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Students' and teachers' perceptions and experiences of course scheduling in undergraduate sports sciences program: An Ethiopian case study

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Keywords

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Introduction

Mainly motivated by a decline in the quality of undergraduate education, in 2013 the Ethiopian government began to require that modularisation and flexibility be a feature of undergraduate curricula (Dinsa, Tollessa, Tadesse & Ferede 2014). The nation's universities have responded with a blend of semester-based and block-scheduled courses, yet there is no evidence of either success or failure that shows the perspective of students and teachers. This paper presents the first of two studies in a program of research to investigate the experiences, reflections and perspectives of teachers and undergraduate students on the changes to the national undergraduate curriculum mandated by the Ethiopian Government.

Universities exist to produce learning, and students are the centrepiece of the learning process (Hockings, Thomas, Ottaway & Jones 2018). The ultimate goal of a teaching policy is to improve students' learning experiences, and thereby the outcomes of learning (Billett & Martin 2018). Our premise is that teaching is a complex affair, encompassing shared responsibilities between the teacher and students (Ben-Peretz 2011). Hence, teaching and learning are inherently intertwined, and thus any development initiative requires a holistic approach (Tadesse, Manathunga & Gillies 2018). Moreover, learning experiences can be gained in many different forms of learning environments or modes of delivery (Tadesse, Gillies & Campbell 2018). Learning also happens outside the institution and from a distance (Bourdeau, Griffith, Griffith & Griffith 2018). This line of argument implies that learning is flexible and occurs within different contexts (Perin 2011).

Over the years, transformative learning has become a pervasive outcome of instructional reforms in many parts of the world (Frenk et al. 2010). Many believe that student engagement is an essential aspect of transformative learning (Tadesse, Manathunga et al. 2018). Given this view of learning, the role of higher-education teachers is changing (Phillips 2005) from that of a subject expert acquainted with ways to transmit knowledge to that of a professional equipped with effective pedagogical skills to facilitate the learning of all students across different modes of delivery, frequency of timetable and scheduling formats (Aldaghir 2017; Reinke 2018). However, teachers' pedagogical practices are not only a function of teacher competencies, but also the product of curriculum intent that requires that teachers should engage in pre-specified activities to achieve learning objectives (Tadesse & Melese 2016). Moreover, they need to cooperate with students, colleagues from other departments and external stakeholders as members of a dynamic learning community (Davey, Elliott & Bora 2019; Haseloff 2007; Tadesse & Gillies 2015).

To meet those responsibilities, teachers incorporate several elements into their teaching repertoire, including designing curriculum and course content effectively, using a variety of learning contexts, soliciting and using feedback and assessing learning outcomes effectively (Palmer 2011; Taylor 2008). In addition, they involve student support services that are likely to improve the quality of the teaching process, the program content and students' learning conditions (Hénard & Roseveare 2012). The relevance of pedagogies of engagement for learning has been stressed in practice as well as in concept (Eberlein et al. 2008; Tadesse 2015). There are numerous choices of engagement pedagogies; for example, active and cooperative learning, learning communities, service learning, inquiry- and problem-based learning and team projects, among others.

As part of the process of adapting to changing student demands, universities have considered new ways of delivering course content (Hanson, Trolian, Paulsen & Pascarella 2016). Extensive research on the psychological and institutional correlates of student outcomes has identified a range of pedagogical practices that enhance students' outcomes (Hockings et al. 2018). One practice – organising courses in a block format – has received increasing attention in recent

research. A very practical example of this is consideration of a move from traditional to “intensive” modes of teaching (Nasiri & Shokrpour 2012).

Block-teaching models (Huelskamp 2014; Maltese, Dexter, Tai & Sadler 2007), otherwise known as accelerated (Colclasure et al. 2018; Lee & Horsfall 2010), time-shortened (Daniel 2000), compressed (Carrington 2010), abbreviated (Anastasi 2007) or intensive modes of delivery (Gallo & Odu 2009), have been variants of non-traditional teaching formats (Lawrence & McPherson 2000). Block teaching has been defined as a daily schedule that is organised into larger blocks of time to allow flexibility for a diversity of instructional activities (Daniel 2000). It consists of classes of longer than the conventional timetabled schedule (Canady & Rettig 2013; Scott 1996, 2003). Usually, intensive modes involve time-compressed teaching formats (Davies 2006). These modes of teaching are in contrast to traditional, semester-length courses (Jonas, Weimer & Herzer 2004).

In a narrower sense, the term “curriculum” refers to a detailed plan of actions stated in a document for a particular program offered in a university (Lattuca & Stark 2009). Historical analysis of the curriculum in Sub-Saharan Africa demonstrates a lack of interest and commitment from universities to formal development and review processes in curriculum implementation (Chisholm & Leyendecker 2008). This prevailing condition was found to be one of the major reasons for failing to attain learner-centred and competency-based education (Schweisfurth 2011; Tadesse & Melese 2016).

