example, is performed as:

$$U_1^T = \frac{12 \times 83\% + 20 \times 65\% + \dots + 87 \times 56\%}{12 + 20 + 23 + \dots + 19 + 87} = 50.79\%$$

U_j^{S1} is the average student-time utilization in the *j*th business school based on physical presence. U_j^{S1} is calculated as follows:

$$U_j^{S1} = \frac{\sum_i n_{ij} U_{ij}^{S1}}{\sum_i n_{ij}}$$

U_j^{S1} are shown in the fourth column of Table 6. The calculation for BS3, for example, is performed as:

$$U_3^{S1} = \frac{123 \times 20\% + 21 \times 56\% + \dots + 75 \times 0\%}{123 + 21 + 55 + \dots + 24 + 75} = 22.06\%$$

U_j^{S2} is the average student-time utilization in the *j*th business school based on mental presence. U_j^{S2} is calculated as follows:

$$U_j^{S2} = \frac{\sum_i n_{ij} U_{ij}^{S2}}{\sum_i n_{ij}}$$

U_j^{S2} are shown in the last column of Table 6. The calculation for BS5, for example, is performed as:

$$U_5^{S2} = \frac{132 \times 31\% + 136 \times 0\% + \dots + 27 \times 37\%}{123 + 21 + 55 + \dots + 24 + 75} = 12.72\%$$

U^T is the average teacher-time utilization in the five business schools. U^T is calculated as follows:

$$\begin{aligned}
 U^T &= \frac{\sum_{j=1,5} n_j U_j^T}{\sum_{j=1,5} n_j} \\
 &= \frac{5625 \times 50.79\% + 2629 \times 34.34\% + 1854 \times 55.23\% + 1343 \times 52.83\% + 1316 \times 39.61\%}{5625 + 2629 + 1854 + 1343 + 1316} \\
 &= 51.23\%
 \end{aligned}$$

Table 6
Overall time-utilization rates.

Business School	Number of students	Time-utilization of		
		Teachers (%)	Students based on	
			Physical presence (%)	Mental presence (%)
BS1	$n_1 = 5625$	$U_1^T = 50.79$	$U_1^{S1} = 34.70$	$U_1^{S2} = 20.74$
BS2	$n_2 = 2629$	$U_2^T = 54.34$	$U_2^{S1} = 32.26$	$U_2^{S2} = 15.52$
BS3	$n_3 = 1854$	$U_3^T = 55.23$	$U_3^{S1} = 22.06$	$U_3^{S2} = 14.72$
BS4	$n_4 = 1343$	$U_4^T = 52.83$	$U_4^{S1} = 37.32$	$U_4^{S2} = 22.43$
BS5	$n_5 = 1316$	$U_5^T = 39.61$	$U_5^{S1} = 20.54$	$U_5^{S2} = 12.72$
Overall	$\sum_{j=1,5} n_j = 12, 758$	$U^T = 51.23$	$U^{S1} = 31.18$	$U^{S2} = 18.14$

U^{S1} is the average student-time utilization in the five business schools based on physical presence. U^{S1} is calculated as follows:

$$\begin{aligned}
 U^{S1} &= \frac{\sum_{j=1,5} n_j U_j^{S1}}{\sum_{j=1,5} n_j} \\
 &= \frac{5625 \times 34.70\% + 2629 \times 32.26\% + 1854 \times 22.06\% + 1343 \times 37.32\% + 1316 \times 20.54\%}{5625 + 2629 + 1854 + 1343 + 1316} \\
 &= 31.18\%
 \end{aligned}$$

U^{S2} is the average student-time utilization in the five business schools based on mental presence. U^{S1} is calculated as follows:

$$\begin{aligned}
 U^{S2} &= \frac{\sum_{j=1,5} n_j U_j^{S2}}{\sum_{j=1,5} n_j} \\
 &= \frac{5625 \times 20.74\% + 2629 \times 15.52\% + 1854 \times 14.72\% + 1343 \times 22.43\% + 1316 \times 12.72\%}{5625 + 2629 + 1854 + 1343 + 1316} \\
 &= 18.14\%
 \end{aligned}$$

Table 5 shows that out of the 75 classes observed 10 were cancelled (namely the observations 16, 19, 21 and 25 for BS1; 10 for BS2; 12 for BS3; 2 and 4 for BS4; and 2 and 6 for BS6); class cancellation is due to either teacher absence or students' strike. The table assigns a value of zero to U_{ij}^T , U_{ij}^{S1} , and U_{ij}^{S2} for such classes. However, if we assume a 50% chance that a cancelled class is recompensed by a makeup lecture we obtain the revised class-time utilization rates shown in Table 7. These rates were calculated in two phases; in the first phase we just recalculate the class-time utilization rates after excluding the cancelled classes, and in the second phase we take the average of the obtained rates and those of Table 6. Even with such a relaxing assumption, the teacher-time utilization is around 55%, the student-time utilization based on physical presence is less than 34% and the student-time utilization based on physical and mental presence is less than 20%.

