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**LEARNING SPACE DESIGN: LANGUAGE  
CLASSROOMS**

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*V Plzni dne 20. června 2019*

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## ABSTRACT

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The object of this graduate thesis is language classroom design. The theoretical part firstly distinguishes between the terms learning environment and learning space. Secondly, it explains why physical learning space is undeniably an important component of learning. Finally, it identifies and describes eight elements of classroom design. The practical part consists of a research which was conducted in six Czech schools and twenty classrooms via observation, interviews, and questionnaires. The aim of the research was to analyse and compare said classrooms to an ideal one set by the guidelines in the theoretical part. The results indicate that many design aspects are satisfactory, while some need to be clearly improved. The greatest issue was found to be classroom sizes. The last section offers some possibilities for improvement and suggests further research topics.

*Keywords:* Classroom, Classroom design, Language classroom, Learning environment, Learning space

## TABLE OF CONTENTS

I. INTRODUCTION.....	1
II. THEORETICAL BACKGROUND .....	2
Classroom Management .....	2
Classroom Climate and Communication.....	2
Activities .....	2
Tools and Techniques.....	3
Classroom Environment and Space .....	3
Light .....	9
Air and Temperature .....	9
Acoustics, Noise.....	10
Layout/seating Arrangement.....	10
Traditional rows.....	13
Semi-circle, U, horseshoe.....	14
Facing/house of parliament. ....	14
Rectangular.....	14
Islands/clusters. ....	15
Zones, stations. ....	15
Full circle.....	15
Curved rows.....	16
Diagonal. ....	16
Arrowhead. ....	17
Reverse. ....	17
One large table/boardroom. ....	17
No table. ....	18
Flexibility .....	22

Ownership .....	23
Colour.....	24
Technology.....	26
Conclusion .....	30
III. METHODS.....	31
Research Tools.....	31
Interviews with Headmasters/mistresses .....	32
Interviews and Questionnaires with Teachers .....	32
Observation.....	32
IV. RESULTS AND COMMENTARIES .....	33
Interviews with the School Management.....	33
Light.....	33
Commentary .....	35
Air and Temperature .....	35
Commentary .....	35
Acoustics and Noise.....	35
Commentary .....	37
Seating Arrangement .....	37
Rows (both horizontal and vertical).....	38
Horseshoe .....	38
Rectangular.....	38
Islands.....	39
Commentary on Rows.....	39
Commentary on Horseshoes.....	41
Commentary on Islands.....	41
Flexibility.....	42
Commentary on Flexibility .....	43

Ownership.....	44
Commentary on Ownership .....	44
Colours.....	44
Commentary on Colour.....	44
Technology .....	45
Commentary on Technology.....	46
Summary.....	46
V.    IMPLICATIONS .....	48
Pedagogical Implication .....	48
Research Limitation .....	48
Suggestions for Further Research .....	49
VI.    CONCLUSION .....	50
REFERENCES .....	51
APPENDIX A .....	55
APPENDIX B.....	56
APPENDIX C.....	57
APPENDIX D .....	58
APPENDIX E.....	59
APPENDIX F .....	60
SUMMARY IN CZECH .....	61

## LIST OF TABLES

Table 1 Barrett and Zhang's description of colour values .....	25
Table 2 Number of language classrooms .....	33
Table 3 Classrooms facing cardinal direction .....	33
Table 4 Number of windows .....	34
Table 5 Colours used on the classroom walls .....	44

## LIST OF GRAPHS

Graph 1. Layouts .....	37
Graph 2. Time flexibility .....	42
Graph 3. Space flexibility .....	43
Graph 4. Movement flexibility .....	43
Graph 5. Equipment in all of the twenty classrooms.....	46

## LIST OF FIGURES

Figure 1. Learning space types (Fisher & Dovey, 2016, p. 164).....	6
Figure 2. Ford model (Nair, Fielding, & Lackney, 2013, p. 26) .....	7
Figure 3. General learning space (Jisc, 2006, p. 11) .....	12
Figure 4. Traditional rows .....	13
Figure 5. Semi-circle/horseshoe .....	14
Figure 6. Tables facing each other.....	14
Figure 7. Rectangular seating arrangement .....	15
Figure 8. Island/clusters.....	15
Figure 9. Circular formation.....	16
Figure 10. Classic rows curved into lines.....	16
Figure 11. Diagonal type .....	16
Figure 12. Arrowhead shape.....	17
Figure 13. Reverse tables.....	17
Figure 14. Boardroom .....	18
Figure 15. No table – four students facing each other like in a train.....	18
Figure 16. No table – students sitting like in an airplane .....	19
Figure 17. No table – students positioned like in a swimming pool .....	19
Figure 18. L-shaped classroom (Lippman, 2006, p. 1).....	20
Figure 19. Learning studio (Nair, Fielding, & Lackney, 2013, p. 29) .....	20
Figure 20. Learning studio planned and designed by Field Nair International (Nair, Fielding, & Lackney, 2013, p. 30).....	21
Figure 21. Learning suite (Nair, Fielding, & Lackney, 2013, p. 29).....	21
Figure 22. Layouts suitable for independent work, tests, start of the school year (Manno, 2016).....	22
Figure 23. Layouts fitting for group work and learning stations (Manno, 2016).....	22
Figure 24. Layouts convenient for demonstration and group discussions (Manno, 2016) .	22
Figure 25. Polycentric NGLS (from Byers & Imms, 2016, p. 205) .....	28
Figure 26. German language classroom A in School 4 .....	34
Figure 27. English language classroom for upper elementary education in School 1 .....	35
Figure 28. English language classroom A in School 2.....	36
Figure 29. English language classroom B in School 2 .....	36

Figure 30. Vending machine in front of the unused connecting door in School 3, LC English A .....	37
Figure 31. English language classroom B in School 2, door view .....	39
Figure 32. Classroom of English teacher in School 3 .....	39
Figure 33. German language classroom B in School 4 .....	40
Figure 34. Language classroom "tower" for lower elementary education in School 1 .....	40
Figure 35. Language classroom "tower" in School 1, back view .....	41
Figure 36. English language classroom in School 5.....	41
Figure 37. English classroom in School 3 .....	45

## I. INTRODUCTION

We all learn in different ways. Some people learn best through group work, some prefer individual tasks and some need visual or auditory stimulations. Learning may come in various shapes and forms, but the one feature that connects them all is that learning is an endless and continuous process. People learn their whole life through numerous situations, and one of the phases, when individuals acquire new information, is behind the students' desks. Therefore, the surroundings in which we learn and teach is a crucial condition of successful learning and this fact prompted me to delve further into the complexities that create a supportive learning space.

As such, even though some researches have been conducted on this topic before, I strove to put these finding into the Czech context and education. The theoretical part sets the framework – it analyses the works of many scholars with the goal to create a guideline which could be used to measure supportiveness. The methodology part pays attention to the representation of eight key elements in correlation to the Czech language classrooms. The results are presented in the subsequent section. Finally, further recommendations are made and implications for improvement are suggested. Conclusion entails an overview of all the findings of this thesis.

## II. THEORETICAL BACKGROUND

In the first part of the section, the meaning of classroom management and some of its components are briefly introduced. The second part deals more explicitly with the topic of learning environment which is the main focus of this thesis.

### **Classroom Management**

Classroom management in this particular sense not only represents the discipline but, in addition, constitutes an array of methods and organisational techniques to ensure that learning proceeds successfully. It is essential that the principles of classroom management are effectively and to the highest possible extent applied to the classes (“Classroom management, 2014; Scrivener, 2011; Scrivener 2012). Classroom management involves activities (giving instructions, setting time), authority (maintaining attention, appropriate behaviour), critical moments (dealing with problems and discipline), grouping and seating, tools and techniques (using gestures, volume of speech), and working with the people (Scrivener, 2012, p. 54-55) Further, I explore some of these in more details.

### **Classroom Climate and Communication**

One of the first tasks that teachers must fulfill is establishing rapport. A well-set rapport between teachers and students correlates to the creation of a positive learning atmosphere. Teachers should strive for an open and honest environment in which also respect is involved. It is noteworthy that respect should go both ways. The interaction between all classroom participants takes various forms. Based on the activities, the grouping of the class is founded as a whole-class work, group work, pair work or individual. These different forms, nevertheless, should be linked by the same principles – be encouraging, positive and supportive (Scrivener, 2011; Scrivener, 2012; The Glossary of Education Reform, 2014).

### **Activities**

Another crucial component of a successful lesson is the sequence of steps. Generally, an activity should consist of six phases. Firstly, preparation/scaffolding stage applies as its aim is to lead students into the topic. The second step is to organise students into groups or pairs if necessary. It is important to give instructions as simply as possible and to demonstrate or use gestures if applicable. While students do the activity, teachers should monitor the class carefully and provide help to students if they require it. Finally,

every activity should be closed properly and proper feedback should follow (Scrivener, 2012).

### **Tools and Techniques**

In addition, teachers should consider how to effectively implement black/whiteboards, computers, and other objects that may help the teaching/learning process. Equally important is to adopt manner in which teachers speak (speed, volume) and, likewise, the non-verbal communication (gestures) they use as they may save time in the future (Scrivener, 2011).

These are only a few of the main aspects of classroom management that teachers should acknowledge as successful classroom management should, in theory, lead to a successful lesson in which all the learning aims are fulfilled. Nevertheless, reaching teaching goals can be enhanced by more means. While classroom management was and still is a concept regularly used among scholars and is considered to be a crucial part, a new term has made its appearance in the talks in correlation to the modern 21<sup>st</sup> century education – multidisciplinary. Nowadays, teaching/learning process is not viewed from the side of methodology only, but it is also looked at from the perspective of psychology, communication, technology, etc. as well. Researchers conduct various studies on broader topics, for example, the influence of surroundings on students' academic performance. This particular phenomenon is examined in more details below.

### **Classroom Environment and Space**

According to the UNESCO Institute for Statistics (2012), learning environment is “the complete physical, social and pedagogical context in which learning is intended to occur” (p. 12). There is a distinction between the notions of “learning environment now” and “learning environment before”. The latter refers to a general place which people can physically visit (a school, a library, etc.). Nonetheless, the concept of bordered space delegated to learning specifically is rejected as learning can also occur through technology as the 21<sup>st</sup> century is abundant of it. Therefore, learning environment nowadays rather implies any situations where people can learn. It is further suggested that learning environment composes of an ensemble of factors (conditions of learning) such as space, technology, time, culture (values, symbols, and communication) and policy (Partnership for 21<sup>st</sup> Century Skills, 2009; UNESCO Institute for Statistics, 2012). It should reflect the

aspect of “multidisciplinary, team-taught, highly interactive learning unbound by traditional time constraints” (Ditoe, 2006, p. 3.9).

It is implied that a sense of community, as in social context, (its members thriving to reach a common goal) should be found in learning spaces as it further supports students’ progress, participation and motivates them to achieve higher results (Bickford and Wright, 2006). Motivation, both extrinsic and intrinsic, should be elicited and encouraged; students can personalize the space and, consequently, feel more connected to it. An example of this can be seen at North Hertfordshire where students were permitted to broadcast their own radio station (Jisc, 2006).

Additionally, Abbasi (2016), a research fellow in the School of Architecture at Deakin University, maintained that school environments have an effect on the formation of adolescent students’ identity. She noted that positive influences are seen in two aspects – “they are supportive of addressing adolescents’ individuation and social integration needs; they offer adolescents opportunities for developmental exploration” (p. 99). In other words, schools that take into account developmental needs are reassuring, give freedom, offer the possibility of choice, promote the use of technology, etc.

According to Partnership for 21<sup>st</sup> Century Skills (2009), a modern learning environment offers conditions which reinforce teaching and learning; it provides educators with the possibility to collaborate; it allows students to learn current problems with the aid of suitable tools and resources; moreover, the 21<sup>st</sup> century learning environment takes into account “architectural and interior designs for group, team, and individual learning” (p. 5). Elliot Washor, a school reformist and the co-founder of Big Picture Learning company, which designed the Metropolitan Regional Career and Technical Center (The Met), claimed that modern school buildings must offer “spaces for individual work, one-on-one, small group, advisory, large spaces, to make stuff, and to display student work” (as cited in Pearlman, 2010, p. 137). Students who learn in flexible classrooms showcase a higher level of engagement, have better learning experiences, and prefer learning in a more active environment (Byers & Imms, 2016). To summarize, a 21<sup>st</sup> century modern learning space, and a classroom specifically, should be an area where participants can create, collaborate, communicate, and share ideas.