Colleges and universities offer classes that meet for different lengths of time and different numbers of days per week (Diette & Raghav 2018). The cost and time saved with block or intensive teaching are encouraging more universities to offer this type of learning (Bonner 2012). However, there is little information regarding the educational benefits of block courses for student performance compared with traditional, semester-based courses (Burton & Nesbit 2008). Many university teachers and administrators believe that block courses are less effective than the same courses taught during a full semester (Anastasi 2007). This is mainly due to the challenges surrounding the implementation of block-scheduled courses (Trout 2018).

Flexibility in course scheduling is an integral part of institutional strategies to increase student engagement and success (Dills & Hernández-Julián 2008). Yet there is little research, which examines scheduling as a key factor in a broader perspective (Burton & Nesbit 2008; Gullatt 2006; Nasiri & Shokrpour 2012). The few studies that exist are primarily quantitative, with a focus on either comparing student performances (Dexter, Tai & Sadler 2006; Diette & Raghav 2018) or examining relationships between course schedule and student performance (Cotti, Gordanier & Ozturk 2018; Gallo & Odu 2009; Murray & Moyer-Packenham 2014). There is little emphasis on the qualitative research, which addresses the lived experiences, perspectives and views of those who are affected (Lee & Horsfall 2010). Qualitative investigations, however, provide detailed descriptions of students’ and teachers’ views in their own words, complex analyses of their perspectives (Creswell 2012) and specific experiences of different (major, supportive and general) courses that shape student experiences with the course schedule (Reinke 2018). Moreover, qualitative inquiry offers the opportunity to involve undergraduate students and their teachers, which enhances the validity of student and teacher views and experiences, as they are uncontaminated by outsiders’ perspectives (Colclasure et al. 2018; Lee & Horsfall 2010).

In this study, therefore, we explored the experiences, reflections and perspectives of students and teachers regarding semester-based and block scheduling as applied in a large public university in Ethiopia. In addition, we discovered the prevailing contexts, what outcomes the participants

achieved and how well the scheduling was implemented relative to how it was intended. In addition, we assessed the recorded learning outcomes as represented by students' cumulative grade-point averages (GPAs).

Study context

In Ethiopian universities, traditional, semester-based teaching is a familiar mode of delivering undergraduate courses. Block teaching was introduced as an innovation (Tadesse & Melese 2016) following the revision of curricula and the resulting harmonisation in 2013. Over the years, block teaching has increased significantly (Education Strategy Center 2012), and a series of consecutive block courses are offered in a compressed schedule concurrent with semester-length courses (Dinsa et al. 2014). However, course scheduling is primarily determined at the curriculum level, rather than being decided by teachers or students. Universities in Ethiopia typically schedule courses that meet for a number of hours each week. The schedule maybe arranged in either of the following two ways, depending on the curriculum: semester-based (traditional) scheduling, in which the course runs for fewer hours each spread over a semester; and block (intensive) scheduling, in which the course runs for more hours each week, but for fewer weeks. A single lesson, in any of these arrangements, takes about 50 minutes. The two scheduling formulas offer the same number of credit hours and class time. Hence, the difference lies in how widely spread the contact hours or course attendances are. Although this harmonisation has been in effect over the last five years or so, no study has examined the effect of scheduling mode on students' learning experience and performance.

Table 1. Major components of the undergraduate sport-science curriculum

Program duration	Three years (six semesters)	
Total ECTS	181	136 ECTS= Core component 25 ECTS= Supportive component 20 ECTS= General component
Mode of delivery [Scheduling format]	Semester-based	17 courses
	Block	22 courses
	Total	42 courses
Teaching methods	Lecture, Individual and Group Work, Discussion, Demonstration, Practical Work, Project work, Field observation, Individual Assignment, Films, Exploration, Lesson presentation	
Assessment methods	Individual and group work, Class participation, Test and Quiz, Skill test, Question and answer, Observation, Solving problems and reporting, Practical test, Final Examination	

Note: ECTS refers to Ethiopian Credit Transfer System.

In the Ethiopian higher-education system, the word “module” refers to a segment of a course. It can be a single component, and can be delivered alone or as part of a course. The conventional approach to the delivery of a full-time course of study is 16 weeks. Usually, a course is weighted in terms of credit hours spent for teaching. A one-credit-hour course has one contact hour per week over a total of 16 weeks, including the final exam. Every undergraduate program in Ethiopia's university system accepts these norms. The undergraduate sport-science curriculum, which is the focus of this research paper, provides a concrete example of how these norms apply in a program. Table 1 provides information about the major components, number of courses included in the curriculum, teaching and learning methods and assessment methods.

