



## Class schedules from international practices to the Bhutanese context: A review of literature

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### ABSTRACT

The class schedule is one of the most important determinants of students' academic achievement. In the face of a rising tide of competency-based curricula, there are calls that urge schools to reschedule class structure from a traditional mode to systems that can lend larger blocks of time. As Bhutan recently implemented competency-based curricula, it appeared quite reasonable that there should be a system that allows larger blocks of time in each class. This narrative overview was, thus, carried out to examine the trends of class schedules world-wide and provide insights, if any, to contextualize into Bhutanese setting. The study searched literature from Scopus, ERIC, and Google Scholar supplemented by random search from search engines and citations of the articles retrieved. 81 articles met the criteria for review and analysis after screening out using a set of inclusion and exclusion criteria. The practices, including traditional schedule, 4×4 block schedule, A/B block schedule, hybrid block schedule, trimester plan, Copernican schedule, interdisciplinary block schedule, and one-subject-a-day schedule appeared in most of the articles reviewed. It emerged that 4×4 and A/B block schedules are far more popular than other class schedules practiced effectively with supporting empirical evidence. Findings from this review have implications to the way the class schedules are organized in Bhutanese educational settings. The implications that need urgent attention by relevant agencies are discussed.

**Keywords:** class schedule, block schedule, schools in Bhutan, narrative review, review of literature

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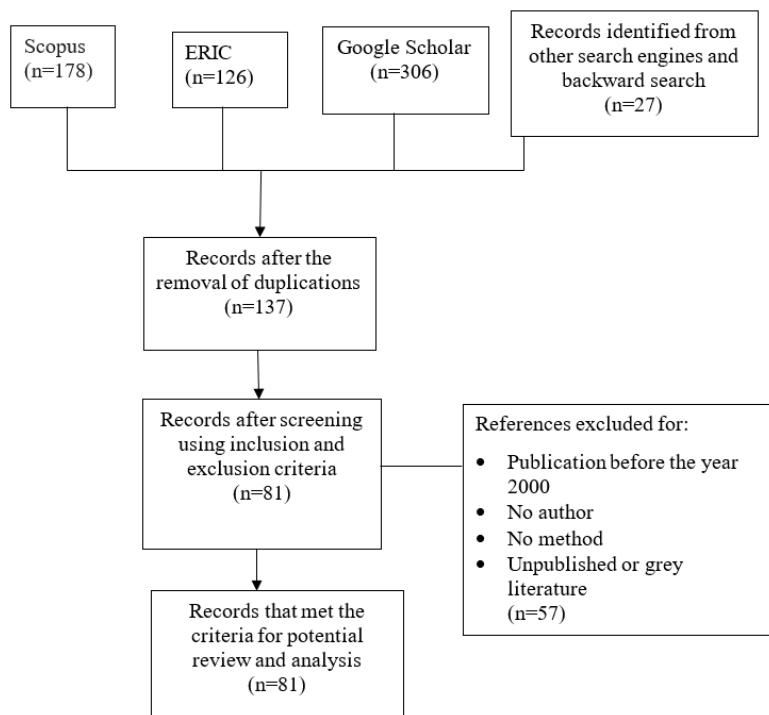
### INTRODUCTION

The class schedule is closely connected with students' academic achievement (Comer, 2012; Cotti et al., 2018). It comes with a package of considerable influences and contributions towards students' learning (Benavot, 2004; Bonner, 2012; Carrington, 2010; Eugene, 2013; Nichols, 2005). The class schedule, as per Roberts (2016), was a subject of decade-old debates and continues to do so in today's education reform efforts. Think tanks and professionals from different circles of education often get engaged, perhaps in a heated discussion of differences, as to how to model a better classroom schedule (Mizhquiri, 2019; Nichols, 2000; Washington, 2011; Zepeda & Mayers, 2006). The classroom schedule is, therefore, considered as one of the cornerstone-matters of education that is just but second to none (Rice et al., 2002).