One term that Torin Monahan presented is “built pedagogy”. This term introduces the concept of a strong connection between the space in which the learning takes place and the learning process (as cited in Chism, 2006, p. 2.2). He described it as “the architectural embodiments of educational philosophies”. He argued that built pedagogy is accompanied

by discipline and autonomy simultaneously. On one hand, students can be restrained by set space as it may prohibit certain activities and, therefore, discipline the lesson; on the other hand, space allows students to view learning environments as a place which they can transform to their specific use (as cited in Cleveland, 2016, p. 31).

Learning place can be studied from two points of view. The first one looks into the psychological side, that is, how space motivates and provides comfort; the second point of view deals with the physical side such as temperature, light, decoration, air quality, acoustics, etc. (Chism, 2006; Scrivener, 2012). Weinstein claimed that school physical environments are as significant as the curriculum itself; space has “direct effects” on students (noise, crowding) and “symbolic effects” (respect or even lack of it, learning expectations) (as cited in Cleveland, 2016, p. 30). The same was observed by Nair, Fielding, and Lackney (2013, p. 16).

Kenn Fisher, an associate professor in Learning Environments in the Faculty of Architecture, Building and Planning at the University of Melbourne, stressed out the importance of the connection between researchers and practitioners. Both parties are equally significant in design as the evidence-based design (EBD) incorporates researchers’ findings and teachers’ practical knowledge. However, Norman’s model added a third component – translational developers (as cited in Fisher, 2005). Fisher (2005) listed the 8-step process of EBD:

- Define evidence-based goals and objectives.
- Find sources for relevant evidence.
- Critically interpret relevant evidence.
- Create and innovate evidence-based design concepts.
- Develop hypothesis.
- Collect baseline performance measures.
- Monitor implementation of design and construction.
- Measure post-occupancy performance results. (p. 8)

Fisher and Dovey, a professor of Architecture and Urban Design in the Faculty of Architecture, Building and Planning, (2016) analysed 59 award-winning middle school plans and divided the space within them into six categories (as presented in Figure 1) which often coincide with each other. Halls and corridors smaller than 2 metres and areas designated for staff only were not included in this typology. The authors suggested the so-called “convertible classrooms” (flexible walls allowing to change two/or more classrooms

into one commons) which provide a wide range of pedagogical forms; another type is “convertible streetspace” which is when “clusters of classrooms can be opened to streetspace as well as each other to become a larger ‘commons’” (p. 170)

<i>Space type</i>	<i>Attributes</i>
Classroom	A traditional closed learning space of about 40–60 sq metres for 20–30 students. If learning spaces are fully ‘closeable’ to this size with flexible walls then they are classified as classrooms.
Commons	A learning space of greater than about 40 sq metres that cannot be fully closed into a 25 student classrooms (or smaller) and is not the major access route to any other commons or classroom, hence protected from major through traffic.
Streetspace	An open learning space (over about 3 metres width) that cannot be closed into classrooms and is exposed to major through traffic as the primary access space to other learning spaces.
Meeting area	A small learning area of less than 40 square metres accommodating groups of 5 to 20. While such spaces may house seminars, the key criterion is that they cannot house a traditional class size.
Fixed function	Any learning space fitted for specialized use such as ‘Arts’, ‘Science’, ‘IT’, ‘Computers’, ‘Wet Area’, ‘Music’, ‘Drama’, ‘Resources’.
Outdoor learning	Any outdoor area defined on the plan as an integral part of the learning cluster, generally labelled ‘outdoor learning’ or ‘learning court’. Simple access to the outdoors does not qualify.

*Figure 1.* Learning space types (Fisher & Dovey, 2016, p. 164)

Nair, an innovationist of school design and recipient of CEFPI MacConnell Award, Fielding, a recipient of CEFPI International Planner of the Year, and Lackney, an architect focused on creating a learning environment for children and youth, (2013) drew attention to the problem of “Cell-and-Bells Ford Model”. This concept pinpoints the issues of learning being sequenced into phases of 45 minutes when students hear the bell which signifies the beginning of learning and the end of the learning process. This notion is inevitably fallacious as it has been already proven that learning does not occur in classrooms only. The Ford Model is based on the impression that learners are empty vessels which are filled in one phase and then passed on to another station which culminates in learners’ completion. It further implies that learners are the same and what they learn is the same; this indicates that there is no space for individualization. To move away from this outdated form, an updated version of the Ford model is established – the “learning streets” offer students more autonomy and greater opportunity for social learning (p. 25-26). Learning streets are transformed corridors (see Figure 2). Another solution can be found in the form of movable walls which can be used to either separate classrooms or make one big space. To further promote transparency, see-through walls can be used in halls as well.

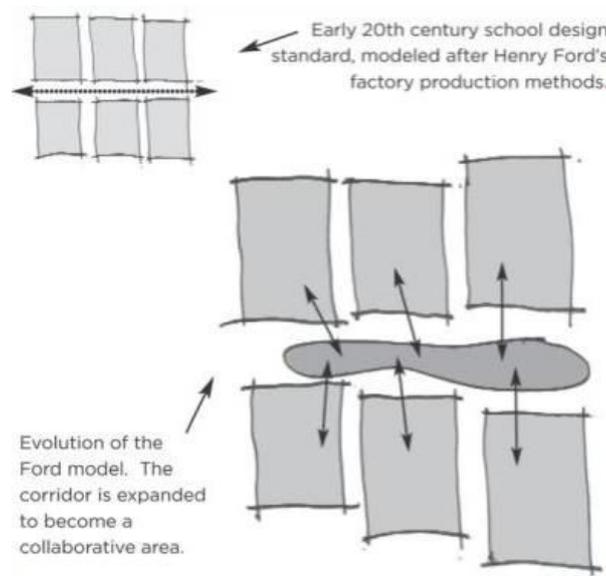


Figure 2. Ford model (Nair, Fielding, & Lackney, 2013, p. 26)

Nationwide Construction, a U.S. based design-construction company, observed five latest tendencies in modern schools – smaller classrooms that enable more intimate atmosphere, innovative tech labs with hands-on possibilities, typical learning environments which balance indoor/outdoor learning, open floor plans, and finally, eco-building schools which thrive for sustainability (5 modern design trends, 2016).

A modern learning environment (n.d.) stated that it:

...incorporates three key elements: connected devices (such as notebooks, tablets or even smartphones); audiovisual tools (including projectors and touch-screen displays); and purposeful furniture that allows students to learn in different ways at different times (such as standing desks, collaborative workstations and connected seating). (p. 2)

Chism (2006) suggested that there are nine key elements which should be kept in mind when speaking about learning space design. The first one is flexibility as students should be able to effortlessly change work from whole-class to groups to individual, and vice versa. The second one is physical comfort as, for example, uncomfortable furniture may disturb learners and lack of space for computers and books prevent proper studying. The third one deals with the stimulation of senses through colours and light, for instance. The fourth emphasizes the importance of technology. The fifth points out that there should not be a centre in classrooms which is also linked to the sixth one as classrooms should be viewed as a collaborative area. Finally, the last three elements deal with the space outside of classrooms because this space must be recognized as a learning zone too.

In a study conducted by Salford university team in 27 schools and 153 classrooms around the UK, which took place between September 2011 and June 2012, it was found that 16% of the students' progress in learning (reading, writing, and maths) in primary schools can be attributed to the classroom design. The team set three groups of design principles (SIN model). The first one which they found to be the most significant as it covers half of the influence is "naturalness". This principle includes light, temperature, air quality, sound, and links to nature. The second criterion is called "individualisation" which includes the parameters of ownership, flexibility, and connection. Finally, the third concept is "stimulation" which accounts for complexity and colour. The last two each have a quarter of impact on the learning process. The team argued that while there have already been some publications on individual aspects of classroom spaces, their research is the first one which offers a holistic multi-layered view on this topic; furthermore, even though they conducted their research in primary schools, they claimed that most of the principles are applicable to other levels of education (Barrett P., Zhang, Davis, & Barrett L, 2015).

While it has been pointed out numerously that learning should happen in the whole school building, in this chapter, the traditional concept of the physical classroom space as the primary learning environment is observed.

Hanover Research, a company that commences various researches in numerous fields of study, pointed to an experimental study that was conducted in an all-boys school in Brisbane, Australia in 2014, which set its goal to observe students' achievement, engagement, and experience. The survey presented that the students who learned in the re-designed classroom showed increased participation and their academic achievement improved too; furthermore, an analysis was carried out on Maths and English – the majority of students demonstrated notable progress (Hanover Research, 2017).

It can be observed that the surrounding of teaching/learning is very important. The design of classrooms combines the principles of teaching, environmental psychology, and architecture – if the classroom is set up as a positive, open-minded and creative learning environment and tactically structured space, it leads to the improvement of both academic results and interaction between teachers/students and students/students at the same time.

Furthermore, the seating arrangement indicates how students will work which in turn prepares students for the work. Nevertheless, furniture is not the only important element – Danish Kurani, an architect who concentrates his work on learning spaces and teaches *Learning Environments for Tomorrow* at Harvard University, emphasized that successful classrooms are not defined by fulfilling Maslow's Hierarchy of Needs; rather,

they are as successful as to what extent they take surroundings (light, acoustics, colours) into consideration (Madda, 2017). Decorations in the form of curtains or pillows enable the students to feel at ease and lessens the stress of school zone; showing students' work/projects can also imply that teachers are really interested in students' learning process. In other words, classroom space should be agile and adjustable to accommodate all the needs particular activities may require and it should be comfortable and welcoming for students. These are some of the elements of classroom design which will be discussed below.

### **Light**

Fluorescent lights are illuminating the majority of schools nowadays as naturally created lighting by Sun often does not cover the needs of both teachers and students. Nevertheless, daylight is one of the natural stimuli that enhance focus and as such, it should be considered as the main source of lighting in classrooms. Therefore, the classrooms in which learning/teaching occur should be oriented to any sides except for north as it offers low illuminance. The most effective types of windows are found to be large ones and/or the ones that are placed high above the floor (clerestory windows). They provide light which is spread in the space more equally (P. Barrett et al., 2015; Scrivener, 2012).

Another problem connected to light is glare and glaze. P. Barrett et al. (2015) suggested that the solution of abundant glare can be found in internal opaque blinds or alternatively, external blinds can be applied. Furthermore, two window sources of light from different sides should be considered. The authors also stressed that the space in front of the windows should be kept clear of any obstacles as they block natural light and can influence the flow of the air as well (p. 18-19).

Finally, the intervention of artificial light with technology should be avoided and mounted lamps should be carefully placed as to not obstruct learners' view (Niemeyer, 2003).

### **Air and Temperature**

Other essential features of classroom space are temperature and air quality. Too warm surrounding makes classroom occupants drowsy, uncomfortable, and prone to shorter attention span; too cold temperature, on the other hand, causes the same problems. Nonetheless, Wargocki and Wyon noted that classes should in general lean towards

moderately cooler temperatures (as cited in P. Barrett et al., 2015, p. 22). But, to find appropriate climate can be a long process as the larger the windows, which allow the entrance to desirable natural daylight, the larger amount of heat gain in summers and heat loss in winters. P. Barrett et al. (2015) emphasized a need for external blinds if classes face the south side as they receive an immense amount of solar heat. To achieve and maintain optimal air warmth, instead of central heating, each classroom should contain its own thermostat which is to be used freely and accordingly to the needs of the current thermal situation. Local control is a desired feature.

Temperature is linked to air quality. The Salford research team observed that while higher ceiling can disperse stuffy air more effectively, natural ventilation should be further supported by a mechanical one. Moreover, they implied that, ideally, the classes would contain window complexes of multiple levels. The first level consists of high-level windows which are open during strong wind; the second part includes trickle ventilators which help to make air flow when the winds are too powerful; in the third level, largest windows are applied for summer weather; finally, the lowest windows are located at the level of students' desk and provide overall air flow (P. Barrett et al., 2015).

### **Acoustics, Noise**

Sound and how it transmits through the classroom is another crucial part of the learning space. Schneider observed that appropriate sound transmission is vital for learning (as cited in Barrett & Zhang, 2009, p. 4). In language classrooms especially, clear reception and production of sounds are arguably the most essential components.