Table 7
Overall time-utilization rates with a 50% probability of makeups for cancelled classes.

Business school	Number of students	Time-utilization of		
		Teachers (%)	Students based on	
			Physical presence (%)	Mental presence (%)
BS1	$n_1 = 5,625$	$U_1^T = 55.63$	$U_1^{S1} = 38.01$	$U_1^{S2} = 22.71$
BS2	$n_2 = 2,629$	$U_2^T = 56.31$	$U_2^{S1} = 33.43$	$U_2^{S2} = 16.09$
BS3	$n_3 = 1,854$	$U_3^T = 58.58$	$U_3^{S1} = 23.40$	$U_3^{S2} = 15.61$
BS4	$n_4 = 1,343$	$U_4^T = 58.99$	$U_4^{S1} = 41.68$	$U_4^{S2} = 25.05$
BS5	$n_5 = 1,316$	$U_5^T = 46.81$	$U_5^{S1} = 24.27$	$U_5^{S2} = 15.03$
Overall	$\sum_{j=1,5} n_j = 12, 758$	$U^T = 55.64$	$U^{S1} = 33.92$	$U^{S2} = 19.77$

4.3. Discussion and analysis

An analysis of variance was conducted to compare the class-time utilization in the five business schools. It is worth mentioning that there is no official school ranking in Tunisia; higher-education institutions are ranked unofficially according to the scores of their admitted students in the national high-school-diploma exam (baccalaureate), i.e. the institutions that attract the best students are considered as the best ones. Among the five business schools in Sfax, BS5 is distinguished by the higher quality of its students and the higher demand for its graduates. Yet, as shown by Table 8, the large values of p (0.80 for teacher time utilization, 0.65 for student physical presence and 0.40 for student mental presence) show that there is no evidence to infer that the class-time utilization is different in any two schools (including BS5). A separate t -test was

Table 8
Analysis of variance of the time utilization for the five business schools.

Variation Between Groups	df	MS	F	P-value	F crit
Teacher-time utilization	4	0.022201	0.416678	0.79607	2.502656
Student physical presence	4	0.043266	0.619623	0.650003	2.502656
Student mental presence	4	0.024203	1.023092	0.40151	2.502656

Table 9
t-Test (two-sample) of the time utilization for lecture versus discussion classes.

	<i>t</i> Stat	$P(T \leq t)$ two-tail	<i>t</i> Critical two-tail
Teacher-time utilization	0.503724	0.615972	1.992997
Student physical presence	0.818744	0.415597	1.992997
Student mental presence	1.293132	0.200043	1.992997

conducted to compare the class-time utilization in lecture classes versus discussion classes. The results, exhibited in [Table 9](#), show that the *p*-values are around 0.6 for the teaching, 0.4 for the physical presence and 0.2 for the mental presence. Such values suggest that there is no evidence that class-time is utilized differently in the two types of classes. It appears that the teachers and the students are behaving the same way independently of the school and independently of the type of lecture. This makes perfect sense as the five business schools are all following the same teaching process, they are all having the same quality of teachers (actually many teachers are shared by at least two business schools) and they are all adopting the same curriculum content.

The figures in [Tables 6 and 7](#) show that the instructors are utilizing on average less than 55% of the time of the lecture for teaching purposes; the rest of the time is being spent in nonproductive activities in addition to untimely and irregular attendance. The low engagement of the teachers can be explained by several factors including job security (most of the faculty members in Tunisia are enjoying life job), the absence of any control on the teachers (nobody except the students knows what a teacher is doing in class), the absence of any teaching evaluation (the union allows neither students nor the administration to assess the teachers), the absence of any rewards related to teaching (low teaching performance has no effect on promotion nor on compensation), the low salaries offered for faculty members (even though such salaries are among the highest offered by the government, they remain among the lowest in the Middle East and North Africa region), and also the generated mediocrity (most junior faculty members are initially students from the same Tunisian business schools and often their knowledge does not exceed what they learned in those schools).

