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Learning Styles of English Learners at Lower Secondary Schools

Diplomová práce

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Studijní program: M 7503 Učitelství pro základní školy

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Zadání diplomové práce

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Cíl, metody, literatura, předpoklady:

Diplomová práce se zabývá problematikou stylů učení. V teoretické části je téma popsáno v obecné rovině (např. rozdělení stylů učení, druhy inteligence, diagnostika stylů učení žáků, eventuálně práce učitelů s těmito s těmito poznatky, popřípadě strategie učení, atd.). Praktická část se konkrétně zabývá styly učení, které jsou využívány žáky 2. stupně základních škol k učení se anglickému jazyku. Práce obsahuje drobný výzkumný prvek (např. dotaznování žáků apod.), je psána anglicky.

Lojová, G., Vlčková, K.: Styly a strategie učení ve výuce cizích jazyků. Portál, 2016.

Mareš, J.: Styly učení žáků a studentů. Portál, 1998.

Oxford, R. L.: Language learning strategies. Heinle & Heinle, 1990.

Oxford, R. L.: Teaching and researching language learning strategies. 2nd ed. Routledge, 2017.

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Prohlášení

Prohlašuji, že jsem diplomovou práci **Styly učení anglického jazyka u žáků 2. stupně ZŠ** vypracoval(a) pod vedením vedoucí(ho) závěrečné práce samostatně a uvedl(a) jsem všechny použité prameny a literaturu.

V Hradci Králové dne

Anotace

ČERNÁ, Eliška. *Learning Styles of English Learners at Lower Secondary Schools*. Hradec Králové: Pedagogická fakulta, Univerzita Hradec Králové, 2023. 81 s. Diplomová práce.

Diplomová práce se zabývá styly učení angličtiny žáků druhého stupně základní školy. Teoretická část práce představuje toto téma z různých hledisek. Zabývá se definicí a odlišení tohoto termínu s jinými, podobnými termíny. Ostatními tématy jsou modely stylů učení, propojení s teorií mnohočetné inteligence, důležitost stylů učení a diagnostika stylů učení. Mimo jiné jsou zde uvedeny pochybnosti týkající se existence stylů učení. Praktická část práce navazuje na teoretickou. Dotazník kombinující část zkoumající smyslové styly učení a část zkoumající motivaci k učení se anglicky je aplikován na druhém stupni jedné základní školy v Praze. Jedná se o případovou studii. Výzkum mapuje styly učení z hlediska ročníku, pohlaví, multimodality, úspěšnosti v anglickém jazyce a motivací k učení se anglicky.

Klíčová slova: styly učení, diagnóza stylů učení, znalosti angličtiny, motivace k učení se anglicky

Annotation

ČERNÁ, Eliška. *Learning Styles of English Learners at Lower Secondary Schools*. Hradec Králové: Faculty of Education, University of Hradec Králové, 2023. 81 pp. Diploma Dissertation.

The diploma thesis concerns English learners' learning styles at lower secondary schools. The theoretical part introduces the topic from different perspectives. It deals with the definition and differentiation from other similar terms. The other subjects are learning styles' models, connection to multiple intelligences theory, importance and diagnostics of learning styles. Moreover, doubts about the existence of the learning styles are mentioned there. The practical part follows the theoretical one. The questionnaire concerning perceptual learning styles and English learning motivation is applied within the case study realized at one lower secondary school in Prague. The research maps the learning styles according to learners' grades, gender, multimodality, English proficiency and English learning motivation.

Keywords: learning styles, diagnostics of learning styles, English proficiency, English learning motivation

Abstrakt

Diplomová práce se zabývá tématikou stylů učení anglického jazyka u žáků druhého stupně základní školy. Jelikož je učení jednou z kompetencí, která se má na základních školách rozvíjet, skýtá tématika stylů učení zajímavou oblast pro výzkum. Učení provází člověka celý jeho život, a to nejen ve školním prostředí. Je tedy potřeba mu věnovat náležitou pozornost. Je třeba si uvědomit, že ne každý z nás se učí stejným způsobem. Někdy mohou špatné výsledky ve škole poukazovat na to, že si žák ještě nenašel svůj vyhovující způsob, jak učení uskutečnit.

Teoretická část práce se zabývá tématem z několika úhlů pohledu. Nejdříve je zde rozebrána problematika definice stylů učení a jejich odlišení od podobných pojmů jako jsou strategie učení nebo kognitivní styly (kapitola 1). Dále jsou zde rozvedeny modely stylů učení (kapitola 2) a jejich vztah s teorií mnohočetné inteligence (kapitola 3). Tento vztah nemůže být potvrzen ani plně vyvrácen, jelikož existuje nesčetné množství modelů stylů učení, se kterými se může teorie mnohočetné inteligence srovnávat. Zobecnění je tedy náročné. Z modelů stylů učení (kapitola 4) je zde nejvíce popsaný ten, jež vychází ze smyslového vnímání. Tento model vymezuje několik hlavních stylů, z nichž jsou zde zmíněny ty, se kterými se pracuje v praktické části: zrakový, sluchový, praktický. V této kapitole je dále popsán Kolbův model (podkapitola 2.2.), Honeyho a Mumfordův model (podkapitola 2.3.), a nakonec model rozdělující žáky dle přístupu k učení (podkapitola 2.4.), u kterého ale není jistota, zda se opravdu jedná o styly učení jako takové. Další kapitola obsahuje úvod do důležitosti stylů učení pro učitele i žáky (kapitola 4) a jejich diagnostiky (kapitola 5). Mimo jiné jsou v kapitole 4 zde zmíněny pochybnosti o samotné existenci stylů učení.