Noises entering the classroom through windows, students moving their books around and busy hallways are thoroughly disturbing. These external and internal disturbances can be, nevertheless, at least partially diminished. There is little to be done by teachers with external disruption – only to ask headmasters/headmistress to assign classrooms which face away from the busy streets; the storage rooms, restrooms or service rooms can be located towards the loud sections of the schools. On the other hand, the internal noise can be dealt with carpeting on the floor, curtains around the windows, decorations on the ceiling, or in general, other noise absorbing materials (Barrett & Zhang, 2009; P. Barrett et al., 2015; Scrivener, 2012). Rearranging the seating is undoubtedly helpful as well.

## **Layout/seating Arrangement**

Generally, seating model in classrooms is already fixed and throughout the years has not changed at all. In most cases, rectangular desks are put into 3 columns of rows facing the front of the teacher's desk; the second most widely used model is the desk arrangement in a shape of letter U. The first model suggests that teachers are in the center and students should mostly listen; the latter offers more participation on learners' side. It should be recognized that each seating arrangement is suitable for different teaching styles and specific activities; therefore, the design of classrooms should aim for flexibility. Some classes contain heavy furniture which is difficult to shift around, and this situation actually prohibits any possibility of rearrangement (Partnership for 21<sup>st</sup> Century Skills, 2009; Scrivener, 2012).

Moreover, the layout of the classroom should permit movement as it has been proven that there is a positive correlation between physical activity, engagement, and academic performance of students. While some might argue that students lose concentration during such movement, students themselves pointed out that this loss is significantly smaller than the drift of focus caused by immobility (Woodman, 2016).

The key element which needs to be kept in mind first and foremost is the question – what is the learning goal? Schools need to determine the learning aims and what particular techniques are used to reach the goals. Classrooms should be transformed into multiple-layered environments with specific learning zones. Overall, general classroom learning environment (see Figure 3) should contain spaces for “presentations, discussions, collaborative project work, and information retrieval and sharing” (Jisc, 2006, p. 11). The notable linking element of all these learning formats is the switch towards project-based learning (PBL) (Hanover Research, 2017; Winske, 2015). The Buck Institute of Education defined PBL as “a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks” (as cited in Pearlman, 2010, p. 120-121). PBL has stages which usually involve multiple types of work. Students' first need quality scaffolding which can be done as a whole class work; secondly, they require space and tools to conduct their research; thirdly, they are divided into groups in which they can do the actual project; finally, groups present their results (Pearlman, 2010).

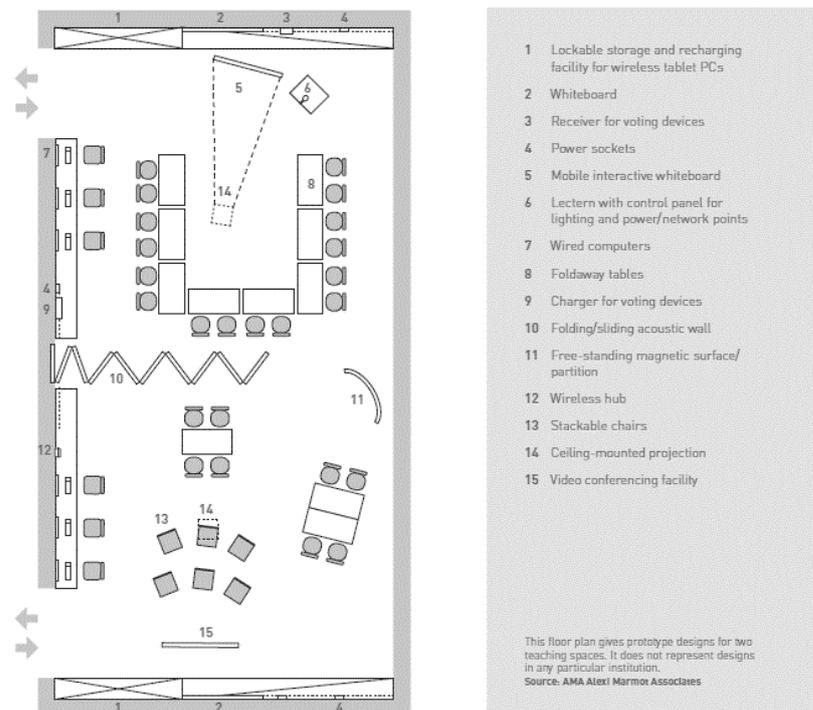


Figure 3. General learning space (Jisc, 2006, p. 11)

Sir Ken Robinson, a renowned educationalist, highlighted the importance of individual learning spaces. He suggested that whole-group work and discussions should happen near whiteboard and/or screens; small-group work and discussions should still allow students to have a clear view of each other; classrooms should enable regrouping of various sizes (as cited in Hanover Research, 2017). To enhance cooperative learning, participants should be able to move around but still be seated in near proximity of each other and the visual aids. According to Haghghi and Jusan (2011), students’ experience can decrease by 50% if they cannot see properly. Moreover, Bickford and Wright (2006) proposed an idea that the layout of classes should also allow space for visitors.

Steelcase Education, a provider of architecture, furniture, and technology designs, conducted its own research in which swivel seating is recommended. Princeton University came to the same conclusion of high effectivity of wheeled chairs with some bag space storage. These swivel chairs allow students to participate in discussions more freely as they are enabled to turn to each other more easily (as cited in Hanover Research, 2017). On the other hand, standing desks have been found beneficial as well as they “heighten alertness and even help burn calories” (A modern learning environment, n.d., p. 3). EdTech (2017) summarized that due to the implementation of standing desks, there was a 15% drop in insulin; students’ engagement increased by 12%; mental development progressed by 7-

14%. After a tech-based blended-learning was introduced, teachers, students, and their parents showcased better understanding within.

Dazkir, a researcher in cultural anthropology, and Read, an associate professor at the Department of Design and Human Environment at the Oregon University (2012), carried out a research on the impact of furniture on human emotions. Their survey showed that people prefer curvilinear shape rather than a rectilinear one. Research participants claimed that rounded furniture evoked calmness, warmness, and contentedness; in contrast to rectangular furniture which was linked to boredom, stress, and annoyance.

There are plenty of possibilities of the layout. Each of them is suited for a specific form of learning. In the following paragraphs, works of Nair, Fielding, and Lackney (2013), a contributor of the International Society for Technology in Education (ISTE) Manno (2016), and Scrivener (2012) are combined to summarize advantages and disadvantages of each seating arrangement.

**Traditional rows.** This type of seating arrangements presents learners' desks stacked in rows with students facing the teacher's desk which is in the front of the class. The advantage of this form is that many desks can be squeezed into a small space and teachers see all students. This layout is used if general teacher-centered teaching is not an obstacle; nevertheless, for language teachers/learners it is not optimal. When working in pairs and, for example, groups of four, the layout already suggests and predicts of whom the group will consist; additionally, students at the front cannot really see students in the back.; lastly, the safety of teachers and learners alike can be compromised if there is not enough space in aisles to make moving around possible.

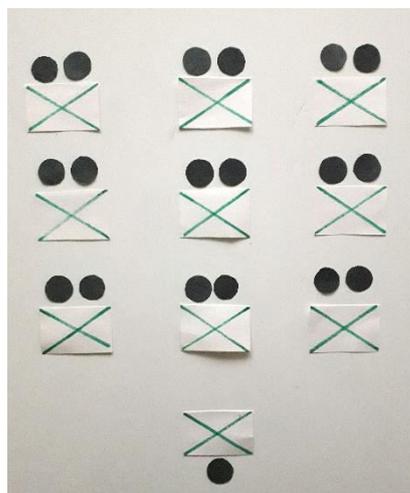
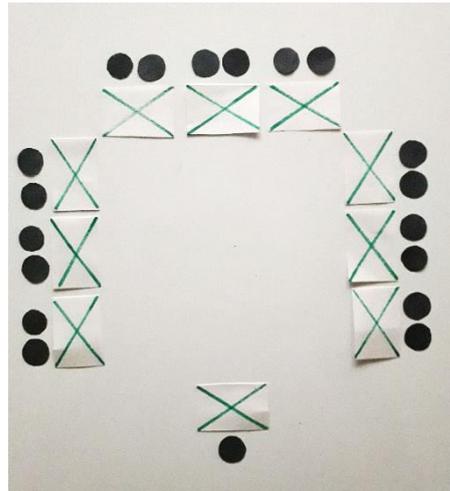


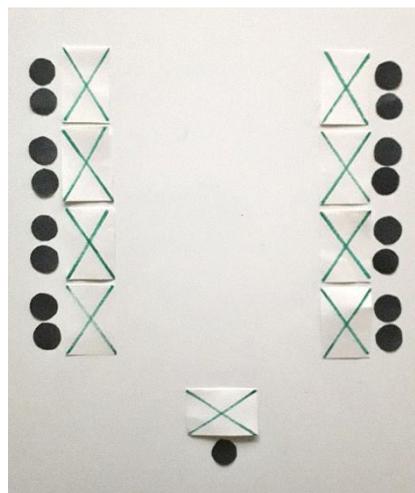
Figure 4. Traditional rows

**Semi-circle, U, horseshoe.** This form facilitates whole-group discussions. Students see each other and can communicate more easily. If the board is at the front, everybody has a clear view from the first rows. As the space is not that clustered, teachers can monitor with more ease and if needed, can provide help. The space in the middle can be used for various presentations as well. What teachers see as an advantage may be a disadvantage for shier students as they are exposed. Alternatively, this formation can be tipped to the side in relation to the walls to make it more informal.



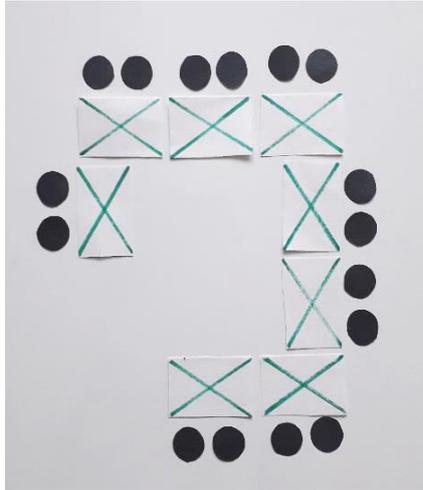
*Figure 5.* Semi-circle/horseshoe

**Facing/house of parliament.** As same as the horseshoe formation, this type encourages communication and provides a sense of opposing viewpoints which can be used in discussions on topics during which students have to take polar stances.



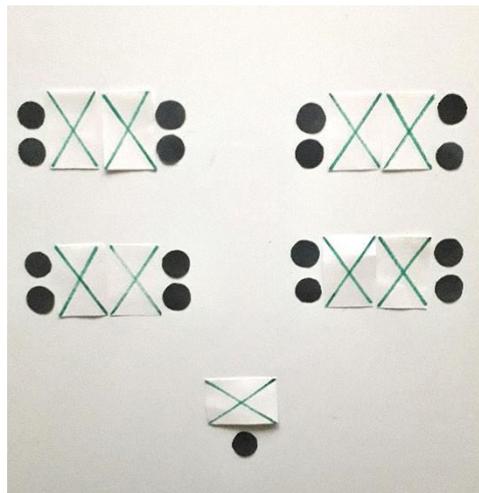
*Figure 6.* Tables facing each other

**Rectangular.** This layout enables easy movement behind desks and also offers space in the middle to do various activities if classrooms are not particularly spacious.



*Figure 7.* Rectangular seating arrangement

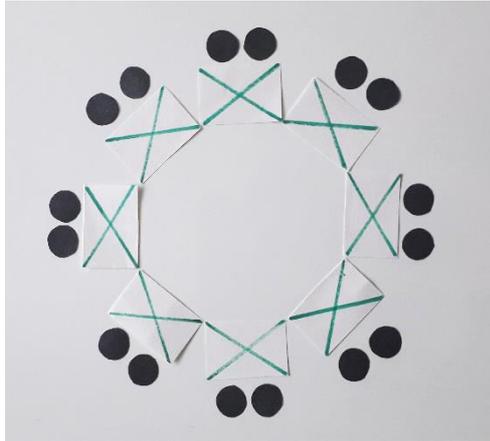
**Islands/clusters.** This type is presumably used the most when teachers are faced with coming to classrooms with traditional rows. It is the fastest way how to partially set an area which supports cooperation and small group works. The participants are members of one group but can become a part of another as quickly and effortlessly as possible.