From their side, the students recorded an attendance rate of less than 34%. Moreover, around 42% of the attending students are engaged in extraneous activities in class, which makes the actual rate even less than 20%. [Moore et al. \(2008\)](#) report a strong positive correlation between class attendance and motivation; students with higher motivation attend more classes. This lack of motivation in our case can be best explained by the work of [Belhaj et al. \(2013\)](#), who conducted a survey on how the students in the Tunisian business schools perceive their learning experience. The study reveals that 80% of the students believe that the content of the courses is inappropriate, includes irrelevant material, and does not meet international standards; in addition, 94% are convinced that the courses are not being updated from year to year (not to mention the absence of such crucial resources as the textbook, the syllabus and even the course outline). The students

are not blaming only the teachers and the managers, but they are also blaming themselves; 53% of them think that the students are the most important cause of their own failure.

The evaluation is another important factor contributing to the demotivation of the students. Only 28% of the students believe that the exams reflect the concepts covered in class. As a result, the students are convinced that class attendance does not affect their pass. This is not only because the exams do not reflect the material covered in class, but also because they know there is a political decision made in the early nineties to increase the pass rate regardless of the quality. According to [MHESR \(2009\)](#), the average of success in the business schools at the University of Sfax is around 86%. The student unions, who considered the easy pass as a gain, are now inhibiting any effort to relate the pass to performance.

Another important reason for student absenteeism in Tunisian business schools is the high unemployment rate among the graduates. According to the National Institute of Statistics in Tunisia ([INS, 2013](#)), the unemployment rate of higher education graduates has reached 31.5% in 2012. Although there are no disaggregate figures for the different higher education specialties, it is widely believed that the unemployment rate is the highest for business graduates. Only 20% of the participants in the survey think that their specialty of study is adapted to the new needs and expectations of the employment market ([Belhaj et al., 2013](#)).

5. Conclusion

This paper is concerned with the quality of higher education in developing countries that is an issue that has been extensively addressed in the literature. The obtained results are in line with the findings of previous studies (e.g. [Glewwe, 1996](#) and the [World Bank, 2011](#)) that higher education in many developing countries exhibits severe deficiencies and suffers from an overall lack of quality in the sense that students learn much less in school than they should and teachers are often absent from classrooms. The study also confirms that many of the problems can be traced back to ineffective management, curricula that do not meet the learning needs of the students, antiquated instructional methods, misaligned incentives for teachers and students, and a poor level of harmony with the labor market.

However, this paper is different from the existing studies because it tackled a question rarely debated in the literature, which is the way the time is being spent in the classrooms. Before investigating what is being taught and how it is being taught there is a need to investigate the extent to which the teaching activity is taking place. In this respect, the paper investigated the way the time is being utilized in five different business schools in Tunisia, North Africa. To our knowledge, this is the first study concerned with time utilization in higher education.

The results show that: (i) the instructors are utilizing on average less than 55% of the time of the lecture for teaching purposes while the rest of the time is being spent in nonproductive activities in addition to untimely and irregular attendance, (ii) the students recorded an attendance rate of less than 34% with around 42% of the attending students being engaged in extraneous activities in class, which makes the actual rate even less than 20%.

These figures are not only incredible but even frustrating as they are collected from five colleges belonging to the University of Sfax, which is ranked second in Tunisia and 97 (ahead of 1350 universities and higher institutions) in Africa ([Journal-Consortium, 2015](#)) and belonging to a country whose performance in education is considered commendable as compared to other developing countries ([OIT, 2013](#); [MHESR, 2013](#); [Akkari, 2004](#); [Abadzi, 2007](#)). Serious questions are raised about the academic learning of the students in low-ranking universities and/or more under-developed countries.

The findings of this research may not apply to the colleges of medicine and engineering, which are attracting the highest performing students in Tunisia, but most likely they do apply to most other colleges with similar quality students. Possible extension of this research includes exploring the generalization of the results to other colleges of the University of Sfax, other universities in Tunisia and in other third-world countries. More extensions involve practical remedies including the use of IT to exercise more control to impose more discipline for both the instructors and the students. The very first step for any type of reform in this regard must make the instructors give the time they are paid for and make the students attend the hours the government is paying for. In particular, business school students are supposed to be future managers; if they don't learn how to be punctual when they are students they will not care about punctuality when they become managers.

The improvement of the quality of higher education in developing countries should go beyond increasing the ratio of teaching-time utilization to enhance actual learning. We believe that teaching/learning is a shared process whose success depends on both the student and the teacher. Improving the quality of this process necessitates a cultural change for both players. It is the responsibility of the teacher to come up with new teaching methods and different educational settings in order to stimulate open and flexible learning that will help him/her achieve the pre-established learning outcomes. Similarly, students need to play a more active role in the institution by stimulating teachers toward being more responsible and more productive. There is much work to be done across the higher education sector in developing countries in order to provide support for students, instructors and institutions.

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