As shown in Table 1, the undergraduate sport-science curriculum runs over three years, during which enrolled students take 181 Ethiopian Credit Transfer System (ECTS) credits. As shown in the same table, the large majority of these, (136 ECTS) are devoted to core or major components, with an additional 25 ECTS for the supportive components and 20 ECTS for the common components. In addition, as Table 2 shows, the 37 core courses are delivered in four different modalities, including 17 semester-based courses, four semi-block, 20 block and two mixed. Also, as shown in Table 1, the lists of teaching methods and assessment methods represent student-centred and continued assessment, respectively (Freed & Huba 2000). Also, some of the listed assessment methods are congruent with the preferences of sport-science students, as evidenced in the literature on this field (Arslan 2013; Tadesse & Gillies 2015). While the curriculum component did indicate the proportion of modules belonging to each category of program, it did not indicate how those courses were scheduled in a particular semester. With the intention to provide information about the course-load distributions in a particular semester, we took two semesters' course distributions as examples. Table 2 summarises the course modules' distributions for the first semester of the second year of the program.

Table 2. Course-module distribution summary for the first semester of Year 2

Module number	Module Name	Course code	Course title	ECTS	No. of weeks	Schedule	Duration
02	Civics and Ethics	CvEt1021	Civic and Ethical Education	5	4	Block	Weeks 1 to 4
08	Exercise Science	SpSc2081	Exercise Physiology	5	4	Block	Weeks 13 to 16
08	Exercise Science	SpSc2082	Health and Fitness	5	16	Semester-based	Whole semester
09	Gymnastics	SpSc2091	Basic Gymnastics	3	16	Semester-based	Whole semester
11	Ball Games	SpSc2111	Volleyball	7	16	Semester-based	Whole semester
11	Ball Games	SpSc2112	Football	7	16	Semester-based	Whole semester
Total				32			

As shown in Table 2, the different courses (32 ECTS) are delivered in both semester-based and block scheduling formats. In the first four weeks, the students take one block course and four semester-based courses. Between weeks 5 and 12, they take four block courses. Finally, between weeks 13 and 16, they take one block course and four semester-based courses. Hence, students take a mix of semester-based and block courses for about eight weeks, and block courses only for the other eight weeks.

Theoretical framework of the study

In this study, interpretive phenomenological analysis (IPA) and critical theory evaluation served as the theoretical frameworks guiding the study. We used IPA to address two complementary commitments. First, the phenomenological requirement to understand and give voice to the concerns of study participants (Smith & Osborn 2004; Symeonides & Childs 2015). Second, the

interpretative requirement to contextualise and make sense of these claims and concerns (Larkin, Watts & Clifton 2006; Smith, Larkin & Flowers 2009) from the perspective of effective educational practices (Quaye & Harper 2015). In addressing these commitments, we had a critical theory evaluation stance (Mathison 2005), adhering to emancipatory perspectives (Smith 2017), with the intent to open up or unpack (Smith 2011) how and why course scheduling had the effect it did on teachers' pedagogical practices, and on students' engagement and outcomes in the Ethiopian higher-education context. With this, we aim to unveil existing realities and determine the merit and value of various modes of course scheduling (Mathison 2005). The anticipated outcomes are emancipatory, serving to improve practices through the conduct of the inquiry (Smith 2011). Our results are presented in the form of critical reflection, judgements and decision-making within the group of participants as practitioners (Eatough & Smith 2008; Melrose 1998), with the researchers interpreting results based on evidence sought from the study participants (Smith 2004).

The use of these theoretical frameworks in the present study is important because pedagogic innovations such as flexible course scheduling entered Ethiopian higher-education classrooms with unexamined assumptions, beliefs and knowledge about teaching, learning and assessment (Tadesse 2015). Traditional conceptions have strengthened the widespread application of knowledge transmission as opposed to knowledge transformation (Zerihun, Beishuizen & Van Os 2011). The use of this study's theoretical frameworks in higher-education pedagogical practices can assist teachers and students to become attuned to their own assumptions and experiences through self-reflection and criticism.

Materials and methods

Study design

This study used an exploratory mixed-methods design consisting of semi-structured interviews with teachers and focus-group interviews with students, and analysis of the institution's archives of students' cumulative GPAs as recorded and filed in the registrar's office of Jimma University. By assessing the nature of the semester-length and block courses and their implementation processes in terms of those outcomes, a complex picture of the semester-length and block courses emerges (Greene & Caracelli 1997). In addition, the inclusion of evidence generated from semi-structured interviews, focus-group discussions and archival records made it possible to involve those relevant stakeholders and data sources more fully (Creswell 2012). Thus, in effect, the study ensured the possibility of attaining triangulation and complementarities (Teddlie & Tashakkori 2009).