*Figure 8.* Island/clusters

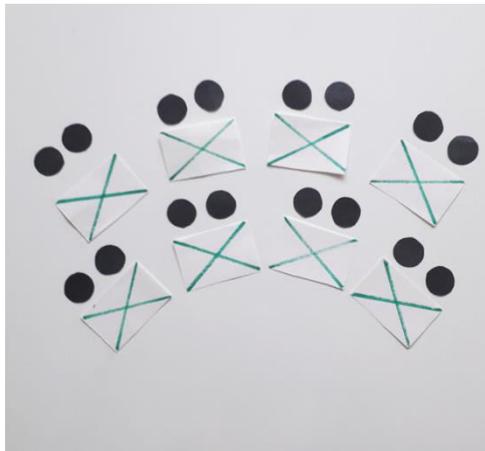
**Zones, stations.** The working centers can be used during activities that are phased. Students rotate from one center to another to complete the task. This kind of design encourages autonomy. Those who do not enjoy collaboration might find this arrangement bothersome, unfortunately.

**Full circle.** There is no teacher-center and as such, the whole arrangement provides a democratic environment.



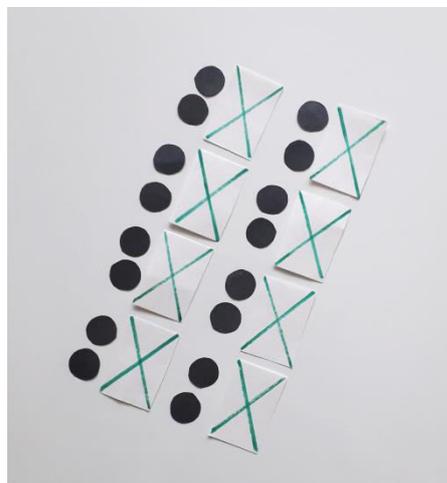
*Figure 9.* Circular formation

**Curved rows.** If there is not much space to work with, curved rows might offer a less strict environment – especially if students face the longer classroom wall.



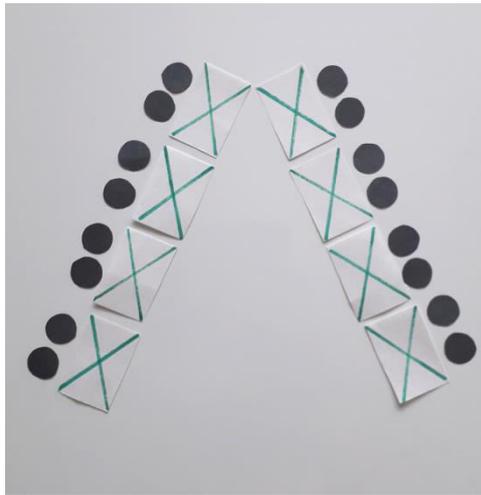
*Figure 10.* Classic rows curved into lines

**Diagonal.** Traditional rows are placed diagonally to create more of working place in the front or the back of classrooms.



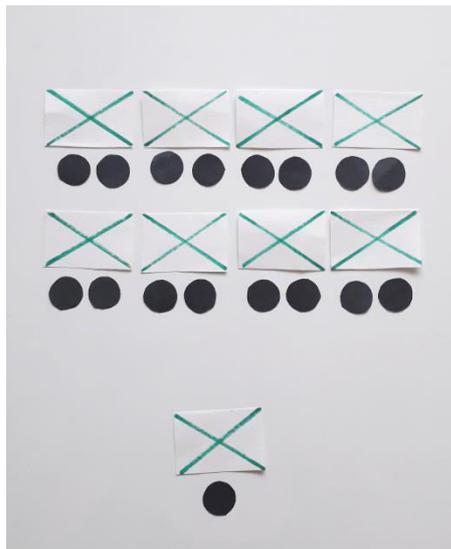
*Figure 11.* Diagonal type

**Arrowhead.** This shape allows more eye contact as it abolishes the problem of students not seeing the front of the classroom because of their taller classmates.



*Figure 12.* Arrowhead shape

**Reverse.** If the lesson does not require students to take notes extensively, this layout might be used to change the traditional classroom.



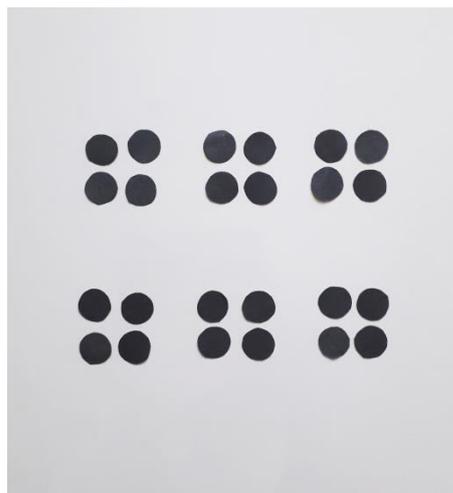
*Figure 13.* Reverse tables

**One large table/boardroom.** This form vastly supports cooperation.

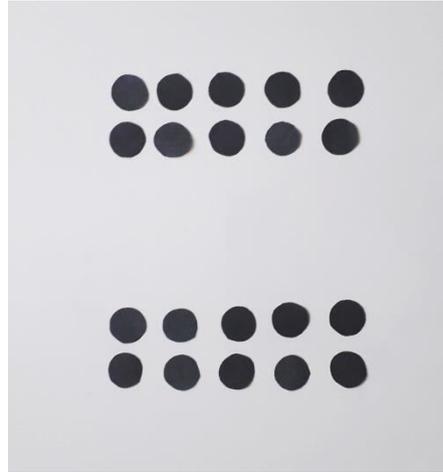


*Figure 14.* Boardroom

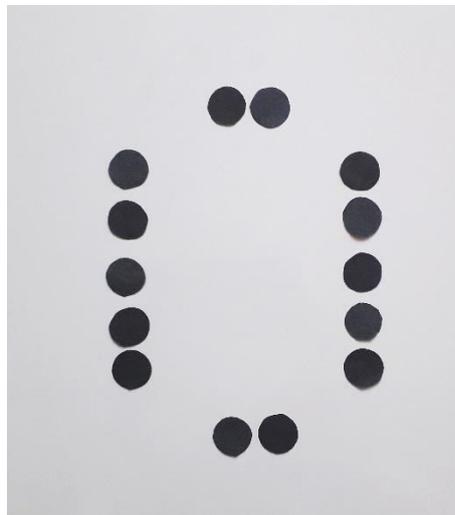
**No table.** These seating arrangements can be created to further support speaking activities, simulations, mock-meetings, etc. Not only the lack of school desks create additional space in which such activities can be done, but also the absence of them might abolish any hindering of communication.



*Figure 15.* No table – four students facing each other like in a train



*Figure 16.* No table – students sitting like in an airplane



*Figure 17.* No table – students positioned like in a swimming pool

To move away from the usual rectangular classrooms, a new structure has been promoted – “the learning studio” (see Figure 9 and 10), also known as “the L-shaped classroom” (see Figure 8). The L-shaped classroom concept was presented by Dyck who further developed three criteria for a modern classroom: the simultaneously working smaller groups cannot be disturbed by each other; the space must be flexible to accommodate all the learning forms (individual, pair, group, etc.); finally, the classroom and rearrangement of it must be manageable by one teacher. The key feature of the learning studio/L-shaped classroom is that the space provides multiple learning zones which can be used at the same time; it is suitable for project-based learning; most importantly, it tends to students’ particular needs. This layout further allows students to watch their peers work (Lippman, 2006).

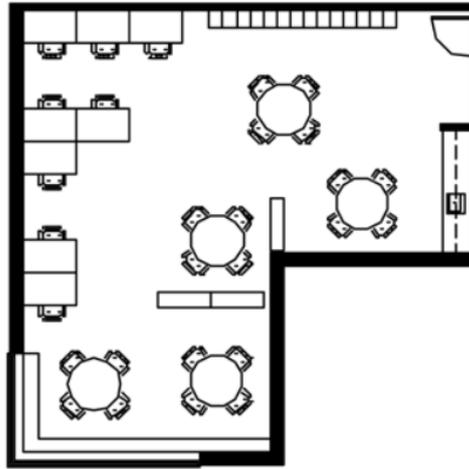


Figure 18. L-shaped classroom (Lippman, 2006, p. 1)

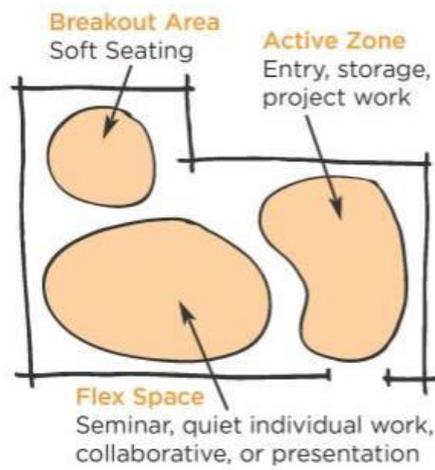


Figure 19. Learning studio (Nair, Fielding, & Lackney, 2013, p. 29)

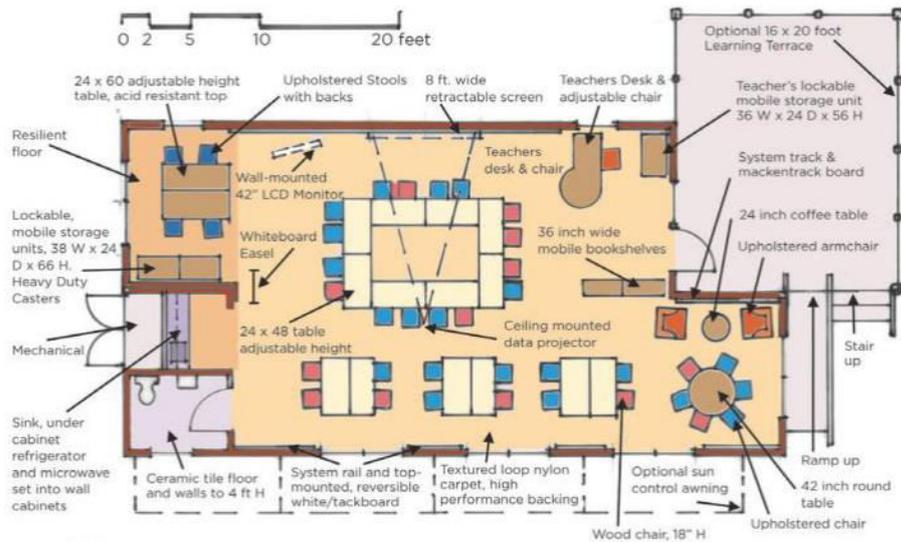


Figure 20. Learning studio planned and designed by Field Nair International (Nair, Fielding, & Lackney, 2013, p. 30)

Based on the positives of learning studios mentioned above, Nair, Fielding, and Lackney (2013) designed “Learning suite”. A learning suite consists of two learning studios which are dividable by a movable wall, bookshelves, or storage (see Figure 11).

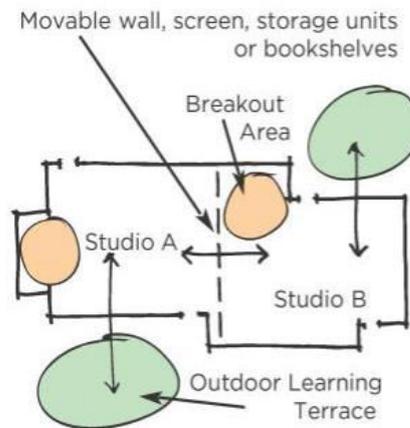


Figure 21. Learning suite (Nair, Fielding, & Lackney, 2013, p. 29)

Manno (2016) offered more designs which combine different learning zones in a singular classroom (see Figure 12-14).