Many, if not most, schools around the world essentially remained in practice of the traditional schedule for most parts of the 20<sup>th</sup> century (Hackney, 2013). For various reasons, some schools even today remain closely adhered to the notions and practices of traditional schedules, conceivably, even without much merit. The first shot over the decade-long battles of traditional class schedules was, however, fired in the USA in early 1983 (Hackney, 2013, Washington, 2011). Despite its roots and

origins that dates back to a long view of history, the faith over the traditional school structure and schedule was put into question when *A nation at risk* reported that American students were tacitly lagging behind their near-peer counterparts in other nations (Nichols, 2000; Queen, 2000). In 1994, the report by the National Commission of Education on Time and Learning, *Prisoners of time*, criticized the traditional schedule and challenged educators to use a time in new, different, and better way to enhance students' learning trajectory (Bottge et al., 2003; Cotti et al., 2018; Levy, 2020; Nichols, 2020; Zepeda & Mayers, 2006).

Typically, but not universally, many nations operated school schedules somewhat different from the traditional schedule, at least, since a couple of decades ago (Levy, 2020; Smith, 2011; Zepeda & Mayers, 2006); take, for example, at the turn of early 1990s, more than 40% of high schools in the USA operated a system that provided a concerted period of time for learning with little to fewer instructional fragmentation. In the USA today, as many as 72% of high schools focus on the routine that allows lengthy instructional time (Queen, 2009). This system that favors larger blocks of time is, of course, both pervasive and widespread across many parts of the world (Labak et al., 2020; Merchant & Paulson, 2001). Britain, Canada, France, and



**Figure 1.** Flowchart of the literature selection of the present study (Source: Author)

Germany to mention just a few advanced nations, are amongst those countries where public education increasingly attempts to configure a school schedule that pays attention to larger blocks of time (Labak et al., 2020; O'Meara & Prendergast, 2018).

Not surprisingly, recent research on school schedule and time (e.g., Durwood et al., 2010; Evans et al., 2002; Labak et al., 2020, 2021; O'Meara & Prendergast, 2018) placed greater emphasis on allocating large blocks of time. Flynn et al. (2005), Labak et al. (2021), O'Meara and Prendergast (2018), Queen (2000), and Rice et al. (2002), to name a few, believe that the curriculum that demands learning in everyday life and application of knowledge requires larger blocks of time as it is almost impossible to implement things in a single period. Equally, there are claims that, oftentimes, associate extended blocks of time with popular educational theories. Childers (2018) and Hackmann (2004), for example, believe that the student-centered learning approaches associated with constructivism could benefit from an increased period of time. Quite recently, the Department of Curriculum and Professional Development (DCPD), Ministry of Education (MoE), Bhutan implemented competency-based curricula that demand extended period of time to carry out an in-depth learning connected with real-life situation. As per the informal feedback and comment from the field, the traditional class schedule practiced by Bhutanese schools does not do much justice in the delivery of the curriculum intentions demanded by competency-based curricula. This pointed out the need to examine the trends of class schedules practiced in the global landscape of education and provide direction, if any, to customize into Bhutanese school setting. This narrative overview was, thus, examined class schedules practiced in education and determined possibilities to contextualize into Bhutanese school setting. This narrative review was informed by the following research questions:

1. What are the trends of class schedules practiced in education?
2. Is there an effective trend of class schedule practiced in education?

3. What is the effectiveness of the class schedule practiced in education?
4. What is the class schedule that can be contextualized into Bhutanese educational setting?

## METHODS

The literature search on the global trends of class schedules was performed based on the lines of searches for a narrative overview. The literature search, however, included the features of systematic review methodology in order to reduce potential selection bias that remains associated with most of the literature selection (Ferrari, 2015). The electronic search, for this study, included three prominent bibliographic databases of social sciences, namely Scopus, ERIC, and Google Scholar. The literature search from these databases were mostly, but not only, research articles-original and review articles, books or book chapters, approved dissertation, or technical reports published in journals, repository databases, or printed by publishing houses from 2000 to 2022. The literature search from these databases were carried out using the scoping processes of both the SPIDER and PICO search tool. Free-text search terms or keywords, such as "period schedule", "school timing", "instructional hours and effectiveness", "class schedule", and "block period" were combined in any form of possible combinations to construct proper search or query strings (Gregory & Dennis, 2018). This was carried out using Boolean's logic operators, such as "AND", "OR", or "NOT".