Praktická část diplomové práce mapuje styly učení na druhém stupni jedné základní školy v Praze. Kromě samotného sečtení jednotlivých stylů učení v jednotlivých ročnících a dohromady na celém druhém stupni, jsou tyto styly porovnávány s dalšími aspekty: pohlaví, známka z anglického jazyka a motivace k učení se anglickému jazyku. Také je zkoumán aspekt multimodality, tedy pokud mají žáci více než jeden styl učení. Dohromady se výzkumu zúčastnilo 140 žáků, ale jen 139 odevzdaných dotazníků bylo použitelných. Zúčastnili se tři šesté, dva sedmé, dva osmé a jeden devátý ročník.

Finální dotazník se skládá ze tří částí. První část zjišťuje základní informace o žákovi (třída, jméno vyučujícího angličtiny, pohlaví a známku z pololetí z angličtiny).

Další část představuje dotazník zkoumající smyslové styly učení: zrakový, sluchový a praktický. Tento dotazník obsahuje tři části, které obsahovaly výroky, u nichž žáci rozhodují, zda pro ně daný výrok platí: *často/vždy, někdy, vzácně/nikdy*. Tyto možnosti jsou obodovány: *často/vždy* – 3 body, *někdy* – 2 body, *vzácně/nikdy* – 1 bod. Každá část představuje jeden styl učení, a právě ta část, ve které má žák nejvíce bodů, určí jeho styl učení. Tuto část finálního dotazníku si žáci vyhodnotí na hodině sami. Poslední část finálního dotazníku je dotazník zkoumající motivaci k učení se anglicky. Obsahuje 17 výroků a žáci na Likertově škále vybírají, zda s výrokem: *souhlasím, tak napůl, nesouhlasím*. Čím více se objeví možnost *souhlasím*, tím více jsou žáci motivování k učení se anglicky. V druhé a třetí části mohli žáci vybírat pouze jednu možnost ze tří nabízených. Pokud by jich vybrali více nebo žádnou, byl by výrok z hodnocení odebrán.

Dotazníky byly distribuovány nejen mnou, ale i mými kolegy, kteří učí anglický jazyk. Nicméně byli detailně informováni o tom, jak hodinu vést. Žáci ve většině případů byli schopni si druhou část dotazníku vyhodnotit sami, pouze u několika případů se objevili početní chyby.

Nejčastějším stylem učení byl praktický styl učení, což vyvrátilo nultou hypotézu opřenou o zdroje v teoretické části, které považovali za nejčastější styl vizuální, a naopak za nejméně častý styl praktický. Z celého vzorku žáků bylo 56,2 % s pohybovým, 28,1 % se sluchovým a 15,8 % se zrakovým stylem učení.

U druhého zkoumaného aspektu byla potvrzena nultá hypotéza, která předpokládala, že rozdíly stylů učení nebudou u dívek a chlapců významné. V tomto výzkumu nepřekročil rozdíl daných 5 %. Aritmetický průměr rozdílu stylů učení mezi pohlavími byl 4,6 %.

Třetí výzkumná pod-otázka zkoumala výskyt multimodality. Jelikož zde byla drtivá většina zkoumaných žáků pouze s jedním stylem učení, byla zde nultá hypotéza vyvrácena. Dohromady bylo 87,6 % unimodálních, 11,6 % bimodálních a pouze 0,8 % trimodálních žáků.

Poslední dvě výzkumné otázky nultou hypotézu potvrdili. V tomto vzorku žáků nebyla nalezena pozitivní korelace mezi styly učení a úspěšností v anglickém jazyce ani motivací k anglickému jazyku. Žádný ze stylů učení nevykázal výlučnou souvislost s žádnou známku z anglického jazyka. Taktéž žádný ze stylů učení nevykázal výlučnou souvislost s možností *souhlasím* v Likertově škále, což by znamenalo vyšší motivaci.

Výsledky mohly být ovlivněné několika faktory jako například momentální emocionální i fyzické naladění, vztah k učiteli anglického jazyka nebo fakt, že dotazník obsahoval velké množství textu ke čtení, což mohlo žáky unavit a zhoršit jejich koncentraci.

Tento výzkum poskytl informace učitelům žáků o jejich stylech učení a motivací k anglickému jazyku. Mimo jiné tyto informace mohou prospět vlastním žákům, kteří se mohli zamyslet nad tím, jak se učí a zda jim tento způsob vyhovuje. Na konci práce je doporučení pro širší výzkum v oblasti počtu účastníků či časového odstupu.

Prohlášení

Prohlašuji, že diplomová práce je uložena v souladu s rektorským výnosem č. 13/2022 (Řád pro nakládání s bakalářskými, diplomovými, rigorózními, dizertačními a habilitačními pracemi na UHK).

Datum:……..... Podpis studenta:……

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INTRODUCTION

Each of us is travelling the path of life in a unique way. These ways include both pleasant and unpleasant situations. As living organisms, we must adapt to our environment, which changes quickly. The changes may be minor or global, but they are all vital. We need to find our place in the world and stay alive. The ability which enables us to survive is learning. We do it consciously and unconsciously as it accompanies us not only during our school days but during our whole life. We all learn, but we learn in different ways. One of the ways to distinguish the different approaches is by determining our learning styles. There are dozens of various models, so there is plenty of opportunities.

The research on learning styles and their popularity is broad, but the final image of the issue lacks specific segments. These segments comprise a lack of proper definition, diagnostical uncertainty and doubts about their application in a school environment. The overall existence of learning styles is questioned.

The theoretical part aims to summarise the most vital information about learning styles. The practical part maps one lower secondary school's students' learning styles.

The theoretical part of this work deals with basic information about learning styles. It attempts to distinguish terms commonly confused with learning styles, describe chosen models of learning styles, and link with the multiple intelligence theory. The chapter which polemises the importance of learning styles follows. The matter of diagnostics concludes the theoretical part. The theory focuses on the learning styles within the context of learning English, but it generally overlaps with other subjects and life situations. Altogether, the theoretical part has five chapters.

The practical part consists of five chapters which assess the learning styles of English learners at one lower secondary school. The model investigating perceptual preferences (visual, aural, and kinaesthetic) is chosen as the results are easily decoded by young learners and their teachers. The final questionnaire comprises three parts: basic information about the learner, perceptual learning styles questionnaire, and English learning motivation questionnaire.