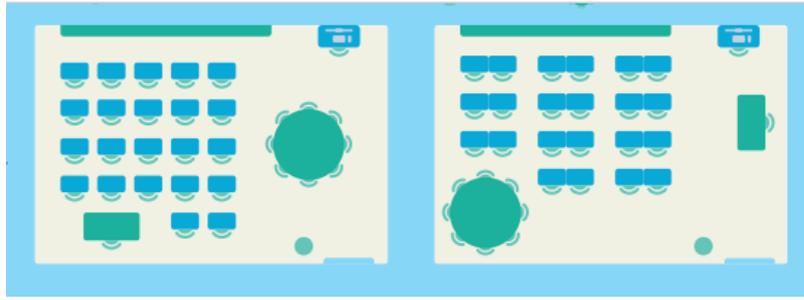


Figure 22. Layouts suitable for independent work, tests, start of the school year (Manno, 2016)

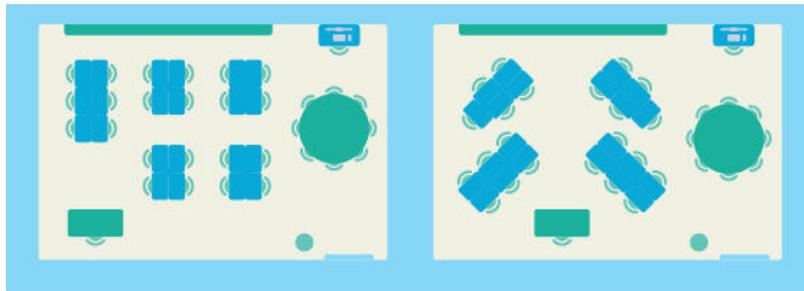


Figure 23. Layouts fitting for group work and learning stations (Manno, 2016)

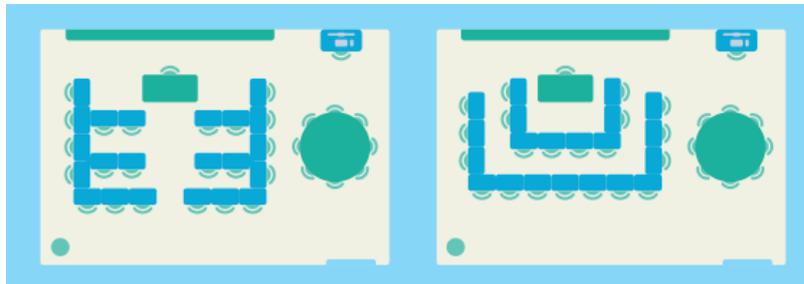


Figure 24. Layouts convenient for demonstration and group discussions (Manno, 2016)

### Flexibility

Building Bulletin 99 observed that flexibility is one of the key elements of individualisation and Higgins et al. asserted that flexibility should be reflected in the space design (as cited in P. Barrett et al., 2015, p. 28). It is essential to realize that the form of teaching languages and mathematics, for example, greatly differ. While mathematics appears to be mainly teacher-centric and uses a lecture approach, the language classrooms should indicate student-centric learning, project-based learning.

As it has been written prior, flexibility is a term vastly used when talking about learning space; consequently, it can be interpreted in many ways. Therefore, Woodman (2016), who lectures *Innovative Spaces and Pedagogy* at the University of Melbourne,

divided flexibility into four groups to determine its specific meaning and suggested more descriptive terms for each type of flexibility:

- “Time flexibility” – presents the ability to comply with needs which change over time = adaptability
- “Space flexibility” – presents the ability to rearrange space in accordance to given task = transformability
- “Use flexibility” – presents the ability to commence various approaches in the same space = polyvalency
- “Movement flexibility” – presents the ability of teachers and students to move in space = fluidity (p. 56)

The Czech Education Act issued in 2005 by the Ministry of Education, Youth and Sports, for instance, dictates that no more than 24 students can be present during foreign language lessons. The number of pupils should be taken into consideration when designing the space. Younger students would benefit from a more layered and divided space; the older students find one larger area more beneficial (P. Barrett et al., 2015).

Another point is the issues of storage. Certain items are expected to be used and available during language lessons – data projector, sound system, teaching aids, some posters with an overview of the language, etc. The accessibility of those is important but while some of them can be effectively put on walls without obstructing the window view, or they can be put into lower-height cupboards, some might take up too much space in classrooms. The Salford team, therefore, suggested that cupboards/lockers filled with these items can be put into adjacent hall/corridor (P. Barrett et al., 2015).

### **Ownership**

McMillian points out that individualization of classrooms can enhance students’ ability to understand, remember, and recall the taught material (as cited in P. Barrett et al., 2015, p. 30). Space can be personalized by various means. Many classrooms are already brightened by students’ work, posters or noticeboards. Ulrich claimed that these products promote “greater participation and involvement in the learning process” (as cited in P. Barrett et al. 2015, p. 30). Showcasing students’ work implies that they are valued. Scrivener (2012) also presented the idea of a washing line spread through the whole class which can further serve as a line-up of various articles and objects. He even suggested that this washing line can support additional light if necessary.

Nevertheless, visual complexity should be balanced – it can be neither high nor low. A sensible amount of decor should be present but should not overpower classrooms; the layout should elicit interest but not cause confusion; overall, functionality is to be considered (P. Barret et al., 2015).

Additionally, both Cleveland (2016), a research fellow at the University of Melbourne's Learning Environments Applied Research Network, and Woodman (2016), proposed that ownership of space is enhanced by having continuous and periodical entry to classrooms, as the more time teachers and students spend there, the more experiences they gain to accustom the given space to their needs.

### **Colour**

Jalil et al. conducted a research on the impact of colours on human's brain: how the colours influence an individual's productivity etc. They found that the intensity of the colourful scheme has significant meaning for students' learning (as cited in P. Barrett et al., 2015). It can be argued that white is considered neutral; however, white painted walls were found to be under-stimulating and the results of under-stimulation are lack of concentration and carelessness. The opposite spectrum of too bright colours is, on the other hand, highly disturbing. As same as for complexity, the scheme should be balanced. When designing the space, the unchangeable elements of the classroom should be assessed initially and, consequently, the rest should be complementary. Selecting suitable colours depends not only on the size of the surface, the placement of the surface, and the intensity of the hue but also the age/level of the students (Barrett & Zhang, 2009; P. Barrett et al., 2015).

For upper-grade classes, it was declared that to enhance students' concentration, use of beige and light green/blue is the most effective; the front wall, where the whiteboard and data projector are located, should be of a different colour than the rest of the class (Barret & Zhang, 2009).

Barrett and Zhang (2009) examined that, in general, the bigger the classrooms are, the lighter/ more neutral the colours should be; the more light exposure in the classrooms, the cooler the colours. They pinpointed some key influences of each hue (located on the floor, the walls, the ceiling) as well (p. 42-43). It can be seen in Table 1.

Table 1

*Barrett and Zhang's description of colour values*

Colour	Overall	Floor	Wall	Ceiling
Black	neutral colour	odd, abstract	ominous, dungeon-like	hollow to oppressive
Blue	cold in large areas, pale blue casts haze over details and objects	inspiring feeling of effortless movement (light), substantial (dark)	cool and distant (light), encouraging and space-deepening (dark)	celestial, cool, less tangibly advancing (light), heavy and oppressive (dark)
Brown	difference between natural brown (wood) and brown paint	steady, stable	secure and assuring (wood)	oppressive and heavy (dark)
Green	tasks involving concentration, meditation	natural (up to certain saturation), soft, relaxing, cold (towards blue-green)	cool, secure, calm, reliable, passive, irritating if glaring, muddy (towards olive)	protective (reflection on skin can be unattractive)
Grey	neutral colour	neutral	neutral to boring	shadowy
Orange	mellow; too bright only as accent; pastel orange cheerful and lively	activating, motion-oriented	warm, luminous	stimulating, attention-seeking
Pink	considered to be feminine oppose to light blue-green (masculine)	perhaps too delicate, unfamiliar in this location	aggression-inhibiting, too sweet if not greyed down	delicate, comforting
Red	modification of pure red suitable	conscious, alert, perhaps pompous	aggressive, advancing	intruding, disturbing, heavy
White	neutral colour	touching-inhibiting	neutral to empty, sterile, without	empty, no design

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			energy	objections (helps to diffuse light sources and reduce shadows)
Yellow	excellent in dim rooms; pastel yellow paired with accents to make it warmer (orange, red) and cooler (green, blue- green)	elevating, diverting	warm (towards orange), exciting/irritating (highly saturated)	light (towards lemon), luminous, stimulating

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## Technology

Aside from the approach towards classroom space design, usage of information technology (IT) has changed in the last few years as well. Teachers and students alike vastly encounter technology in their everyday life. National School Board Association claimed, “96 percent of nine- to seventeen-year-olds embrace the Web 2.0 culture of social networking, blogging, twittering, GPS mapping, or interactive gaming at some level” (as cited in Lemke, 2010, p. 244). Lemke (2010), who is a CEO of the Metiri Group which focuses on the implementation of technology in schools, presented an extensive number of examples of IT being incorporated into the actual real world; she contended that “digital and physical lives are blurring” (p. 243).

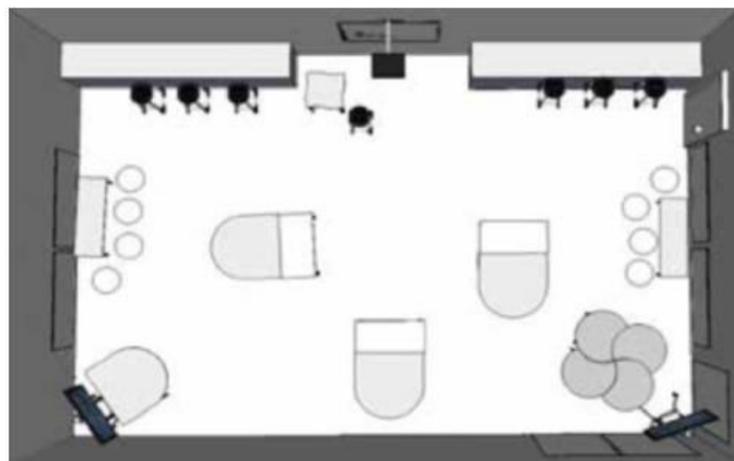
According to Oblinger (2006), “students consider the Internet, not the library, their information universe” (p.1.2). As such, this fact is to be reflected in classes as well. IT, if integrated correctly and properly, can, therefore, support learning process and enable more possibilities; but, both the devices and audiovisual tools must be incorporated in a system which showcases teaching theory. Byers, the director of Innovation in Learning, and Imms, an associate professor at the University of Melbourne, (2016) pointed out the opinion of many scholars – in some cases, IT is merely added to lessons, it is more of an extra feature than an equal part of the pedagogical practice. Maddux called this phenomenon of teachers using technology just because they have access to it “Everest syndrome” (as cited in Stanley, 2013, p. 3). Byers and Imms (2016) claimed that technology-enabled new

generation learning spaces (NGLS) provide connectivity between teachers and students in both ways. On the other hand, successful integration of IT is, for example, in PBL of 21<sup>st</sup> century classes, as follows: firstly, technology helps students to find appropriate information for tasks; secondly, they create their products; lastly, it helps to present their final projects. Most importantly, IT is a vessel and not the end product (Pearlman, 2010).

Lemke (2010) presented the idea that a 21<sup>st</sup> century competitive-able individual needs to have the technological skills of the 21<sup>st</sup> century. She proposed three concepts of modern learning – “visualisation”, “democratisation of knowledge”, and “participatory cultures of learning”. In her study, it is showcased how the “technology permits greater balance between a visual approach and traditional language-based communication” (p. 242). Her first concept, visualisation, observes that visual stimuli and audio/text stimuli are processed differently by human brains; students learn the best when all three are combined and integrated; it is preferable when text is heard rather than seen. Lemke adopted four elements that are applied to design of digital products – contrast (difference attracts the eyes), repetition (shows togetherness), alignment (gives structure and order), and proximity (related items grouped together). The second innovation, democratisation of knowledge, states that it is the school’s obligation to provide students with access to information. The students “gain expertise in navigating, interacting, and learning within digital environments” (p. 260). Teachers should be able to adapt technology to their students’ needs. Additionally, students must be taught how to look at sources critically. Lastly, the third innovation presents the importance of participatory learning which has been enabled by Web 2.0, specifically, the applications such as *Facebook*, *Twitter*, etc. as they provide their users with space to contribute and authenticity. *Facebook* and *Twitter* are especially put forward as the former is a medium students’ already use and the latter promotes more opinions/comments exchange (Stanley, 2013).