The central focus of this study was teachers' and students' perspectives, based on their experiences in the 16-week and relatively shorter (one- to 12-week) timeframes for courses. The aim was to investigate how the study participants understood issues of teaching, learning and assessment based on specific classroom incidents illustrating good practices and challenges faced in the semester-based or block courses. What these students and teachers said may not necessarily be consistent or correspond with their everyday classroom practice; however, our intention was deliberate, using individual and group interviews to gather information about their perceptions and experiences based on what was happening in either of the course schedules. Our epistemological stance is that memory and experience are the results of enacted social actions (Atkinson & Coffey 2003). In effect, how the sampled students and teachers tried to make sense of memorable classroom events was, for us, a window of opportunity to understand how they approached

classroom practices and the challenges surrounding their implementations across these scheduling forms. In relation to the quantitative analysis, the fact that the same students had been exposed to both scheduling forms gave us the opportunity to compare student samples' performances across the two scheduling forms.

Study area and period

We conducted the study at Jimma University, a large public university in Ethiopia. We completed the study over two months (November-December, 2017). The overall activities of this research endeavour ranged between a primary focus on understanding the existing practices and challenges of semester-length and block courses to discovering study participants' possible multilateral perspectives and views regarding their beliefs about and benefits of these practices. This was corroborated by quantitative analyses of students' academic records found in institutional archives.

Participants

This study used a stratified random sampling method to select students for the focus-group discussions, with the strata being the class year and academic ability as explained in terms of cumulative GPA scores in the previous semester. These participants enrolled in the Department of Sport Sciences, Jimma University during the academic year 2017/18. A total of 40 students ($n_{\text{Females}} = 20$ and $n_{\text{Males}} = 20$) were selected across the class year. During sampling special consideration was given to provide a representative sample within each participating group. Sampled students were pulled from the list of groups from each year at the department level. In each sampled class, the stratification was conducted at two levels: gender and academic achievement (the latter as demonstrated in their previous semester's cumulative GPA).

The analysis of institutional archives used in this study took the same 40 students in their second and third year. We included these same students in the quantitative analysis to examine their perceptions and experiences of the courses in relation to their recorded learning outcomes. In contrast, we selected the six teacher interviewees purposefully based on their experiences in implementing both semester-length and block courses across general, supportive and core courses. We considered six full-time teachers who had had the experience of implementing both semester-length and block courses. In addition, the researchers used purposive sampling to select interview participants from the general, supportive and core courses.

Tools for data collection

The researchers collected the necessary evidence using different data-collection methods, including individual and focus-group interviews and institutional archives.

Document analysis of institutional archives

We examined archival records of students' cumulative GPAs as a tool to supplement the field investigation of individual and focus-group interviews (Ventresca & Mohr 2017). We examined both the hard copies and the digital texts, including electronic databases, in the archives. It is important to remember that the reality as reflected in the archived records of the students' cumulative GPAs may not necessarily reflect the reality as experienced by the students and teachers who lived it (Mills, Durepos & Wiebe, 2009). Hence, the evidence collected from archives would help to cross-validate.

Teachers' semi-structured interview

A semi-structured teacher-interview guide was prepared to collect data concerning teachers' views and comments about their experiences in implementing both semester-based and block courses, and the perceived benefits of their involvement in the process. Each teacher was interviewed in a separate session for an average of 15-20 minutes. The researchers took field notes while interviewing, and tape-recorded the entirety of each interview.

Student focus-group discussions

Focus-group discussions were prepared to collect data from recent students concerning their experiences, reflections and views in the semester-length and block courses. With the intent of simplifying comparisons, similar items were included in the semi-structured interviews and focus-group discussions. In this study, students of high academic achievement (cumulative GPA ≥ 2.50) and low academic achievement (cumulative GPA < 2.50) participated in separate focus-group discussions. Each focus-group session took an average of 1:30-2:00 hours. The individual and focus-group interview questions were pilot tested in advance, and the instruments were improved accordingly based on the comments.

Data analysis and presentation

The qualitative data obtained from individual and focus-group interviews were recorded and transcribed verbatim. In addition, we reviewed and expanded the individual and group interviews immediately after each session of data collection. More specifically, the analysis focused on mining the interview and transcriptions for possible meanings that would reveal the phenomenon of interest (Smith et al. 2009). During interpretation, we examined these meanings critically, comparing our interpretations with each other's as well as with our evolving and shifting understandings (Miller, Chan & Farmer 2018). These testify to IPA's double hermeneutic, representing the researchers' efforts "to make sense of the participant trying to make sense of what is happening to them" (Smith et al. 2009, p. 3). Here, the double hermeneutic points to how interpretation and understanding evolved as events played out through synthesis of research participants' sense-making, with the researchers engaging deeply with the transcriptions of participants' personal experiences and views (Smith 2004). The results were then condensed as per the themes and sub-themes. Students' views and comments on the semester-length and block courses and their effects were systematically analysed and compared to see patterns of similarities and differences across the different stakeholder groups (students of low and high academic ability and their teachers) involved in the study. In addition, comparison was made across gender and class-year. Finally, the researchers summarised the study findings from each data-collection method in the major thematic areas. For the analyses of institutional archives, researchers used descriptive statistics such as means and standard deviations. In addition, the researchers calculated independent samples' t-tests, paired t-tests and effect sizes, depending on the nature of the data.