There is one research question which is divided into five sub-questions. The research question maps the proportion of learning styles among the pupils and compares

the result with other components. These components include gender, multimodality, English proficiency and English learning motivation. The results of the questionnaires are subsequently compared with the literature in the theoretical part.

This work is written according to citation style ČSN ISO 690.

THEORETICAL PART

1. Learning Styles

This section of the theoretical part deals mainly with the definition of learning styles and their comparison to learning strategies and cognitive styles, as the terms might be mistakable. Moreover, a few basic cognitive styles essential for language learning are described at the end of the section.

1.1. Demarcation of Learning Styles

There is no unified definition of the term learning styles, which generates a problem in identifying what exactly learning styles mean. The absence of a united definition may play into the hands of confusion with other similar terms such as cognitive style, learning strategy or approach to learning. Moreover, these terms are viewed slightly differently in pedagogy and cognitive psychology, as various concentrations of affective and personal aspects exist in each conception (Lojová and Vlčková, 2011). The disunion of definitions leads to doubts about the existence of learning styles, which is described in subchapter 4.2. in more detail.

There are several chosen examples of the definitions of learning styles from both Czech and foreign authors in the following lines:

Czech authors Mareš and Skalská (1993, p. 54, translated by the author) describe learning styles widely as "…distinctive approaches to study (distinctive by its structure, sequence, quality and the flexibility of application) which have a character of metastrategy of learning. Individuals use it in a certain period of life in most pedagogical situations. Learning styles are described as probably relatively independent of the content of the curriculum. The styles stand on the innate foundation (cognitive styles) and are developed by the cooperation of inner and outer influences. That is why we can distinguish various components: cognitive, motivational, social, environmental and autoregulatory. Although it is not easy and quick, they can be influenced and changed. Learning styles bring certain results, but they avert the other results."

Foreign sources, the Longman´s Dictionary of Language Teaching & Applied Linguistics definition defines learning styles as "…a particular way of learning preferred by a learner" (Richards and Schmidt, 2010, p. 331).

Alan Pritchard (2009) presents four different definitions of learning styles in his book, but he mentions that these definitions overlap in certain features. The word which is declined in each of those definitions is *individuality*. It is interesting to notice that one of the definitions refers to learning strategy as a part of the learning style definition.

Lojová and Vlčková (2011, pp. 23-26, translated by the author) list six characteristics of learning styles: holism and consistency of psychological functioning of a human, emphasis on individuality, subconscious and conscious tendencies to process information, relative stability, predispositions to approach to tasks, determination by biological and psychological and social factors.

Neither the question of the heritability of learning styles is definite. The level of heritability may differ for various learning styles, and the stability depends on the components of particular learning styles (Lojová and Vlčková, 2011). Mareš (1998) uses the structure of learning styles presented by Jon C. Marshall (1987), which comprises three parts. The first part consists of personal factors and is considerably stable. The second part, the tendency to process information, has just a medium level of stability and is more influenceable. The last part obtains educational and teaching preferences, which is the most influenceable part of the model. As demonstrated, learning styles are influenced by both inborn and gained factors.

Lojová and Vlčková (2011) divide factors influencing learning styles into three groups: innate factors, internal factors and outer environment factors. While the innate factors include physiological and neuropsychological mechanisms (for instance, the dominance of brain hemispheres), the internal factors consist of age, experience, motivation or momentary psychological condition. The last-mentioned group is crucial from a pedagogical point of view. The authors include the conception of the teaching, curriculum, learning conditions, teacher and his/her teaching style, means of examination and evaluation, and social situations in the last group of factors.

1.2. Learning Style vs Learning Strategy

Learning styles and learning strategies are interrelated terms (Lojová and Vlčková, 2011), but a difference in meaning must be explained. The following paragraphs gather several definitions to make a clearer view of the difference.

"Learning strategies are defined as ways in which learners attempt to work out the meanings and uses of words, grammatical rules, and other aspects of the language they are learning" (Richards and Schmidt, 2010, p. 331). Another source defines learning strategies more generally as "…the behaviours or steps learners use to make language learning more self-regulated and effective" (Oxford, 2015, p. 597).

Learning styles are described as habitual patterns (Leaver et al., 2005) whose predispositions are characterised by consistency and relative stability (Lojová and Vlčková, 2011). Nevertheless, learning strategies are described as specific actions (Leaver et al. 2005) learned by a learner (Lojová and Vlčková, 2011).

Oxford (2017) gathers 33 definitions of learning strategies, so this term does not have a clear definition either.

Oxford (1990) stresses the importance of learning strategies for language learning. She mentions that active self-directed involvement is vital for developing speaking skills. She also adds that the well-chosen learning strategy improves language proficiency and confidence while learning a language.

1.3. Learning Style vs Cognitive Style

Another term which is frequently confused with learning style is cognitive style. The confusion stems from the absence of a clear definition of learning styles, making it more challenging to separate these terms. The authors' conceptions of the variance between learning and cognitive styles diverge.

Cognitive style is defined as "…ways of gaining, accepting, processing and using information" (Kalhous et al., 2002, p. 209). Mareš (1998) mentions a similar definition, but he chooses words such as think, perceive, remember information, solve problems and make decisions.

Mareš (1998) summarises relations between these two terms into five possibilities presented in the following lines. Mareš (1998) automatically rejects the first one as he states there is no relation between learning and cognitive styles. Other options are: the terms are synonymous, the first term is part of the second, the second term is part of the first, and the first term overlaps the second one.

Literature offers various overviews of learning styles. Nevertheless, the authors have a different perspective on what actually learning styles are. For example, the work written by Simon Cassidy (2004), where he tries to put together various models of learning styles, includes models considered cognitive styles in Mareš's work (1998). Mareš (1998) uses division by Riding and Cheema (1991), who divide cognitive styles into two families. The first is called a global-analytical family, which contains various dimensions, such as field-dependency/field-independency, impulsivity/reflexivity, and divergence/convergence. The second one is called a verbal-imaginative family, which includes a dimension of verbalisation/visualisation, for instance. These dimensions are bipolar, which leads to the possibility of research on whether the first or the second extremity is more suitable for learning (Lojová and Vlčková, 2011).