Currently, there are two widespread models. The first one presents spaces which are normally used per one function (such as hallways or canteen) but are transformed into double-function areas as computers are set in them. These open-access IT areas “encourage learning through dialogue, problem-solving and information sharing in the most supportive of contexts” (Jisc, 2006, p. 4). The second occurrence is the classroom presence of IT in the form of one computer/laptop, an interactive whiteboard (IWB) located behind the teacher’s desk, and a data projector dangling from the ceiling (Jisc, 2006; Partnership for 21<sup>st</sup> Century Skills, 2009). However, IWBs are usually located in front of and the center of

the classroom. Reynard called this “fireplace syndrome” (as cited in Byers & Imms, 2016). In a study conducted in Australian primary schools, the difference between traditional general learning areas (GLA) with students’ desks facing frontal teacher position and classrooms designed in accordance with the NGLS principles were observed. The NGLS classrooms were not centre-structured and eliminated Reynard’s fireplace syndrome of IWBs as seen in Figure 25. One of the aims was to observe students’ engagement in their “Integrated Studies” which were English, Humanities and Science lessons based on the PBL approach. The two other aims were set to analyse students’ perception of IT and their learning experience. Byers and Imms’s (2016) results among others implicated that “layout and elements of the NGLS had a significant effect on how teachers incorporated the use of technology within their practice. This then had a corresponding effect on the way students’ utilised technology” (p. 211).



*Figure 25.* Polycentric NGLS (from Byers & Imms, 2016, p. 205)

Roger Shank, the founder of Institute for Learning Sciences at Northwestern University and education reformer, felt strongly negative about classrooms and claimed that there is no need for classrooms at all and computer-based learning should replace them. He said, “Classrooms are out! No more classrooms! Don’t build them!” (as cited in Fielding, 2006, p. 1). He based this statement on the opinion that students learn best by trial and error; error evokes emotions which is rarely seen in typical classrooms. According to him, 1/3 of daytime is to be devoted to the creation of something, 1/3 consumed by socialization, and finally, the last third is to be dedicated to computer work. Shank claimed that all these learning cycles can be commenced in multiple non-classroom places. For example, libraries or halls for computer-learning, conference rooms and cafeterias for

social learning, science labs and museums for learning by doing (Fielding, 2006). While his assertion may seem sound to some, a considerable number of academics still believe in the importance of face-to-face learning and the human factor. The middle ground is to be found in blended-learning. Sharma and Barrett described the approach as “a language course which combines face-to-face classroom component with appropriate use of technology” (as cited in Stanley, 2013, p. 10). Blended-learning is offered through *Virtual Learning Environment, Moodle, Blackboard* or *flipped classroom* format (Stanley, 2013).

In language classrooms specifically, Stanley (2013) asserted that IT offers “a source of real language, both spoken and written” (p. 2) and he specifically highlighted few functions of how IT can be utilized:

- Accessing information, including information about language
- Exposure to the target language
- Entertainment (i.e. reading/listening for pleasure)
- Creating text
- Publishing learner work
- Communication and interacting with other language users/learners
- Creating community
- Managing and organising learning (e.g. learning management systems, online vocabulary notebooks, etc.) (p. 1)

Further, Stanley (2013) analysed works of Hockly and Lyon-Jones to make a list of questions which teachers should ask themselves before integrating technology:

- “Why use the technology?” – Is the activity enhanced by the technology?
- “Who is the technology best for?” – Are the learners of appropriate age to use the technology?
- “What is the technology best used for?” – Is the chosen medium the most suitable one?
- “Where should it be used?” – In what kind of learning environment is the technology utilized the best?
- “When should the technology be used?” – In what particular time implement the technology?
- “How should the technology be used?” – Does the technology help more teachers or students? (p. 4)

In previous years, one laptop on a movable cart or a heavy desktop computer were the standards in many schools, nowadays, an increasing number of schools encourage students to bring their own devices. Nevertheless, with a greater number of such devices can arise a new problem – lack of power outlets. As it often happens, there are only sparse places where one can charge electronic devices. Most schools were built in an era when tablets nor laptops were a daily occurrence. The shortage of such power outlets can be solved through built-in power furniture; this furniture would be, ideally, mobile around classrooms, depending on its need at a specific position, or by charging ports (A modern learning environment, n.d.; Winske, 2015).

Taking into account the previously mentioned advantages of IT, all the possibilities that IT provides, and the problems that can arise, schools should consider investment of considerable amount of money into IT implementation and fine network connection. Equally important is the training of teachers so they can use the technology to its full potential.

To sum up, technology is among eight aspects which are identified to produce a language learning classroom.

## **Conclusion**

The Theoretical Background aims to describe all the key elements that should be considered when designing language classrooms. The following research's goal is to observe and note to what extent these guidelines are put into practice in the Czech language classrooms; moreover, some suggestions for their improvement are presented.

### III. METHODS

This chapter outlines the research methodology which was conducted in both elementary schools and high schools. The purpose of the study was to observe to what extent Czech schools provide students and teachers with hypothetically “ideal language classrooms”. As it was stated in the theoretical part, there are many facets that need to be considered when design of learning space is concerned; it includes not only theories of psychology and pedagogy but also architecture. Each field’s input assembles final plans for space design.

The schools in which the inspections were made during the span of one week are situated in the Pilsen region; they were selected in such a way to represent each type of school. The researcher browsed the Internet to identify schools which claimed to have language classrooms and/or specialized classrooms. As a result, 13 schools in total were approached and permission to conduct the research was granted in 6 schools. The research was done in three elementary schools, two general grammar schools, and one specialized high school (hospitality).

The aspects which were measured in this study stemmed from the features which had been detailed in the previous chapter. These specific features which create encouraging learning space are as follows: Light, Air/temperature, Acoustics/noise, Seating arrangement, Flexibility, Ownership, Colour, and Technology.

The structure of the research was intended to be arranged as firstly, to carry out short interviews with headmasters/mistresses and/or teachers; secondly, to photograph and measure selected classrooms, and to carefully record each feature into premade observation sheets; lastly, all compiled data for each school were to be summarized. When no personal interviews were possible, questionnaires were to be spread out through *Google Forms*.

Additionally, the researcher elected to use a recording device during the interviews to have every present reference to help with data analysis; while some of the interviewees consented to be taped on the recording device, regrettably, some did not.

#### **Research Tools**

As each school applied its own approach towards the researcher, the sequencing of the observation differed, but, nevertheless, all predetermined components were documented equally. Three methods of data collecting were used – a semi-structured interview, an open-ended questionnaire, and a direct non-participatory observation.

The researcher decided on both the qualitative and the quantitative approach. The qualitative approach allowed a deeper understanding of each case (each classroom and each design aspect) and the quantitative approach showcased frequencies of identified phenomena.

### **Interviews with Headmasters/mistresses**

An interview seemed to be a suitable method to assemble all the data through prepared questions; it also allowed the interviewer to ask the interviewees (4 people) follow-up questions if their previous answers demanded specification or asked to be elaborated on. The school management was inquired about four questions (see Appendix B). The aim of these was to familiarize the researcher with the situation of language classrooms (LCs) in individual schools – if schools possess any LCs; if LCs are divided by the language itself; if the schools do not have LCs, do they plan to set some; and finally, how it is decided where languages are taught.

### **Interviews and Questionnaires with Teachers**

The questionnaires were utilized when not all the language teachers could have been interviewed personally; nonetheless, 9 teachers were. Virtually, the interview questions and *Google Forms* questionnaires (see Appendix D) were identical to maintain objectivity, reliability, and validity. In the *Google Forms*, the teachers were just additionally asked to specify which classroom they describe to ensure that the researcher can combine their answers with the researcher's own observation. The questionnaires had, nevertheless, one disadvantage as the teachers could not be prompted to expand their responses by the researcher's additional questions. 11 responses were gathered via *Google Forms*.

### **Observation**

During the direct and systematic observation, observation sheets (see Appendix F) were filled out for each language classroom (20 classrooms). Method of observation proved to be the most valuable one as it offered the objective perspective of the researcher, personal experience of the teachers, and administrative point of view from the school management; these together formed a complete comprehensive picture of the issue which language classrooms present.

To sum up, all these three methods of data collection were applied, each being linked to the next, to form the findings of the research which will be commented on further below.

## IV. RESULTS AND COMMENTARIES

This part of the thesis presents analysed data which were acquired through methods of interview, questionnaire, and observation. This chapter's structure is in concordance with the theoretical part in which 8 important features of learning space are listed.

Initially, the responses of school management are disclosed; subsequently, responses and personal observation to individual language classrooms design aspects are displayed; finally, commentaries to each aspect are provided and the research findings are summarized.

### Interviews with the School Management

Interviewing the headmasters and headmistress aimed to uncover conditions in which languages are taught. What I found is that the average number of classrooms in which specifically only language teaching occurs is 3. S4 monumentally exceeds the average by 4. The case of S3 is very particular, as it is the only school where students come to the language teacher; logically, the number of LCs depends on the number of teachers.

The schools claimed simultaneously that the low number of LCs is due to the lack of space – regular classrooms or IT classrooms are used to teach languages in; the main concern is to ensure that students have space to learn and the exact location is a secondary issue.

Table 2

*Number of language classrooms*

Schools	S1	S2	S3	S4	S5	S6
Language Classrooms	2	3	Based on teachers	7	2	3

### Light

Spaces facing the South and West receive the most amount of natural light, which is also the case of 9 classrooms. Surprisingly, glare and glaze do not pose any problems in them as every school has blinds, curtains or some kind of shading installed to help with the abundance of light.

Table 3

*Classrooms facing cardinal direction*

	North	South	West	East	Undetermined
Number of classrooms	3	5	4	5	3

The number of windows varies considerably as well (as shown in Table 4); their common feature of appearance is that they are of a larger construction and often contain at least two opening sections as can be seen in Figure 26 and Figure 27.

Table 4

*Number of windows*

	S1	S2	S3	S4	S5	S6
Number of windows	3 and 3	2, 2 in English LC 3 in French LC	4, 4 and 3	3, 2 and 2 in English LC 2 and 2 in French LC 2 and 2 in German LC	3 in English LC 3 in German LC	2, 2 and 3



*Figure 26.* German language classroom A in School 4



*Figure 27.* English language classroom for upper elementary education in School 1

Classrooms facing the north side might have been in a disadvantage due to lack of natural light. Nevertheless, artificial lighting which is provided abundantly balances any possible problems. It can be noticed (Figure 26 and 27) that even though these photos were taken at two different locations, the style of lighting is the same – these long rectangles emit rather bright white light.

### **Commentary**

All schools were built with fairly high ceilings which enabled to construct sufficiently large windows to elicit as much natural lighting as possible. During winter time, both southern and eastern facing classrooms need the support of another light source. The only issue is that these elements might be too straining for the eyes when exposed to them for a longer period of time.

### **Air and Temperature**

All classrooms possess central heating with a manual thermostat to regulate the temperature. During warmer days, shading is used to block undesirable heat. Furthermore, various parts of the windows can be opened to let fresh air in.

### **Commentary**

Another possible solution to overheating or colder temperature is air conditioning. Regrettably, AC systems cannot be probably purchased due to their higher price.

### **Acoustics and Noise**

Except in S1, no major problems were observed or noted about noise issues. S1 is located on the main road and, consequently, suffers from the outer commotion. It was

suggested by both the teachers and the observer, that when such disturbances are to be stopped, windows are simply to be closed.

Only one slight annoyance was found in S2 – in its two English language classrooms. These two classrooms were originally one space which was later separated by a thin wall and connected through the door as seen in Figure 28 and Figure 29.



*Figure 28.* English language classroom A in School 2



*Figure 29.* English language classroom B in School 2

The same irritation was located in S3 where the same door situation occurs. In this case, the door is somewhat hidden from sight by the school supply machine allocated in front of it (Figure 30).



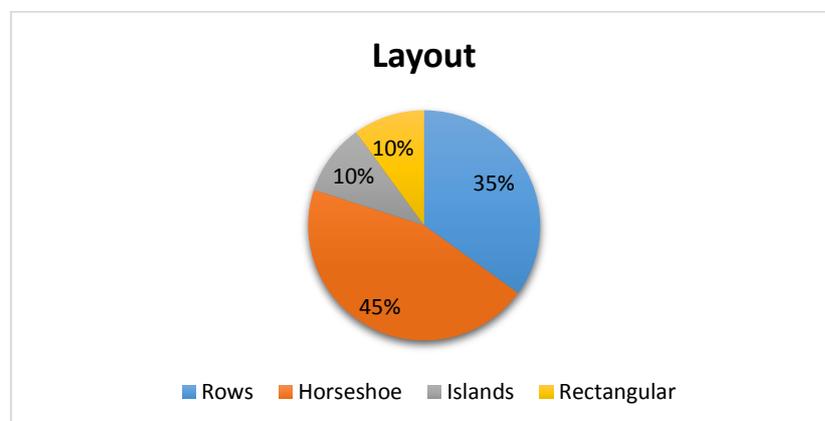
*Figure 30.* Vending machine in front of the unused connecting door in School 3, LC English A

### **Commentary**

Acoustics in observed classrooms did not generally pose any significant problems – the LCs are fitted with enough furniture to absorb minor disturbances and at the same time, they are not overfilled with too much equipment to prevent clear sound transmission.