The literature search was also carried out from other search engines and through the references or citation search of the articles retrieved. The literature search from the databases and random searches using search engine or citation searches generated 1,231 articles. These articles, as follow up, were screened out using a set of inclusion and exclusion criteria; and based on other evaluative points to build up a "map" of relevant studies (Figure 1).

81 articles met the criteria for review and analysis. After the screening process, each article was read to not only summarize but also to analyze and synthesize information on the trends of class schedules practiced in education. During these processes, notes were kept in a summary table against each article in terms of purposes of the study, a synopsis of the content, the research design or methods used in the study, and a brief review of the findings. The notes were, then, consumed for drafting synthesis of the narrative review.

## RESULTS AND DISCUSSION

Findings from the literature search on the accounts of school structure and class schedules are summarized and discussed in the following themes as:

### Traditional Schedule

The traditional schedule predates all forms of school structure and class schedules. It is, perhaps, the oldest form of school structure and class schedules that has been put into effect (Queen, 2000). Significantly, it is also, by far, the most prevalent form of schedule practiced in many parts of the world, including the USA (Hackney, 2013; Huebner, 2012; Rice et al., 2002). The traditional schedule, aka single-period schedule, refers to the practice of students attending the same classes on a daily basis for equal, but shorter time periods for the duration of the course (Levy, 2020; Queen, 2000; Washington, 2011). In the format of the traditional schedule, school days mostly experience short seven or eight classes, each with 45 to 55 min, meeting on a daily basis (Rice et al., 2002; Roberts, 2016; Smith, 2011). The traditional schedule, like anywhere else, is also quite common in Bhutan. This, as per Royal Education Council ([REC], 2019), the daily schedules in almost all the Bhutanese schools are divided in either seven or eight classes with 40 min recommended time.

Despite being quite common in effect, the traditional schedule is almost completely shrouded with many uncertainties. There is, indeed, a growing body of research that points out that there are not many advantages or merits associated with traditional schedules (e.g., Bottge et al., 2003; Childers, 2018; VanWeelden, 2015). The traditional schedule, therefore, draws a lot of fire from educators and parents (Ellerbrock et al., 2018). The criticism against the traditional schedule includes, but are not limited to, fragmentation of the instructional time, lack of adequate time to make a concerted effort and deeper learning; reduction of the opportunity to use innovative and active learning strategies, or reduced effort to use or loss of time as a result of frequent changes in period.

### Block Schedule

Block scheduling is an alternative and supposedly the only recommended method in place of a traditional schedule (Gullatt, 2006; Zepa & Mayers, 2006). It is, oftentimes, employed as a quick fix recipe for ineffective traditional schedules. It is typically known as the organization of a daily school schedule into blocks of time over an extended period (Bryant & Bryant, 2000). Many schools in the USA, a few Flounder and Nordic countries, and Australia today, to mention just a few, today have shifted from traditional schedule towards a practice that provides blocs of time or extended period of time (Ellerbrock et al., 2018; Heltzel-Ward, 2013; Huebner, 2012; Labak et al., 2020). The term "block" does not refer to a specific period of time but denotes a schedule that is flexible enough to allow a lengthier period

of instruction (Comer, 2012). As per Ryan and Cooper (2004), the "block scheduling is a 'less is more' approach, where students spend less class in each school day but spend more time in each class" (p. 133). The detail of block schedules are, as follows.

### Four-by-four block schedule

The 4x4 block schedule is, in fact, the most popular block schedule of all. Quite many schools (in Australia, Finland, and the USA for example) operate based on 4x4 block schedule (Brannon, 2020; Ellerbrock et al., 2018; Mattox et al., 2005; Rettig & Canady, 2001; Rice et al., 2002; Smith, 2010; Thomas, 2001). The organization of the daily class schedule, as per the 4x4 block schedule, is divided into four blocks with 90 min in duration in each block (Ellerbrock et al., 2018; Heltzel-Ward, 2013; Huebner, 2012; Labak et al., 2020; Pettus & Blosser, 2013).