Due to diverse opinions on the classification of cognitive styles and their relation to learning styles, this work briefly mentions two bipolar dimensions of cognitive styles which are important for language learning.

1.3.1. Field-Dependence and Field-Independence

Lojová and Vlčková (2011) claim that the field-dependency/field-independency dimension is one of the most investigated parts of cognitive styles in relation to learning styles. The authors do not omit to mention that this dimension should be viewed as a scale and not only as two absolute maximums. The difference between these two polar styles is embedded in the possibility of differentiation between the details of the whole field and the interactions with the environment.

Field-dependent learners, further mentioned as learners A, struggle to extract detail from the whole (Field-dependent learners, 2022) as they see the material from a holistic perspective (Lojová and Vlčková, 2011). Field-independent learners, further mentioned as learners B, can assimilate the details and parts of the material but have problems understanding it as a whole (Lojová and Vlčková, 2011).

Learner A is not expected to know the meaning of every word or structure in a text, but one does not struggle to understand the whole purpose. One enjoys real-life situations to learn the language and is good at rephrasing thoughts. The learner is good at speaking activities and group work (Lojová and Vlčková, 2011). One prefers when the lesson parts are logically connected and likes opportunities to share opinions and knowledge about the topic (Teaching English, 2022b). One's problem is the lack of understanding of linguistic structures and incorrect consolidation of the rules (Lojová and Vlčková, 2011).

Learner B enjoys activities which require a focus on details, like scanning. Otherwise, the learner can get anxious when not understanding one word in a text, so one loses track of the meaning. One has problems understanding the overall purpose of the text. One's compositions are syntactically, lexically and grammatically correct, but the stylistics is insufficient. Learner B prefers formal lessons with strict organisation and the use of textbooks before real-life experiences. One excels in grammar tests but lags in speaking activities (Lojová and Vlčková, 2011). The learner often requires the teacher's support and prefers working alone, primarily through extensive reading or writing (Teaching English, 2022a).

A study from Kafipour and Noordin (2021) points out the importance of the rigid following of textbooks by teachers for field-independent learners. Moreover, these learners preferred explicit grammar explanations or having a broad lexicon in the target language. On the contrary, field-dependent learners placed teachers' expressions of learners' abilities, open-mindedness, and use of various materials during the lesson on the upper rates. Surprisingly, both groups mentioned working in pairs or groups as an essential factor in learning.

1.3.2. Impulsivity and Reflexivity

The dimension of impulsivity/reflexivity describes the quickness of one's acts and decision-making (American Psychological Association, n.d.).

Impulsive learners react quickly, but the speed is balanced by inaccuracy as they do not think enough before acting. They tend to be the first ones who answer teachers' questions and expect immediate feedback, which helps them realise their mistakes and learn. Impulsive learners stand out in speaking activities and quick reading, which

demands understanding the meaning. On the other hand, their weaknesses lie in writing exercises and understanding grammar (Lojová and Vlčková, 2011).

Reflective learners require more time to reflect on the task. They analyse and consider various options before choosing the best one. Compared to impulsive learners, reflective ones take their mistakes more seriously and even sense them as failures. Although they can be viewed as passive, reflective learners do well in writing and grammar exercises (Lojová and Vlčková, 2011).

Unfortunately, teachers incline to favour impulsive learners as they enable a fluent flow of the lesson. That is why reflective learners can lack opportunities to stand out because they need more time to analyse (Lojová and Vlčková, 2011).

2. Models of Learning Styles

People have different ways how to absorb new information. This work mainly focuses on the absorption of the school curriculum, more precisely, the English language. These various ways underwent diagnostics from several scientists, but it is still complicated to prioritise just one model because these models are still going through research to prove their quality. The quantity of the models is high. Association for Psychological Science (2009) states that over 71 models of learning styles exist. As the theory in the resource is thirteen years old, there might be even more models today. Therefore, the following subchapters describe just the selected models of learning styles.

2.1. Perceptual Learning Styles

Perceptual learning styles are distinguished according to the preference of sensory organs. It is important to note that healthy individuals use all the senses, but the difference is in the mentioned preference while learning (Lojová and Vlčková, 2011). The division into particular styles varies as authors are not united. Learners who learn best by using sight are called visual learners, and learners who prefer aural perception are called aural learners. The problem comes with the classification of styles connected with touch, called kinaesthetic or tactile, and sometimes these are stated as two individual styles. Moreover, some authors produce new learning styles; for instance, the VARK model mentions a read/write modality besides visual, aural and kinaesthetic modalities (Fleming and Baume, 2006) and Sovák (1990) includes a verbally-conceptual modality. However, insufficient certainty about the definition of learning styles is projected here. Fleming and Baume (2006) note that their VARK questionnaire containing the four beforementioned modalities does not directly determine learning styles but only preferred modes of communication, which are part of learning styles. Nevertheless, this model is considered a learning style model as it overlaps with other perceptual learning style models. Learners may be unimodal, which means they are diagnosed with just one learning style, or multimodal, with two or more learning styles. Research conducted by Shah et al. (2013) showed the dominance of multimodal learners. The same results from VARK (2022b) show that 66% of respondents were multimodal.

Research by Chen (2009) suggests that perceptual learning styles change during ontogenesis, but the author emphasises the importance of further research on this topic.

Other research questions are concerned with the link between specific perceptual styles and English proficiency. The results are often opposing. Al-Zayed's (2017) study shows no significant correlation between English proficiency and perceptual learning styles. These results are supported by Jaya's (2019) study, which found no positive correlation either. On the contrary, Kim and Kim (2014) found that the visual learning style is the most positively correlated with English proficiency. The aural style also showed a positive correlation. However, the kinaesthetic style correlated negatively (Kim and Kim, 2014).