### **Seating Arrangement**

The most common layouts used in observed schools are a horseshoe and a row – the former can be found in 9 classrooms, the latter in 7; they are followed by a rectangular shape and island arrangement in 2 cases each (see Graph 1.)



*Graph 1.* Layouts

### **Rows (both horizontal and vertical)**

The row layout is set in 7 cases out of 20. Based on the observation, these 7 classrooms have one of these common grounds: either small space is allocated or it is used for another subject. Furthermore, as this particular seating arrangement suggests, space is teacher-centered.

Five classrooms deal with small space, therefore horizontal rows were found to be the most effective way how to fit as many desks as possible into a limited space; four of them are 5x6 metres in size. All these areas offered 18 chairs and 9 desks equally. The fifth one is of the unusual shape of the hexagon; this classroom is literally dubbed “the tower” with its 4 double desks and 10 single desks, creating 18 sitting places in total.

The remaining two classrooms are of general size, that is, usually up from 6x8 metres, and other subjects are taught there due to a limited number of classrooms in schools. These two classrooms also serve as a base for a specific class.

### **Horseshoe**

Horseshoes have increasingly become favoured alternative of the traditional row arrangement. This shift is not only apparent but also welcomed by all the teachers who teach in such classrooms. They unanimously proclaimed that they can monitor students efficiently without disturbing them excessively.

Horseshoe classrooms can be divided into two groups as well – the criterion is the size once again. From 9 in total, 6 of them are in big classrooms and 3 are stationed in a smaller space. Both have a few advantages and disadvantages.

Firstly, the larger spaces permit uncomplicated teacher monitoring; secondly, the zone in between “the arm of the horseshoe” offers an excellent chance for mingling. Secondly, small-scale horseshoes are found to be more personal and cozy. On the other hand, horseshoes demand a considerable amount of space and if such space is not given, it might look and claustrophobic.

### **Rectangular**

Two rectangular arrangements which were found in School 2 are somewhat a combination of a horseshoe and a row design (see Figure 28, 29 and 31).



*Figure 31.* English language classroom B in School 2, door view

### **Islands**

Islands/clusters were observed only in School 3. The teachers of these two classrooms expressed vast enjoyment of this arrangement; nevertheless, they also wished for more defined zones (relax zones, etc.) and additional space.



*Figure 32.* Classroom of English teacher in School 3

### **Commentary on Rows**

While it is undeniably true that the classrooms are not of great size, it does not immediately signify that rows are the only means how to utilize the space to its fullest. My suggestion would be to transform the space into four islands with three sets pushed to the back wall and two sets put on each side to create an open area in between in case of Figure 33.



*Figure 33.* German language classroom B in School 4

A very clustered case of “tower” classroom (as seen in Figure 34 and Figure 35) can be remodeled through the boardroom layout. Ability to move is increased and presumably, the new unobstructed area grants more opportunities for tasks during which students are active in every sense.



*Figure 34.* Language classroom "tower" for lower elementary education in School 1



*Figure 35.* Language classroom "tower" in School 1, back view

### **Commentary on Horseshoes**

Six horseshoe classrooms are of considerable size – approximately 8x7 meters or more. And each horseshoe is located in the middle of the classroom which creates a vast amount of unused space around it. It might be advisable to reconsider this particular layout and examine if, for example, two different zones, might not be more efficient. In my opinion, learning zones could be created in English LC of S5.



*Figure 36.* English language classroom in School 5

### **Commentary on Islands**

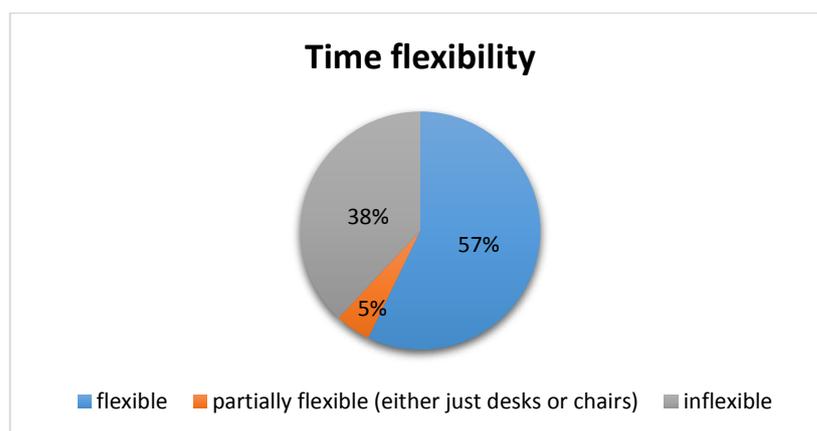
Both classrooms are the largest of the studied LCs. These have the highest chances of achieving various zones within one spot – the learning studio. My proposition is to try to establish the “fat L” plan. Figure 32 presents a classroom with measurement of approximately 10 x 7 metres. There are enough desks and chairs to create three learning

zones. The first learning area would be located in the front with the aim to facilitate two groups work. To ensure that these two groups would not disturb each other, partition could be managed by, for example, the mobile whiteboard. The second zone would be in the middle area with islands/clusters to offer the flexibility of both cooperative and individual work. Finally, the third area would produce the so called “breakout area”

### Flexibility

In terms of flexibility, the results presented here are in concordance with four different types of flexibility set by Woodman (2016, p. 56):

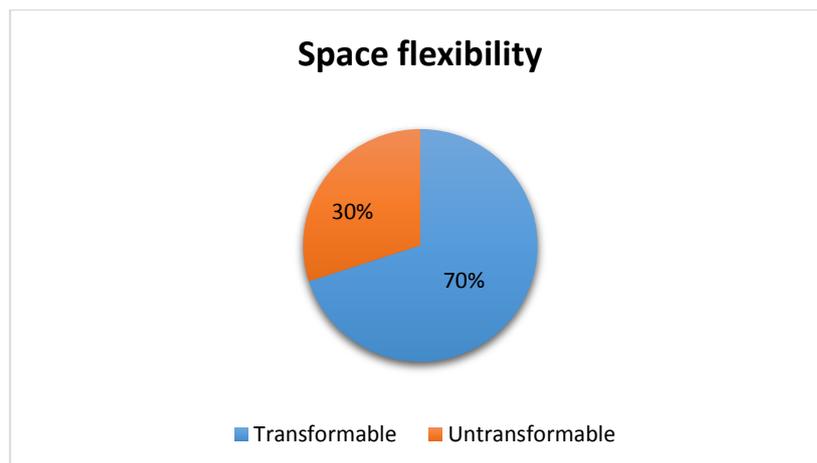
Time flexibility (adaptability) presents the ability to accommodate changes which progressively happen over time. The physical growth of students is one of the changes. Therefore, attention was paid to desks and chairs with the question “Are they resizable?”. The analysis showed that 11 LCs are adaptable, 1 is partially adaptable (only the chairs), and 8 LCs are unadaptable.



Graph 2. Time flexibility

Space flexibility (transformability) presents the idea of desks and chairs being reshaped into different forms in a matter of a few seconds. Transformability is tightly linked to the size of LCs. As such, 14 LCs are viewed as transformable and 6 untransformable due to the small classroom space.

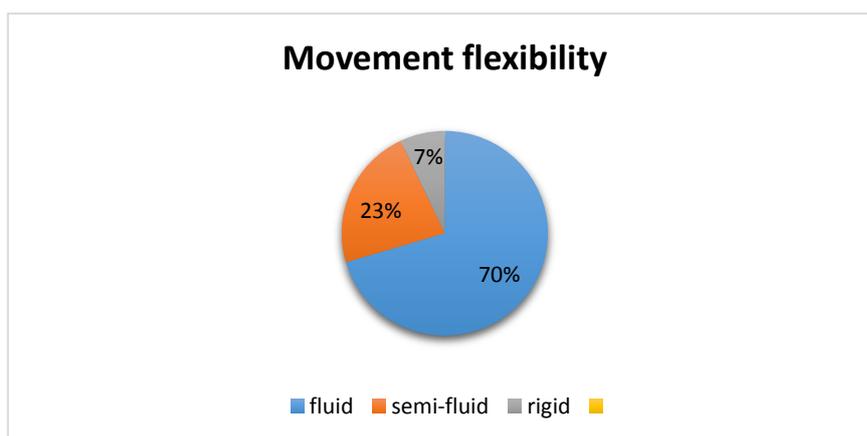
One classroom is completely untransformable not as a result of its size but because the desks are mounted to each other, forming one big horseshoe structure (see Figure 27). The reason behind this is the fact, that S1 purchased a “Consett jazyková laboratoř” programme which specifically designs LCs in diverse shapes.



Graph 3. Space flexibility

Use flexibility (polyvalency) presents the possibility of different types of work being done in the same space. For example, traditional rows support individual, pair and group work. Generally, all four identified seating arrangements allow all three types of work. The reason for distinct layout versions is that each one supports one particular type more than the other.

Movement flexibility (fluidity) presents the possibility of LCs' inhabitants to roam. Fluidity takes into account the seating arrangement in each of the classrooms and the classrooms' length and width. Based on the pictures taken in Schools 1-6, 10 are recognized as fluid, 9 as semi-fluid, and finally, 1 as rigid.



Graph 4. Movement flexibility

### Commentary on Flexibility

All four types of flexibility were found in each LC; the only differentiation came into form as to their extension. As it can be observed, previously mentioned aspects of ideal language classroom design are all, virtually, incorporated into flexibility.

## Ownership

Sense of ownership can be accomplished by various means. The most common ones are posters and materials made by students. The assumption that more decorative objects will be found in elementary was proven. While high school classrooms contain mostly few maps and student-made posters (Figures 33 and 36), elementary classroom walls are covered with students' projects, bulletin boards and in some cases even drawings (see Figure 34 and 35)

### Commentary on Ownership

The stark difference between elementary and high schools quite surprised me. One might argue that the lack of personalization and colour on high school walls stems from considering these too "childish and playful".

## Colours

White is still the predominant colour found in schools. From 20 cases, 10 either have all walls in white or white with a combination of one different hue. In the second place is beige with its representation in 5 classrooms. The other frequently used colours are orange, yellow and green.

The teachers were questioned about the choice of colour; in most cases, teachers nor students can decide themselves. Three opposite responses were answered in S1 and S3, where the head teachers decide; in S6 students have the opportunity to choose themselves.

Table 5

*Colours used on the classroom walls*

White and combination	Yellow and combination	Orange and combination.	Beige/brown and combination	Green and combination.
10	3	4	5	3

### Commentary on Colour

White walls do not necessarily mean a boring classroom; in some cases, it might help decrease fidgetiness if too much stimulation comes from the décor. Nevertheless, there should be a balance between clinically looking space and overfilled tacky classroom.

The most eye distracting classroom was S3 English B classroom (Figure 37) as all four walls are horizontally divided in the middle by a somewhat reddish line. The first wall

is of an orange colour; the second wall is of a different orange shade, leaning towards apricot; the third and fourth walls are yellow and the orange tint found on the first wall. The furniture is of light wood colour with yellow metal accent. While orange and yellow are acknowledged as warm colours, in my opinion, too much of them seem weary.

My proposal would be to focus on furniture first as it is not as easily changeable as a wall colour. As the desks and tables are yellow in this particular classroom, I would use blue shade (blue is complementary to yellow) as an accent wall (the whiteboard wall behind the teacher as recommended by Barrett & Zhang, 2009) while leaving the rest three white. This scheme not only draws attention to the teacher but also allows white walls to be freely decorated as it is a neutral colour.