Ethical considerations

The study participants were informed beforehand about the study and their informed consent was secured before any data was collected. Study participants were approached for data collection with a brief explanation of the study purposes and informed consent was obtained verbally through a face-to-face interaction with the researchers. Similarly, we accessed the archival records from the student registrar office of Jimma University after securing permission from the corresponding registrar officer.

Findings and discussion

Teacher interviews and student focus-group discussions

Analyses of the teacher and students responses to interviews and focus-group discussions respectively yielded five primary themes related to their perspectives on and experiences of the semester-length and block courses. This section presents the details of each theme, with some additional details on the sub-themes when appropriate. In this paper, “perspective” refers to the participants' attitude or intention to favour either semester-based or block scheduling. Similarly, participants' motivations or reasons for preference were justified in terms of perceived convenience, effectiveness, efficiency or personal reasons. In terms of experiences, we considered both positive and negative experiences of the study participants. Moreover, the benefit was sought from two perspectives: benefits for teachers in relation to teaching; and benefits for students in relation to learning and study. Students' and teachers' concerns accompanying course-scheduling lay in two major domains: concerns regarding the curriculum and the implementation of semester-based and block scheduling. Finally, we saw similarities and differences across groups in terms of attitude, perception and experience.

Students' and teachers' perspectives in semester-based and block courses

Teacher and student participants were asked about their perspectives regarding semester-based and block courses and some of their reasons for liking and disliking each of them. Analysis of the teachers' interview data revealed that most of them had more-positive or favourable attitudes toward semester-based course scheduling (five teacher participants) than toward block scheduling. For example, one teacher participant (T3) said:

I favour the semester-based course offering [more] than block format, as my subject (X) is difficult to be handled with the block format due to the difficult nature of the course. In my view, the block schedule seems better for the teacher in terms of covering a large amount of course content in a short period. However, comparably this has a negative effect on the teacher, as it is so challenging and tiresome in implementing [a] block schedule. You may be very tired as you teach for long hours per day. Apart from this, if you look [at] this from the students' side, it is more challenging for them to understand easily as the load increases. In addition, from the preparation perspective, I prefer the semester-based arrangement, as I can get more time so that I can make more preparation slowly, reading additional books and other materials.

Similarly, analysis of the students' focus-group discussion data indicated that some students, particularly low-ability students, preferred the semester-based course over the block schedule. A male third-year student participant (SL9) commented:

As for me, I believe that semester-based courses are better than block courses. This is so because when the course is semester-based we will have time to cover the substantive contents of the course in details, and those ideas to be presented in the course can be treated and elaborated in details. While [when] the course is in block format, the time is too short, so the course coverage becomes minimal or reduced in size. Thus, it is difficult to say that the block courses cover the expected content details as in semester-based courses. In addition, the teachers focus on the major points without considering the details. Hence, if the target is

to help us understand the course well in all its detailed contents, the course should be presented in a semester-based format [rather] than the block format.

Some student participants, particularly high achievers, preferred the block mode of one course at a time instead of pursuing several unrelated courses during a semester, as most of them said, as it allowed them to structure their time more effectively and meet personal needs; aroused interest and motivation; and fostered teacher enthusiasm. A student participant (SH6) said:

I favour block courses [rather] than semester-length courses because in a block course we have better academic focus as the time is short. In addition, there is an extended engagement with learning though the time is short, and this helped us to score better grades in block courses than the semester-length courses.

Contrary to this, however, another student participant (SL7) commented:

In my view, I would say semester-based courses are better because we did learn and study better in the semester-length courses. As for me, the block course was useful for [the] grade, but not for knowledge.

The reasons for liking the block courses emanate from the focus and continuity of learning (Kretovics, Crowe & Hyun, 2005). As per the findings of this study, some students, particularly high achievers, felt that they had more focus because of continuous learning experiences occurring daily instead of weekly, as in the semester-based courses (SH3, SH4 and SH10). In addition, some perceived that they had fewer courses to focus on and teachers had increased time to devote to other responsibilities in a block format (Allen & Voytek 2017). The higher-ability students' preference for block teaching students reported in this study is consistent with earlier studies in this field. In one study, researchers found out that students chose block teaching depending on their experience with the format and their perception of their ability in a particular subject, among others (Burton & Nesbit 2008). In general, the results of the current study show that student and teacher participants overall had mixed perspectives regarding the semester-based and block course formats.