Some research was done on the topic of the distribution of learning styles by the genders. Sarabi-Asiabar et al. (2014) examined medical students and found that the aural learning style was more common among females and the kinaesthetic among men. Another study found no significant differences between the genders (Shah et al., 2013). VARK (2022b) found no significant difference except that female respondents have a higher percentage of read/write modality than the visual one.

The correlation between learning styles and learners' motivation was researched by Jin-Suk & Tae-Young (2011), Moneva et al. (2020) and Kim & Kim (2014). While Jin-Suk & Tae-Young (2011) and Moneva et al. (2020) found no positive correlation between the subjects, on the other hand, Yoon-Kyoung & Tae-Young (2011) found a positive correlation between visual learning style and higher motivation for learning a second language. Motivation is crucial to learning languages (Cambridge English, n.d.) and can be either outer, when learners study for a particular purpose, or inner when learners study because it is enjoyable (Cambridge English, n.d.).

Firstly, the various classification of the perceptual models will be mentioned. Secondly, more detailed information about particular sensual modalities will be depicted in separate sub-units.

To begin with, the previously mentioned VARK model introduced by Neil Fleming consists of four modalities: visual, aural, read/write and kinaesthetic. The model's name consists of the initial letters of the modalities (Fleming and Baume, 2006). Neil Fleming introduced the model in 1987 (Cherry, 2019). At that time, the model consisted of just three modalities and bore the name VAK as the read/write modality was added later in 2006 (Othman and Amiruddin, 2010). There was a need to separate one more modality from the visual one. Consequently, the read/write modality arose. While

the visual modality prefers graphs, charts, hierarchies and other symbolic and graphic ways of expression, the read/write modality focuses specifically on printed words (Fleming and Mills, 1992).

Sovák (1990) divides learners into four types. The first type, the aural-speech type, is a kind of aural style enriched with an ability to learn best by speaking. The speaking part is understood as these learners reproduce the learning materials orally. This learning aloud can be noticed by teachers as the learners tend to whisper. The aural part will be described more in the following sub-units. According to Sovák (1990), the second type is the verbally-conceptual type, which is defined by the ability to distinguish an essential point from the insignificant rest. The critical substance of this type is abstract thinking. The last two types of learners are visual and tactile/kinaesthetic.

Mezera and Topičová (2015) state seven learning styles, but only some can be considered perceptual. The perceptual styles they mentioned are visual, aural, tactile/kinaesthetic and verbal. Learners with the verbal learning style benefit from writing and speaking activities. The other three styles are logically mathematical, social and individual.

Institute for learning styles (n.d.) lists seven perceptual modalities: visual, aural, kinaesthetic, print, haptic, olfactory and interactive. The print modality is connected with the preference for printed words. The haptic modality is equivalent to the tactile modality. The olfactory modality is associated with the senses of smell and taste, and finally, the interactive modality refers to verbalisation.

Lojová and Vlčková (2011) present only three types: visual, aural, and kinaesthetic.

2.1.1. Visual Learner

Visual learners prefer to use their sight the most during the learning process. This learning style is believed to be the most common in the population, as 65% of people who have undergone surveys were diagnosed with the visual learning style (Mezera and Topičová, 2015). This statement may be supported by the same findings from Oxford (1995) mentioned in Lojová and Vlčková (2011), which affirms that 50%-80% of people are equipped with the visual learning style. It may relate to the claim that sight is the most important human sense organ (Science daily, 2018).

Visual learners' learning process benefits from using maps, atlases, books, illustrations, and records written on the board. They try to make their notes more visual-friendly by using colours to underline the text or creating mind maps to organise their notes (Mezera and Topičová, 2015). They can recall the exact place of the required information while being tested at school (Sovák, 1990). As they predominantly use their sight to learn, teachers should encourage them to sit at the front of the classroom (Walton, n.d.).

From the point of view of learning skills, watching videos with consequent discussion or analysis, working with pictures, or sharing experience is convenient for visual learners while learning to speak English (Lojová and Vlčková, 2011). They profit from using flashcards accompanied by the teacher's movements and gestures (Walton, n.d.). The same activities can be applied in writing. The other preferred activities for writing are completing speech bubbles in pictures and written games such as crosswords, but they enjoy all writing exercises in general (Lojová and Vlčková, 2011). They need to write down new vocabulary (Walton, n.d.). In listening, they might appreciate the completion of a story with pictures, the possibility of having transcription, listening to simulated or real-life situations or having pictures matching new vocabulary (Lojová and Vlčková, 2011). Finally, suitable reading activities include matching pictures to the text, reading comics, watching videos with subtitles, working with multicoloured texts (Lojová and Vlčková, 2011) or silent reading (Teaching English games, n.d.).

2.1.2. Aural Learner

Aural learners learn best by using their sense of hearing. This perceptual learning style is the second most occurring, forming 30% of the diagnosed population (Mezera and Topičová, 2015).

In the lessons, they need to get verbal instructions from the teacher. Otherwise, they might not understand even the easy written instructions. While speaking, teachers should not be monotonous if they want the aural learners to pay attention and learn. That is also why the learners should be exposed to natural language situations. For instance, the presence of a native speaker in the lesson might be beneficial as they learn the correct paralinguistic features of the target language. It is crucial because aural learners learn the correct pronunciation quickly while listening to the speech (Lojová and Vlčková, 2011).

These learners often need to learn aloud; some might even prefer to record their voice while reading a textbook to play it later. They like to listen to others talking in class and cooperate with others. Other activities which help them learn are rhymes and mnemonic devices associated with sounds (Lojová and Vlčková, 2011). They might close their eyes to focus on their hearing to become more focused. A quiet learning environment also helps them concentrate, as a noisy environment can distract them (Drinko, 2005-2022).