*Figure 37.* English classroom in School 3

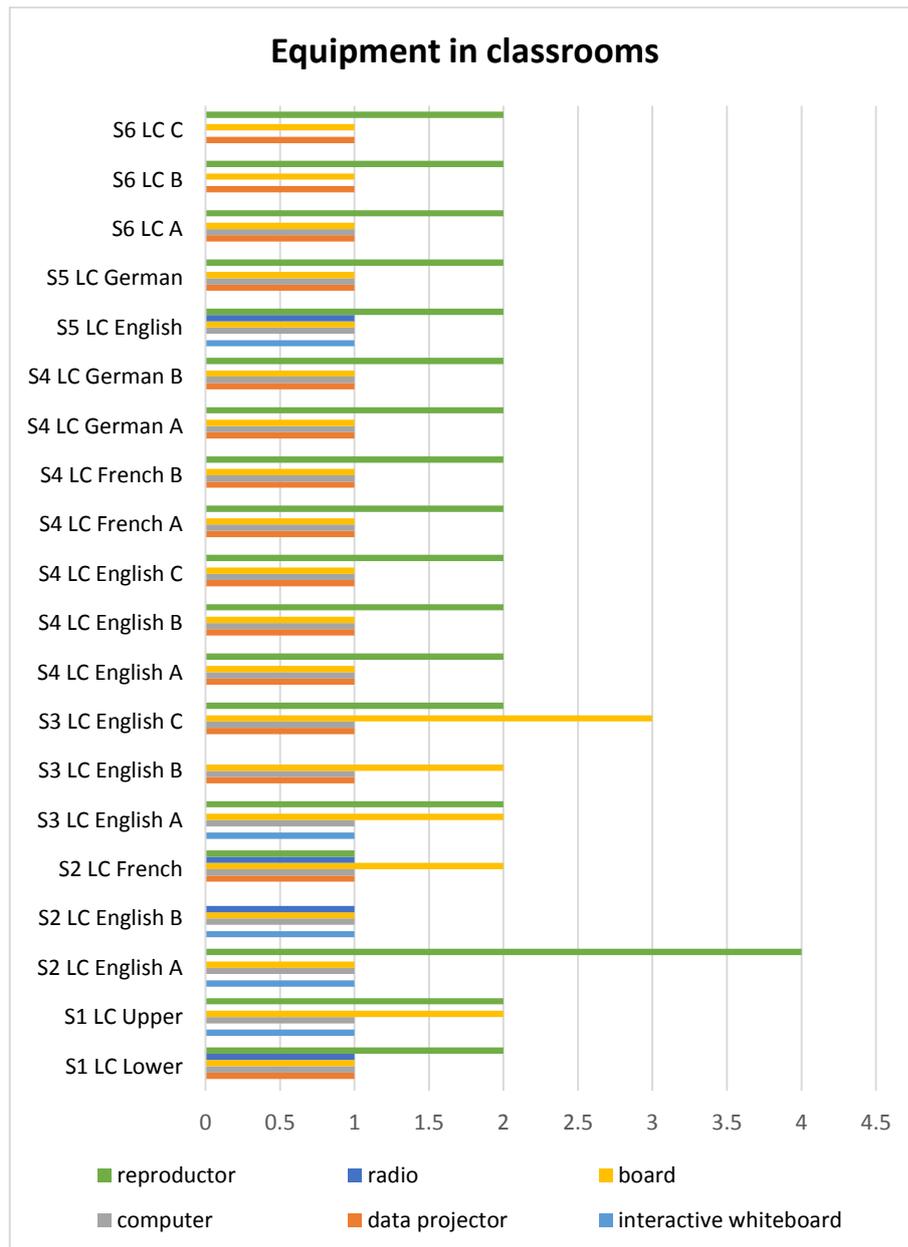
### **Technology**

Nowadays, technology is closely interwoven in the everyday life of the majority; a fact which is also reflected in the school environment. Both teachers and students are encouraged to use IT and supported further by, for example, being given access to the Internet, being permitted to use their own electronic devices, or being given the opportunity to borrow some (in S3 and S4).

All 20 LCs are equipped with either an interactive board or data projector. S5 additionally provided their English students with a notebook – there are 24 notebooks available, one per each chair. With so many electricity demanding devices, sockets might be a problem. The school tackled this issue by creating fixed power outlet islands on the floor (refer to Figure 36). A detailed listing of all the equipment can be seen in Graph 5.

## Commentary on Technology

As Graph 5 suggests, schools have lately been progressive with their approach to technology. To discover either an interactive whiteboard or data projector in classrooms signify that authorities came to terms with the unavailability of technology entering the education realm. The presence of these gadgets is the first step towards blurring the strict line between schoolbookish environment and the real world outside.



Graph 5. Equipment in all of the twenty classrooms

### Summary

The results from the research showcase that while, in general, some features such as light, acoustics and noise, air and temperature, colour, ownership, and technology do

more or less not pose any problems, some elements might need to be rather improved. Based on the analysis, I came to the conclusion that aspects of seating arrangement and flexibility are firmly linked together; they form a structure which is dependent on each other. Flexibility is determined by seating arrangement, seating arrangement is in turn reliant on classroom measurements.

The space issue is, therefore, the leading problem which I deduced from this research. There are few language classrooms, and consequently, teaching and learning take place in “regular” classrooms which are relatively spacious but are not adapted to language learning. The seating arrangement is formed into traditional rows which might incline to signify a rather very formal teacher-centred approach, thus hindering a desirable feature of all language teaching – a sense of cooperation and uninhibited communication.

To sum up, the findings of the research were presented in this chapter. Each classroom design aspect was addressed and commented on. Moreover, some recommendations have been given to improve the observed phenomenon. The following chapter provides some implications which are based on the research, points to research limitation, and finally, discloses a few suggestions for further research.

## V. IMPLICATIONS

This section discusses the applicability of the research findings into teaching practice, it pinpoints limitation of the research done, moreover, gives suggestions for further research.

### **Pedagogical Implication**

Based on the summary above, my recommendation for classroom design would be to consider the space carefully and thoroughly. The ideal situation would be if each teacher would have his/her own classroom to transform according to his/her own needs. As this notion is not a very common practice, other possibilities need to be found.

Considering, that many teachers rotate between at least two language classrooms and therefore, spend a considerable amount of time there, one possibility would be for them to establish the space themselves, together. If school management allows it, teachers can target larger classrooms and create learning studios with various learning zones; it offers areas for all types of work without the necessity of desk and chair reshuffling. If classrooms are generally of a smaller proportion, horseshoes or islands might be the best solutions as they still arguably provide space for movement if furniture is placed sensibly.

### **Research Limitation**

One of the limitations of this research is that even though the language classrooms were inspected, their important inhabitants were not taken into consideration. Although the theoretical part proclaims distinctive assumptions and guiding lines, successful teaching and learning is not based on the classroom design only but also on the students who study in such a classroom as every individual interacts with his/her surroundings differently.

Consequently, it would be advisable to ask about their insight. A questionnaire would be uncomplicated and straightforward method but I fear students would not be particularly inclined to write any answers in length. Therefore, an interview would be more fruitful; this technique would be, nevertheless, exceptionally time-consuming.

The second limitation that arises is that there is no clear scale for measuring how well designed a classroom is. There is a notion of singular aspects of a well-designed one, but no listing of how many items a classroom must tick off to be considered truly satisfying. Thereupon, my findings are based on my personally created scale and cannot be generalized as other researchers might interpret the cases differently.

### **Suggestions for Further Research**

If I were to do this research again, I would, as I have mentioned above, attempt to have wider sampling as I think that there is a significant difference between schools in towns and in villages due to funding. Or, this research could be expanded further by observing how students work in their already designed classrooms, and if and how would their studies change in classrooms designed by me.

My suggestion for further research would be to actually design a variety of classrooms with particular wall colour and décor in mind, and with distinctive learning zones. With these classrooms established, experiments would follow to observe which age group thrives in what classroom the best.

## VI. CONCLUSION

This thesis deals with the design of language classrooms. Its aim was to evaluate Czech language classrooms based on theoretical works by many academics from fields of education, psychology, and architecture.

Eight aspects of classroom design were identified and then described: LCs should have as much natural light as possible with shading to help glaring and glazing; it should be further supported by suitably colored artificial light. Fresh air and temperature are moderated by a set of multi-section windows, which can be opened in varied manners, and central heating with thermostats. To ensure that no noises disturb lessons, suitable soundproofing should be provided. Colours used, especially, on walls need to be in balance with décor – too many objects distract and too little make classroom impersonal and clinical. Students have to be at ease and feel welcome in their surroundings. Use of technology is to be supported and encouraged. Finally, seating arrangements should support various types of work and enable space for flexibility.

As education is a very complex and ever-changing field, multiple types of researches on varied topics are constantly conducted. In these modern days, one might recognize that effective teaching and successful learning do not have their foundations only on methodology. The goal of this study was to draw attention to another crucial part of the learning process.

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## APPENDIX A

### Polostrukturovaný rozhovor pro vedoucí škol

1. Kolik specializovaných jazykových tříd (SPJ) je ve škole?
2. Rozdělují se tyto třídy podle jazyků nebo jsou univerzální pro všechny?
3. Pokud škola nedisponuje SPJ, jaký je hlavní důvod? A je v plánu takovéto třídy do budoucna zřídit?
4. Jak se rozhoduje o tom, v jaké třídě se jazyk vyučuje?
  - a. Podle umístění žáků – vyučující chodí do jejich kmenové třídy
  - b. Podle umístění učitele jazyků – žáci chodí za ní/ním
  - c. Jiné
5. Zajímavosti, poznámky

## APPENDIX B

### Semi-structured interview with headmasters/mistress

1. How many language classrooms (LC) are there in the school?
2. Are these LCs assigned according to the foreign language taught there, or are they universal for all?
3. If the school does not feature LCs, what is the main reason for this? Are there any plans to establish some?
4. How is it determined in which classroom a language is taught?
  - a. Based on the students' location – teachers come to students' main classrooms
  - b. Based on the teacher's location – students come to the nearest classroom to teachers
  - c. Other
5. Interesting things and curiosities

## APPENDIX C

Polostrukturovaný rozhovor a otevřený dotazník pro učitele

Vyhovuje Vám prostor třídy k vyučování z pohledu vyučujícího? Co byste změnili? Myslí se tím např.:

1. Velikost prostoru a způsob rozmístění lavic a židlí
2. Umístění třídy na světovou stranu – s tímto souvisí dostatek/nedostatek denního světla, přidané umělé osvětlení, žaluzie/závěsy, kvalita vzduchu a teplota
3. Problémy s hlukem z venkovního prostředí, nedostatek izolace mezi třídami a chodbou
4. Vybavení třídy (technologie, pomůcky)
5. Jiné

## APPENDIX D

Semi-structured interview and open-ended questionnaire for teachers

Are you satisfied with the space in which you teach? What would you change? Things to consider such as:

1. The size of the classroom and the seating arrangement
2. Location of the classroom (facing what cardinal direction) – focus on abundance/lack of natural daylight, additional artificial lighting, shading, quality of air and temperature
3. Issues with disturbance from the outside, lack of sound isolation between classrooms and halls
4. Classroom equipment (technology, learning aids)
5. Other

## APPENDIX E

### Standardizovaný záznamový arch

1. Rozměr a tvar třídy
2. Směřující na jakou světovou stranu
3. Počet a velikost oken; zaclení; druh osvětlení; teplota a vzduch
4. Problémy s ruchem a akustikou
5. Barva stěn, podlah a nábytku
6. Vybavení třídy – technologie, tabule, nástěnky, ...
7. Aspekt “třída patří studentům”
8. Rozložení lavic
  - a. Tvar
  - b. Centralizace vs decentralizace
  - c. Flexibilita – možnost přetvoření
9. Zvláštnosti a zajímavosti

## APPENDIX F

### Standardized observation sheet

1. Size and shape of the classroom
2. Facing what cardinal direction
3. Number and size of windows; shading; type of lighting; temperature and air
4. Problems with noise and acoustics
5. Colour of walls, floor, and furniture
6. Classroom equipment – technology, boards, bulletin boards, ...
7. Aspect „students‘ classroom“
8. Seating arrangement
  - a. Shape
  - b. Centralization vs decentralization
  - c. Flexibility – the possibility of transformation
9. Peculiarities and interesting things

## SUMMARY IN CZECH

Tato diplomová práce se zabývá učebním prostředím pro výuku cizího jazyka. Teoretická část nejdříve stručně sumarizuje položky vedení třídy (classroom management) a dále identifikuje a popisuje aspekty, které by měly být brány v potaz během vytváření jazykových tříd. V praktické části je popsán výzkum, který byl proveden na šesti školách v Plzeňském kraji. Účelem tohoto výzkumu bylo zjistit, do jaké míry jsou české jazykové třídy sestaveny dle osmi aspektů, které byly vyjmenovány v teoretické části. Primární metodou bylo vlastní pozorování a přímé rozhovory s vyučujícími. Následná analýza výsledků odhalila, že největším problémem je nedostatek prostoru. Práce dále obsahuje návrhy, které se mohou aplikovat do škol za účelem zlepšení situace jazykových tříd.