Students' and teachers' experiences of semester-based and block courses

Almost all high-ability students were successful and satisfied with both semester-based and block courses, but perceived that they were more successful in achieving higher grades with the block courses. Likewise, some high-achieving students had the experience of achieving better grades in block courses even though they reported getting more knowledge in semester-length courses. Most of this group regarded the more relaxed period for learning, study and completing assignments in semester-based courses positively, and felt that they learned more in this format. Teacher participants also felt that they were more successful and satisfied with semester-based courses than block courses. Most of the lower-achieving students reported not being particularly successful in the block courses, and all of them complained about it. According to their views on their participation, performance and grade, while these students seemed unsuccessful in both formats, they perceived themselves to be particularly so in the block courses.

The number of hours of classroom contact in the undergraduate sport-sciences curriculum should be the same regardless of mode; however, the findings of this study, particularly the student participants' responses, show that teachers did not use the same number of class hours in the block courses and semester-based courses. According to the views of the student participants (both high

achievers and low achievers) in this study, the number of class hours were minimal in the block courses. In addition, in their interview responses, teacher participants indicated their consideration of reducing the depth of content, student in-class engagement level and assessment tasks while implementing the block courses; however, none of them thought about planning for various class activities.

The block format did not seem convenient for those courses with broader content (T3). In addition, students, particularly low achievers, did not feel happy with the block courses, which they felt put pressure on them. One of the teacher participants (T1) said:

Most students of mine [regardless of their ability level] felt uncomfortable with block courses. In the semester-based course, the time schedule is relaxed and the students are comfortable with it, as they have enough time for learning, studying and [completing] different assessments, as well as to practice the theoretical part in the real environment in the lab and field.

The study participants cited several pedagogic and assessment matters that require consideration when implementing the block courses:

- Have tight schedule so that it creates pressure.
- Too much load for the students.
- Cannot cover the depth of the contents of the course.
- Students lack active engagement (e.g., discussion, questioning and answering).
- Did not match with the teachers' or students' social or environmental situation.
- Tiredness and boredom.
- Difficult for students to run with teacher's lecture or PowerPoint presentations.
- Failed to apply different teaching methodologies and assessments tasks.

Benefits attained from the semester-length and block courses

In this study, the researchers examined how undergraduate sport-science students and their teachers perceived the benefits of semester-based and block courses in terms of academic rigour and self-efficacy. Rigour was seen as the quality of the course being extremely in-depth and carefully taught. Similarly, self-efficacy was characterised as encompassing both the effectiveness and efficiency of semester-based and block courses in terms of delivery, student learning experiences and learning outcomes.

Most of the teacher and student participants referred to the course-specific standards mainly as content coverage. In terms of academic rigour, almost all teacher interviewees and student focus-group participants believed that the semester-based courses were useful for in-depth knowledge. However, block scheduling was found to be more convenient for completing courses. For example, one teacher interviewee (T5) pointed out:

[The] semester-based schedule is more convenient, so that I did prepare and teach being more relaxed. I have enough time and the weekly schedule is relaxed. As a result, I can cover the depth of the contents, and give opportunities for students to participate in different assessment techniques, including group discussion, presentation [and] practical and field activities.

Similarly, the low-ability student participants felt that semester-based courses were more suitable for knowledge or mastery of the subject matter; hence, they were seen as more productive for both the students and teachers. A number of students participants (SL1, SL5, SL7 and SL8) reported that they learned more effectively in the semester-based courses than the block courses.

However, some teacher participants supported the idea that block teaching is more convenient for the teacher, particularly when the teacher has several assigned responsibilities (T2, T4, T5 and T6). In addition, some second-year students (SH1, SH4, SH7 and SH8) noted that the larger blocks of time for class meetings and taking fewer courses helped them to focus on the course materials.

According to the evidence collected for this study, most of the student participants of high academic ability tended to prefer learning under the block-scheduling format. They felt that block scheduling was an advantage as it made them focus more seriously on learning beginning from day one and exert extended concentration in preparing for the course and completing assignments on time. These students felt that the quality and quantity of work increased under the block format.

Concerns

Almost all the interviewed teachers felt more positive about the program with few comments surrounding the implementation of the semester-based and block courses. Also, the majority of student participants reported that, teachers' missing scheduled classes, tending not to teach the full time of the class session and lecturing continually and the scarcity of instructional resources were major challenges surrounding the implementation of both semester-based and block teaching.

Teacher quality was the other concern raised particularly by the students in the focus-group discussions. As the focus-group data revealed, teachers of block courses did focus most to finish the course in the shortest time possible. Hence, the focus was perceived to be course completion instead of a real concern for students' learning. Some students (SH2 and SL9) commented

These block courses are offered out of sequence and we spent less time in block courses, though there is equal program expectations.