Aural learners benefit from speaking activities, including repetition, answering questions, paraphrasing of a listened text, dialogues and discussion. In terms of writing, they prefer methods connected with dictation. They like reading aloud, and reading which is accompanied by spoken narration. Listening is their most vital skill; thus, the suitable techniques in the lesson include all listening exercises, sound riddles or the usage of songs, dramatisation and rhymes (Lojová and Vlčková, 2011).

2.1.3. Kinaesthetic/Tactile Learner

The last perceptual learning style is a fusion of two slightly different types, although they are often presented as one. The kinaesthetic type is connected to the body's movement (Cambridge Dictionary, n.d.), and the tactile type is associated with the touch (Macmillan Dictionary, n.d.). Mezera and Topičová (2015) join these types together, but Lojová and Vlčková (2011) introduce both as kinaesthetic type. Sovák (1990) present the tactile-kinaesthetic type as an independent one. The following lines refer to this learning style as kinaesthetic for economic reasons.

Mezera and Topičová (2015) claim that this type is the least frequent in the population as it has only 3% of the total respondents. Notwithstanding, the study that researched medical learners' learning styles showed that the kinaesthetic style dominated among them (Kharb et al., 2013).

Kinaesthetic learners need hands-on experiences to learn, which is why they enjoy doing experiments and projects. They have excellent spatial movement memory (Lojová and Vlčková, 2011) and intuition (Major, 2016). While learning, they often walk around the room, draw, or write down notes. When they cannot walk, they need to stretch or exercise before studying (Sovák, 1990). They profit from using tangible aids during learning, such as flashcards, three-dimensional models or tangible objects (Lojová and

Vlčková, 2011). Major (2016) states additional recommendations to support kinaesthetic learners, such as outdoor teaching, frequent change of activities during the lesson or support of learner imagination during problem-solving activities.

It is suggested that kinaesthetic learners may experience some problems during typical school lessons. Lojová and Vlčková (2011) indicate that these learners, especially the young ones, have problems with extended sitting or standing sessions as they need opportunities to move. The same concern is presented by Major (2016), who calls these learners misunderstood, stemming from the seemingly undisciplined behaviour during these lessons.

Role-play can be suitable for kinaesthetic learners as they connect movement games with learning vocabulary, projects and presentations to practise speaking. They might appreciate creating posters, participating in projects and filling in pictures or schemes to practice writing. Change of loudness of the voice or dramatisation of the reading material can enrich their reading skills. Last but not least, kinaesthetic learners benefit from the total physical response method to practice listening. Other applicable activities for practising listening skills are finding objects in the classroom or drawing pictures based on the teacher's instructions (Lojová and Vlčková, 2011).

2.2. Kolb's Model

David A. Kolb's learning styles model was introduced in 1984 (Kolb, 1984). Initially, only four styles were distinguished by him. Later, in 2013, five more styles were added (Kolb and Kolb, 2013). The model is based on two dimensions. The dimension of concrete experience/abstract conceptualisation describes the information intake. On the contrary, the second dimension of active experimentation/reflective observation focuses on internalising the information (Pritchard, 2009). Individual styles can be pictured in a kite shape according to the dimensions (Kolb and Kolb, 2013), as visualized in figure 1.

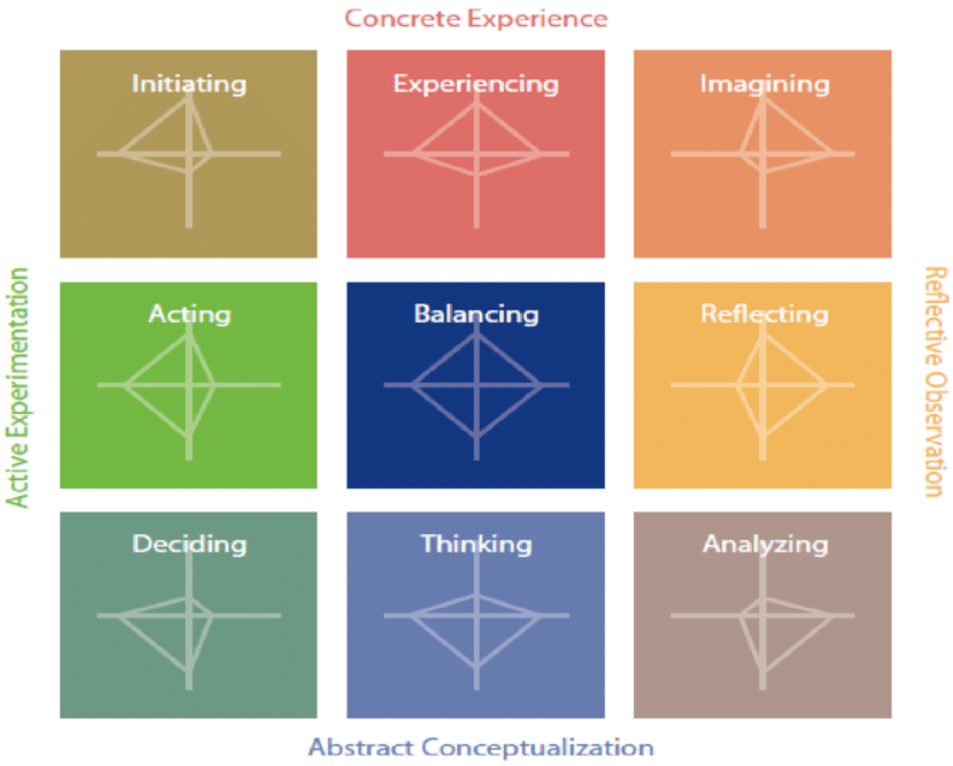


Figure 1: The Nine Learning Styles in the KLSI 4.0 (Resource: Kolb and Kolb (p. 14, 2013))

Kolb's model is based on the model of experiential learning, as displayed in figure 2. His original four-style model resembles the cycle of experiential learning. The four original learning styles are: accommodating, diverging, assimilating and converging. The original division into four styles is essential, as much literature only mentions precisely these four, for instance Pritchard (2009).