The 4x4 block schedule, as per Labak et al. (2020) and Zepeda and Mayers (2006), is practiced with little to moderate variations. The 4x4 skinny block schedule, for example, is one of the modified versions. As Mizhquir (2019) put it, teaching of core academic subjects notably takes place in the first two, three, or in all the blocks. The last few blocks of time or in-class time after lunch remain usually, but not exclusively reserved for non-academic programs or elective subjects (Hackma, 2002). The other version that is quite noteworthy is the 4x4 flex schedule. While related to the 4x4 skinny schedule, its last few blocks of time or in-class time after lunch are slated more for assignments, homework, literature search, or otherwise (Gill, 2011; Smith, 2010; Spence, 2020). These schedules, though not necessarily, appear much relevant to key stage 1 in Bhutanese settings. This is, due, in part, that the class schedules, such as these, are convenient if there are four subjects offered in a year.

This schedule, as per the growing body of literature, holds promising benefits. These are, but not only,

- (a) extended periods of time to fully develop concepts and themes,
- (b) fewer transitions during the day,
- (c) more time for individual interaction between and among teachers and students, and
- (d) increased opportunities for teachers to use varieties of innovative strategies (Ellerbrock et al., 2018; Labak et al., 2020; Labak et al., 2021; O'Meara & Prendergast, 2018; Rice et al., 2002; Yesil Dagli, 2010).

As per Nichols (2005), a larger block of time should be allocated to teach a topic in its depth, e.g., to focus on one topic where innovating teaching practices, e.g., lab-work or collaborative peer-based learning could take place (Marchant & Paulson, 2001; Nichols, 2005).

There are records that substantiate the effectiveness of the 4x4 block schedule. For example, in a comparative study conducted by Childers (2018), the USA students from 4x4 block schedule groups outperformed their counterparts from traditional schedules in mathematics achievement tests. Likewise, in a recent study conducted by Landry (2016), both teachers and students felt that students were more productive and experienced greater academic growth in block scheduling. These findings, in fact, mirrored the findings from the past research by Adrain (2009), Comer (2012), Evans et al. (2002), Forman (2009), Hueber (2012), Nichols (2005), Nogler (2017), Norton (2010), and Smith (2010, 2011).

### *Alternating day block schedule*

The A/B schedule, which is also referred to as the alternating day schedule, is another form of block schedule. This schedule, like the 4x4 block schedule, is common in Australia and the USA for example (Ellerbrock et al., 2018). It operates by the way, wherein students take four classes on A days and another four classes on B days (Botthe, 2003; Ellerbrock et al., 2018; Hackma, 2002; Hackney, 2013; Heltzel-Ward, 2013) or a teaching schedule where students and teachers meet in four classes every other day for extended blocks of time (Clark, 2021). According to Heltzel-Ward (2013) and Hickman (2006), this schedule per se is compatible with a school that runs on a six-day cycle, wherein students take four classes on day 1, 3, and 5 and other four on day 2, 4, and 6. This schedule, as per Hackney (2013), is an alternating pattern that repeats all the while in a year. This schedule, as per Williams (2011) and Williams and Shapiro (2018) is also practiced as ABC model, where A and B days are reserved for blocks of time, while on a C day, schools practice traditional schedules. Needless to say, this schedule as it seems though, appears convincingly operational at key stages 2 to 3, if any, in the Bhutanese contexts. This is because the alternating schedule, as Hackma (2002) says, can best run the school that offers up to eight subjects in a year with four subjects on every alternating day. On the whole, it is by no means that the A/B schedule is as rigid as one might assume occasionally. There is no denying, as such, that the A/B block schedule can be modified in numerous possible ways to suit the need and interest of schools that offer six to eight or more subjects (Dickson et al., 2010).