The most significant concern expressed by teacher participants entailed developing teaching approaches that are effective for the longer class sessions. The interview responses showed that none of the interviewed teachers felt more confident with their own pedagogical practices in the block courses. Some teachers felt that provision of basic courses like (X) in a block format was inappropriate. As T1 said, *"It was wrong to give the course Human Anatomy and Physiology within one month."*

The study results showed that some students, particularly high achievers, felt that they had more focus in block courses because of additional continuous-learning experiences occurring daily instead of weekly, as in the semester-based courses. This particular finding is very important for higher-education administrators and teachers to consider as they advocate for the use of active learning pedagogies during instruction (Roksa, Trolan, Blaich & Wise 2017). Hence, the concern is with advancing pedagogical knowledge and teaching practices to improve student learning and associated outcomes (Fitzmaurice 2008; Hanson et al. 2016). The present study is not immune to this deficiency, as the existing interview and focus-group data revealed. Thus, a focus on commitment, capacity-building and support needs special attention (Fullan 2012). Research has shown that the provision of technical support is significant for promoting curriculum implementation (Tadesse & Melese 2016).

Student participants expressed concerns that semester-based courses were more fragmented so that they failed to understand connections between topics even within the same subject. Moreover, student and teacher participants' concerns accompanying block scheduling lay in the perceived incompatibility of the block course schedule with laboratory and practical classes. In their views, the short span of block courses resulted in a reduced opportunity for the students to develop the required skills and capabilities. Particularly, teachers argued in their interviews against block scheduling, being greatly concerned about the possible impact on the development of practical skills proficiency in major areas and laboratory-based instruction. They believed that skills development occurs during a long, uninterrupted sequence of course study instead of an intensive, compressed course. This assertion coincides with the psychology literature, driven by the spacing effect theory; there is some concern that classes that meet less often, spreading out over time, are better suited for student learning than those that present the same amount of content in a time-compressed fashion (Diette & Raghav 2018).

Similarities and differences between participant groups

One of the most interesting results of this study was that both female and male students, and students of both high and low academic achievement, as well as teachers, did not seem to differ in their perspectives about the quality of semester-length and block courses. The findings of the study indicated that the student participants of low academic achievement and some teacher participants favoured teaching under the semester-based schedule. The teachers felt that they could address the students' needs more effectively through semester-based scheduling and that the quality and quantity of their students' work was higher in semester-based courses. Likewise, students of low academic achievement agreed that the extended time of a semester-based schedule helped them to study longer and work more effectively on their assignments and projects.

Teacher participants felt that they had the experience of treating semester-based and block courses differently because of how the two formats varied in their use of time. One teacher interviewee (T6) highlighted:

For the semester-based courses, I did prepare the notes, handouts and PPTs in-depth because the time was enough to cover the entire contents as well as to teach further ideas with relaxed time. However, for the block courses, if the course has a large content, say it's three credit hours, the notes, handouts, and PPTs are short and should include only the main points and ideas of the course without extending the contents. This is so because, if I have prepared them as semester-based courses, they will be boring and too much load for the students with [the] short time, so that the students cannot understand and catch the core point of the course. Finally, they could not achieve, as they wanted.

In addition, assessment tasks were assumed to be the same, but in reality, the block courses had fewer assessment tasks than the semester-based courses. This was mentioned both by the teacher and students participants. Moreover, the students' academic performance was not the same for the two formats. One teacher participant (T1) commented:

Most high- and medium-achieving students of mine were successful, satisfied both in a semester-base, and block courses, but they are more successful, in case of grade and performance, in semester-wise courses. I myself also was more successful and satisfied with semester-based courses than the block courses. In

my view, most of the lower- and some medium-achieving students were not, as such, successful with the block courses. They are always complaining about it. When we see their participation, performance and grade, these groups seem unsuccessful.

The most significant difference between semester-based and block course schedules, as articulated by teachers and some students, entails the learning outcome related to teaching via semester-based and block course schedules. According to their views, while learning for understanding can be achieved with the semester-based schedule format, higher scores or grades can be achieved via block courses. Regardless of this, the study participants cited several pedagogic and assessment practices for effective functioning of both semester-based and block courses.

Results of the quantitative analysis of students' cumulative GPA

We could observe the GPAs of the student participants for their second- and third-year results, giving us within-student variation in terms of GPA across the scheduling forms. Table 3 presents the summary of the findings for within-subject differences, comparing the same students' GPAs across semester-based and block courses (Paired Sample t test).