The place where the learner enters the learning process depends on various factors. These factors include culture, personality type, life experiences, educational specialisation, or career choice (The Cycle of Learning From Experience, 2021). As represented in figure 2 by the arrows, the logical sequence of the cycle has to be met, so all four stages (concrete experience, reflective observation, abstract conceptualisation, active experimentation) are undergone (McLeod, 2017).

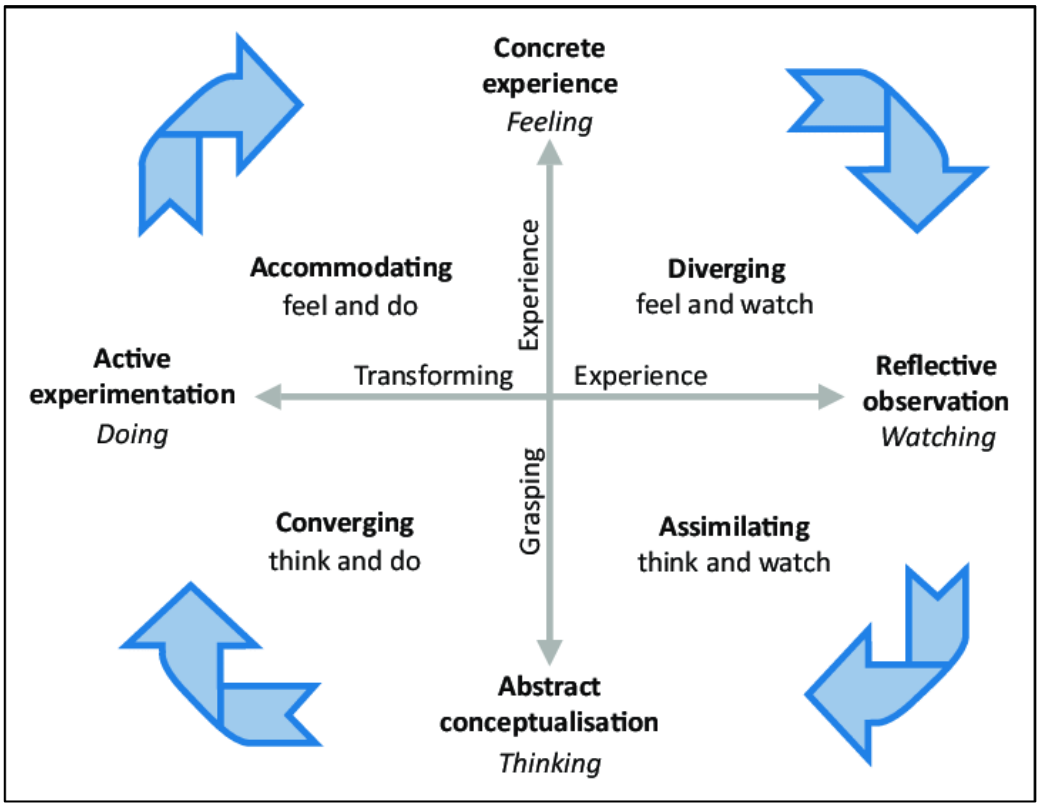


Figure 2: Experiential learning (Resource: Van der Horst and Albertyn (p. 6, 2018))

As mentioned previously, there were only four styles originally. These were diverger (concrete/reflective), assimilator (abstract/reflective), converger (abstract/active) and accommodator (concrete/active) (Pritchard, 2009). Kolb and Kolb's (2013) further research indicated the existence of the fifth possible style, which is now called the balancing style. The balancing style is placed in the middle of the kite shape model (as shown in figure 1). Finally, they distinguished not five but nine learning styles: initiating, experiencing, imagining, acting, balancing, reflecting, deciding, thinking and analysing.

The authors state that learning styles are not fixed traits as they depend on the environment's interaction (Kolb and Kolb, 2013).

Only three of Kolb's learning styles are described in this work to outline the features of individual styles. The ones chosen for demonstrative description are initiating, balancing and analysing styles. Other styles' characterisations can be found in Kolb and Kolb (2013).

The initiative learning style is deduced from the word *initiate*, as the holders of the learning style tend to initiate action to deal with new experiences and situations. It

combines modes of active experimentation and concrete experience. They are ready to commit themselves to the task. However, they may be impatient and impulsive, which worsens their skill in listening to others (Kolb and Kolb, 2013).

The balancing style is named after the distinctive feature of balancing all four components of the two dimensions. As a result, the learners are flexible in learning situations and capable of working with various groups of people. On the contrary, the central position might cause indecision in the learners. (Kolb and Kolb, 2013). The analysing style combines reflective observation and abstract conceptualisation modes. Their prominent "ability is to systematise and integrate ideas through reflection" (Kolb and Kolb, 2013, p. 202). These learners tend to plan ahead as they want to avoid mistakes (Institute for experiential learning, 2021). Their strengths comprise having good organisation skills and being rational and logical. On the other hand, they might struggle with taking risks, socialising, and learning difficulties when they lack structure (Kolb and Kolb, 2013).

2.3. Honey and Mumford's Model

Pritchard (2009) summarises the work of Honey and Mumford (1986), which identifies four learning styles: activist, reflector, theorist, and pragmatist. The proportions of the characteristics set the difference. The extreme cases of the styles do not frequently occur as it is more common for the individual to have components of all four styles.

The styles mentioned above are divided according to continuums called processing continuum and perception continuum, similar to Kolb's model. The processing continuum differentiates the approach to the task, whether the individual learns best by doing (active experimentation) or watching (reflective observation). The second continuum, the perception one, is delimited by the emotional response towards the task. The first maximum denotes the learner who learns best by feeling (concrete experience), and the second learner who learns best by thinking (abstract conceptualisation) (Honey and Mumford Learning Styles, 2020).