The A/B block schedule also shares similar patterns of perceived benefits like the 4x4 block schedule. In a recent study conducted by Brannon (2020), students from A/B block schedule had significantly higher scores in algebra concepts than the students from traditional schedules. Similar results were also recorded by Childers (2018), Clark (2021), Hackney (2013), and Pedersen (2001). The comparative finding between 4x4 and A/B block schedule is, however, mixed and shaky. Many, therefore, argue that there is no clear advantage of one over another (Bottge et al., 2003). The study conducted by Lewis et al. (2005), on the other hand, found out that US students from 4x4 block schedule performed better than their peers from A/B schedules in reading and mathematics standardized tests.

### *Copernican schedule*

The Copernican schedule, for VanWeelden (2015), is a form of block scheduling. Zepeda and Mayers (2006) describe Copernican scheduling as typically following one of two formats. Either students enroll in one "four-hour macro class each day" for core subjects and then "two or three shorter classes each day" for electives for a period of approximately 30 days (or six weeks); or students enroll in "two classes lasting approximately two hours each and receive new schedules every 60 days" (p. 137). The first configuration of the Copernican schedule, of course, looks quite similar to the 4x4 skinny schedule. While they share some similarities, the Copernican schedule allows schools to run seven or eight subjects in a day. In the face of such rising tides of claims, it looks convincingly rational that the Copernican schedule is somewhat relevant to customize to key stages 3 or 4 in Bhutanese education settings, at least modestly. This is because as for key stage 3, students on average, learn at least three core subjects in addition to a few minor subjects in a day (REC, 2019). Theoretically, the Copernican schedule might also work for key stage 4. In principle, this schedule, as per Queen (2000), can be modified by certain folds to suit the need of the changing

hour. Therefore, like most of the other block schedules, Copernican schedule does not have any rule of fixed schedules as it does not remain confined in the likes of "one size fits all".

The Copernican schedule, as per Rettig and Canady (2001) and Zepeda and Mayers (2006), allegedly holds benefits similar to that of 4x4 and A/B block schedule. While this in itself is largely pleasing, empirical reports around its effectiveness are both scanty and shadowy. Often enough, educators (e.g., Nichols, 2000; Zepeda & Mayers, 2006; Veal, 2000) who advocate this block schedule per se still believe that the schedule, both by and of itself, is more effective than the traditional schedule, at least modestly.

### *Hybrid block schedule*

As its name implies, hybrid block schedule is a blend of single-period schedule and block schedule (Mizhquir, 2019). In this school day schedule format, some classes are held in the block format, while others, depending on need or preference, are held in the traditional format (Smith, 2010). Usually, schools operate five classes a day as opposed to four in other block schedules and seven to eight in traditional schedules (Dickson et al., 2010). According to Queen (2000), classes in hybrid block schedule can be scheduled in various combinations, according to subject content or desired flexibility. Correspondingly, many schools in Bhutan follow a hybrid block schedule-like format. The case in Bhutan is, however, quite different. This is because the frequency of blocks of time offered, oftentimes, comes less both in a day or in a week.

Hybrid schedules, like other block schedules, result in better student performance. In a recent study conducted by Childers (2018), the USA students from hybrid block schedule demonstrated better understanding of concepts from physical sciences in their end-of-course tests. Moreover, the students from this block schedule exhibited equivalent performances with students from 4x4 block schedule or A/B block schedule. While these are the claims, reports surrounding hybrid block schedule are quite scanty and shallow when compared to 4x4 and A/B block schedule. Nevertheless, hybrid academic schedules are still believed to provide an academic schedule type that meets the needs of students, course content, and school goals. The hybrid allows a school freedom to utilize a combination of both the traditional and block academic schedule at its discretion (Washington, 2011).

### *Trimester schedule*

Trimester schedule, as per large anecdotal information (e.g., Hackney, 2013; Pettus & Blosser, 2013; Reinke, 2018; Washington, 2011; Zepeda & Mayers, 2006), is prominent in colleges. This schedule per se allows the school year to be divided into three trimesters (60 days per term), each of which includes four or five blocks of time (Bair & Bair, 2010; Stanley et al., 2007). This schedule, both by and of itself, stands quite promising if contextualized into Bhutanese setting. While it seems to hold some degree of promises, it might draw some degree of critique as it runs in a pattern of three semesters, which is not the case in Bhutanese educational setting.