Table 3. Differences in student academic achievements

Variable	Class year	Semester-based courses		Block courses		95% CI		df	t	Cohen's d
		M	SD	M	SD	LL	UL			
CGPA	Second year (n=20)	2.75	0.47	2.39	0.69	.19	.54	19	4.31***	0.63
	Third year (n=20)	2.63	0.53	2.80	0.52	-.26	-.07	19	-3.55**	-0.32

Note: CGPA refers to cumulative grade point average, SD = Standard Deviation, LL = Lower limit, UL = Upper limit
Significance levels. * p < .05, ** p < .01, *** p < .001

As shown in Table 3, the GPAs of the student samples consistently varied across years, though in opposite directions. We found that the second-year students performed slightly better in courses offered with a semester-based schedule than those offered with a block schedule, with effect size 0.63. Contrary to this, we found that the third-year students performed slightly better in courses offered with a block schedule than a semester-based schedule, with effect size of -0.32. These consistencies across grade year may reveal differential effects of semester-based and block courses depending on the students' experiences.

While time-compressed, block or accelerated courses are being implemented more widely around the globe, there is relatively little research regarding the impact of changes in delivery timeframes on curriculum design, learning experiences and student performance in college (Lee & Horsfall 2010). The few available studies have shown that student success is not conclusive across scheduling forms. For example, earlier studies reported that there is significantly higher student achievement in the block version of a course than the semester-length version (Hall 2008; Scott 2003). Other studies found no difference in student success between the intensive and traditional courses (Anastasi 2007; Carrington 2010). Still other studies found greater success rates for the semester-length courses than for intensive courses (Gallo & Odu 2009; Loveland & Bland 2013). The findings in this study also affirm the mixed nature of these results. As shown in Table 3, the

students' scores for the semester-based and block courses differed for the second-year and third-year students. However, these results are partially contradicted by the students' views gathered during the qualitative part of this study. In their interview responses, teacher participants of this study indicated their consideration of reducing the depth of contents, student in-class engagement level and number of assessment tasks in their implementation of the block courses; however, none of them thought about planning for changing class activities to better suit the schedule type. On the other hand, because of the limited time between classes, students had less time to digest material, which puts some students at a disadvantage (Jonas et al. 2004). The participants of this study noted that in a block course they had fewer hours to study between classes; courses overlapped, forcing them to leave or switch programs; and there were a minimal number of continuous assessment tasks. This hindered the possibilities for students to engage in independent learning (Hockings et al. 2018; Vrieling, Stijnen & Bastiaens 2018). Thus, teachers should look for innovative instructional approaches for teaching block courses quite differently to the way they handle semester-based courses (Anastasi 2007). Because class meetings in the block schedule are typically longer, teachers have to think even more about planning for varied class activities (Mishra & Nargundkar 2015).

Conclusions

This study generated concrete evidence regarding semester-length and block courses of the undergraduate sport-science program. The findings highlight some of the reasons why teachers misunderstood the nature and use of semester-based and block schedule courses. Both teachers and low-ability students had similar perceptions on the effectiveness of semester-length courses for deep understanding and better academic achievement; however, they disagreed regarding the utility of student-centred teaching in both semester-length and block courses. These findings, along with the higher learning outcomes in block courses as indicated by third-year student grades, provide evidence that negative beliefs concerning block courses may be unjustified, and block courses may be as effective as, or more effective than, those presented in traditional formats (Anastasi 2007; Davies 2006). Contrary to this, low-ability student participants' positive attitude to semester-based scheduling as well as their learning performance, as indicated by sample higher grades in semester-based courses for the second-year students, show the benefits of a semester-based schedule (Dexter et al. 2006; Loveland & Bland 2013). Despite these mixed results, the interviewed teachers reported that they were mainly knowledge transmitters, which contradicts the notion of a modular, student-centred approach to teaching for both the semester-based and block courses (Tadesse, Manathunga et al. 2018). In addition, the study found little or no difference in the teachers' pedagogical practices based on the course-scheduling format. If reformed teacher pedagogical practice and improved student learning outcomes are the goals of transitioning to a block schedule, results point to a critical need for authentic professional development for teachers (Biesinger, Crippen & Muis 2008; Webster-Wright 2010).

We recommend shifting the paradigm from knowledge-transmission-driven teaching to teaching focused on the development of knowledge and transferable skills, as demanded by external markets and employers (Ali, Tariq & Topping 2009). The results of this study may be of interest to university administrators responsible for making scheduling decisions, faculty members teaching under different course-scheduling formats and undergraduate students in finding strategies to become successful within their flexible class schedules (Canady & Rettig 2013). In addition, the results of the quantitative analyses need to be viewed carefully. This study does not claim to be comprehensive, but connections with the generated themes in the qualitative part of the research suggest that its findings are significant. Thus, we recommend that future studies need to include a

more comprehensive and longitudinal dataset to allow robust generalisations. Research is needed to examine undergraduate students of various major fields who experienced a decline in success rates under both semester-based and block course formats.

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