This schedule, though prominent in colleges, is rarely acknowledged and poorly studied in school settings. Its effectiveness regarding students' academic performance is, therefore, largely surrounded in mystery. As it would be so, this schedule might still work out to be effective if it is operated based on the modes of other block schedules. A period of three semesters, for instance, might supposedly turn out to be an effective turn of the lessons, if filled up with either a 4x4 block schedule or A/B block schedule.



### *Flexible interdisciplinary schedule*

The flexible interdisciplinary schedule is one of the forms of block schedule (Caplinger, 2013). As its name implies, the flexible interdisciplinary schedule is not as rigid as other block schedules. Take, for example, the language arts and social studies are taught in one block of time just as maths and science in another (Olsen, 2020). Its strength lies upon its ability to help students understand the connection between and amongst subjects (Brown, 2001; Daniel, 2007). This schedule, in itself, looks quite relevant to what is being desired by current curricular reforms in Bhutan. The Bhutanese science teachers, for example, are increasingly encouraged to apply epistemic processes of STEM education during science lessons (DCPD, 2022). The flexible interdisciplinary schedule, therefore, seems to hold great promise if implemented in the Bhutanese contexts. It, if any, may possibly help to break download-bearing walls that exist amongst related subjects, either wholly or partially.

This schedule, though quite prevalent in the school system, considerably lacks empirical data that substantiate its effectiveness. Therefore, up to this end, it looks quite apparent that there is virtually no study that has empirically tested its effectiveness. While this is quite certain, there is enough literature that supports the case of interdisciplinary approach of teaching. Integrative and transdisciplinary approaches of STEM education, perhaps, are interdisciplinary approaches that are increasingly backed both by growing bodies of theoretical foundations and increasing deposits of empirical data.

### *One-subject-a-day schedule*

This block schedule, as evident, is quite common in elementary schools and home schools. It is nested on the idea of providing one-subject-a-day for a certain period of time (Blair & Blair, 2010). It typically breaks a traditional school day into several blocks of time, but exclusively for one subject a day. Take, for instance, students might do maths on Mondays, English on Tuesdays, science on Wednesdays, social studies on Thursdays, and electives or anything else on Fridays (art, music, foreign language, etc.) (Faulconer, 2020). The order and length of the blocks might vary from school to school, but the idea is to focus on one subject more thoroughly and in-depth each day. In Bhutanese contexts, this schedule, both by and of itself, looks quite doable at key stages 1 and 2. This is due, in part, to the number of subjects offered at these key stages (e.g., as per REC, 2019) appears increasingly doable to follow the mode of one-subject a day.

One-subject-a-day schedule though may appear quite radical, there are schools and families that still prefer to focus on a daily basis instead. While there is little to less studies carried out in this regard, there are some explanatory groundings that give due regards regarding the suitability of the one-subject-a-day schedule. In a school with littles, children often spend an unlimited amount of time on a fascinating reading or a time-consuming project without the pressure of having to pack up and move on to another (Marie-Claire, 2019). Moreover, students at the lower grades, at least by their needs, require repeated routine or extended periods to form habits or soak in basic information and concepts (Briggs, 2012).

Overall, all types of block schedule, including one-subject-a-day schedule, have their own share or fair amount of concerns. Critiques, for the most part, argue that children in larger blocks of time, oftentimes, fall off from the pace of learning as a result of cognitive overload, tedious and monotonous nature of learning, or pressure

related to the need to attain for an extended period of time. Moreover, it is almost entirely harder to make up for the absences and missing works for both teachers and students (Keny, 2003; Levy, 2020). While these claims are quite certain, they can be averted, however, by planning the lesson carefully. Issues related to the monotony and boredom nature of the learning, for instance, can be minimized by incorporating a multitude of teaching strategies or various range of stimuli.

## CONCLUSIONS

This narrative overview carried out literature search from three electronic repository databases, namely Scopus, Eric, and Google Scholar. The literature search was also carried out from other search engines and citation searches from retrieved articles. As per the literature search, many schools around the world still practice traditional class schedules. While this is common, there are quite many schools that practice 4x4 block schedule and A/B block schedule in place of traditional schedules. Block schedules, such as hybrid, trimester, interdisciplinary flexible, or one-day-a-subject schedule, are other types of class schedules practiced in place of a traditional schedule.

The block schedules have perceived advantages, including less fragmentation of classroom instruction; extended periods of time to fully develop concepts and themes; fewer transitions during the day; more time for individual interaction between and among teachers and students; and increased opportunities for teachers to use varieties of innovative strategies. Into all these alleged benefits, block schedules also have a few shares of concerns. These include cognitive overload, tedious and monotonous sessions, or pressure related to the need to attain the same or similar stimuli for an extended period.

### Recommendations and Implications

The education reform initiatives and proponents today make a concerted call for a greater emphasis on larger blocks of time. While this sort of call might appear quite dramatic, those that argue in favor of such educational reforms do not make a case in point simply by jumping on a bandwagon out of a mere passing fad (e.g., Gargis, 2013; Levy, 2020; Zepeda & Mayers, 2006). A growing body of research (e.g., Dickson et al., 2020; Pettus & Blosser, 2013; Labak et al., 2020; Smith, 2011; Randler et al., 2008), for the most part, lend both plausible and intelligible credence to such claims backed by educational psychology, explicit chain of reasons, and empirical evidence. Into all these types of urges, the demands are that competency-based learning, such as abstract reasoning, application of knowledge, and development of lasting imprints and values requires larger blocks of time as it is near to impossible to implement things in a single period. As the DCPD, MoE implemented revised competency-based curricula in all standing subjects quite recently, to move from a traditional schedule to a system that provides larger blocks of time appeared more than just necessary. Therefore, based on research findings, this study proposes the following recommendations:

1. The key stage 1 may have a 4x4 block schedule, that is either 4x4 skinny schedule or 4x4 flex schedule. The first two, three, or all four blocks of time may be devoted for core academic subjects, while the remaining few blocks or time-in class after lunch may be reserved for elective subjects; enrichment programs; coding and technology; recreational activities- painting, arts, or crafting; literacy activities- theatre, drama; or

for homework and assignment. This corresponds to most of the theoretical assumptions, neuroscience developments, and empirical evidence (e.g., Dimitrova, 2016; Peaton & Ordway, 2016; Pope, 2016; Sjosten-Bell, 2005) that substantiates that learning occurs at the max often during the morning sessions or the sessions just before the afternoon.

2. The daily school schedule at key stage 1 might also be worked based on a one-subject-a-day block schedule. A school day can possibly be divided into several blocks of time, but exclusively for one subject a day. Take, for instance, students might do Dzongkha on Mondays, English on Tuesdays, maths on Wednesdays, and coding on Thursdays. The afternoon classes on every weekday can be reserved for electives or anything else (art, music, foreign language, etc.)
3. The key stage 2 might also be operated based on the modes of 4x4 block schedule. It can be based on either a 4x4 skinny schedule or a 4x4 flex schedule. The first two, three, or all four blocks of time may be devoted for core academic subjects, while the remaining few blocks or time-in class after lunch may be reserved for elective subjects, enrichment programs, coding and technology, vocational traits, literature search, literary activities, recreational activities such as painting, arts, crafting or for homework and assignment.
4. The key stage 3 or even 4 may have an A/B block schedule in which four subjects can be scheduled on A days and the other four subjects can be scheduled on B days. The days can also accommodate electives or enrichment programs during the in-class time after lunch.
5. The key stage 5 may have a 4x4 block schedule in which there are four blocks of time offered for four subjects over an extended period of time.

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**Data availability:** Data generated or analyzed during this study are available from the corresponding author on request.

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