The four learning styles overlap with the four stages of learning: having an experience (activist), reviewing the experience (reflector), concluding from experience (theorist), and planning the following steps (pragmatist) (Beard and Wilson, 2006, p. 34).

A closer look at the division of Honey and Mumford's styles indicates a resemblance to Kolb's model. The reason is that Honey and Mumford based their model on Kolb's original four-style model. The similarity lies in the presence of the four stages of learning. Another similarity is that the learner may start at any stage. Finally, Honey and Mumford stress that although the learner may begin anywhere in the cycle, there is a need for the cycle to be completed if the learning process is about to be accomplished (Beard and Wilson, 2006).

Activists lie in the quadrant of concrete experience and active experimentation (Honey and Mumford Learning Styles, 2020). They learn by doing, as they are not afraid of trying new things. They are open-minded, enthusiastic, and prefer to work with others, not individually. They are bored by repetition (Pritchard, 2009) and do not like learning from reading, analysing data and theory (Lea, 2022). The same author suggests suitable activities for the activists. These are brainstorming, competitions, role-play, puzzles and problem-solving activities (Lea, 2022).

Reflectors share features of concrete experience and reflective observation (Honey and Mumford Learning Styles, 2020). They are not impulsive as the activists. They are more likely to observe, collect data and analyse before acting. Their style might be slower (Pritchard, 2009). Lea (2022) states that reflectors are not good at leading activities and prefer activities which allow preparation. They learn best by observing, getting feedback, being coached, and having discussions or interviews (Lea, 2022).

Theorists are placed in the quadrant of reflective observation and abstract conceptualisation (Honey and Mumford Learning Styles, 2020). They tend to build frameworks in memory and put there all the collected data (Pritchard, 2009). The previous information is connected with the new one, which enables them to understand the theory better (Lea, 2022). The same author adds that these learners have trouble when there is no instruction or when the instructions are ambiguous. They also do not like activities involving feelings. They learn best through discussions, problem-solving exercises, case studies or reflecting upon the practical realisation of the theory (Lea, 2022).

The last type, pragmatics, connects abstract conceptualisation and active experimentation (Honey and Mumford Learning Styles, 2020). Pragmatics enjoy looking for the practical implications of the theory (Pritchard, 2009). The inapplicable abstract theories are seen as useless (Lea, 2022). They benefit from being confident in their actions

(Pritchard, 2009) as they enjoy trying new techniques (Lea, 2022). Lea (2022) also suggests that discussions, case studies, problem-solving activities and thinking about applications are suitable activities for learning for pragmatics.

2.4. Deep / Surface-Approach

The research generated another division of learning styles, which divides learners according to their approach to learning. The inclusion of this division into learning styles is disputable. While some authors present these approaches among learning styles, for instance Turek (2008), others put the learning approaches into separate chapters. Mareš's (1998) book contains an individual chapter on the learning approaches. However, he includes a table from Schmeck (1988 in Mareš, 1998) which denominates these approaches as styles. Apparently, the delimitation is unclear, so this chapter briefly delineates the approaches.

Deep-approach learners use their inner motivation while learning. Learners are capable of distinguishing important and non-important parts of the information. They do not only learn to pass an exam, but they want to understand it in a more complex way and put it into the informational frameworks in their memory (Turek, 2008). These frameworks contain either theory or practical experience (Mareš, 1998). According to Mareš (1998), deep learners use their own words when recalling the information and can express and defend their opinion on the subject. Learners with this approach are usually more experienced learners interested in the learnt topic. Teachers possess tools to support this learning approach in learners (as described in subchapter 4.2.).

The surface-approach learners present the other side of the spectrum. The appellation stems from touching only the surface of the learned information as they do not try to understand the relation between the old and new curriculum (Turek, 2008). They are driven chiefly by external motivation (Mareš, 1998). They do not think much about what they learn, so they apply bare reproduction of information during examination (Turek, 2008). These learners lack the knowledge of how to learn appropriately (Turek, 2008), interest in the subject or enough time for learning (Mareš, 1998). Mareš (1998) does not omit to observe the ways teachers employ when supporting surface-approach learning. Teachers may boost this approach by having too heavy demands on the curriculum, giving not enough time to learn new information, suppressing learners'

opinions, or even demanding outcomes related to the style, e.g., literal data reproduction (Mareš, 1998). The traditional education system is mainly based on surface-approach learning (Turek, 2008).

3. Multiple Intelligences and Learning Styles

The theory of multiple intelligences was introduced by Howard Gardner (2011). The theory states there are nine intelligences, while initially, only seven intelligences were distinguished by him. Later, the eighth and ninth (naturalistic and existential intelligences) were added (Pritchard 2009). The original intelligences are called: verbal-linguistic, logical-mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, and intrapersonal (Silver et al., 2000).

Every individual is born with all of the intelligences mentioned above. However, the difference between the individuals is in the distribution of particular components. A person may excel in one or more intelligences and fail in others. The issue of priorities is similar to the conception of perceptual learning styles. Each type of intelligence demands different learning activities as they have unique abilities. Plus, the bearer of the preference of a specific intelligence is sensitive to diverse kinds of impulses (Silver et al., 2000).

An exhaustive look at the relationship between learning styles and multiple intelligences theory is described by Silver et al. (2000), who use Silver and Hanson's model of learning styles designed as a combination of perception preference, which includes sensing and intuition, and judgment preference consisting of feeling and thinking. As the perception and judgement preferences combine, four learning styles emerged: mastery, interpersonal, understanding and self-expressive style (Silver and Hanson 1998 cited by Silver et al., 2000). The authors claim that while multiple intelligences are concerned with learning content, learning styles are centred around the learning process. That is the reason why these two features are interconnected.

The integration is described by Silver et al. (1997) in more detail. The final product can be seen in figure 3. Firstly, each intelligence is divided into four quadrants according to the four learning styles. Every quadrant is filled with the abilities with which the individual is endowed. Additionally, the vocations have been added to the model. Finally, the potential products which the individual may create were added to the side of each quadrant.

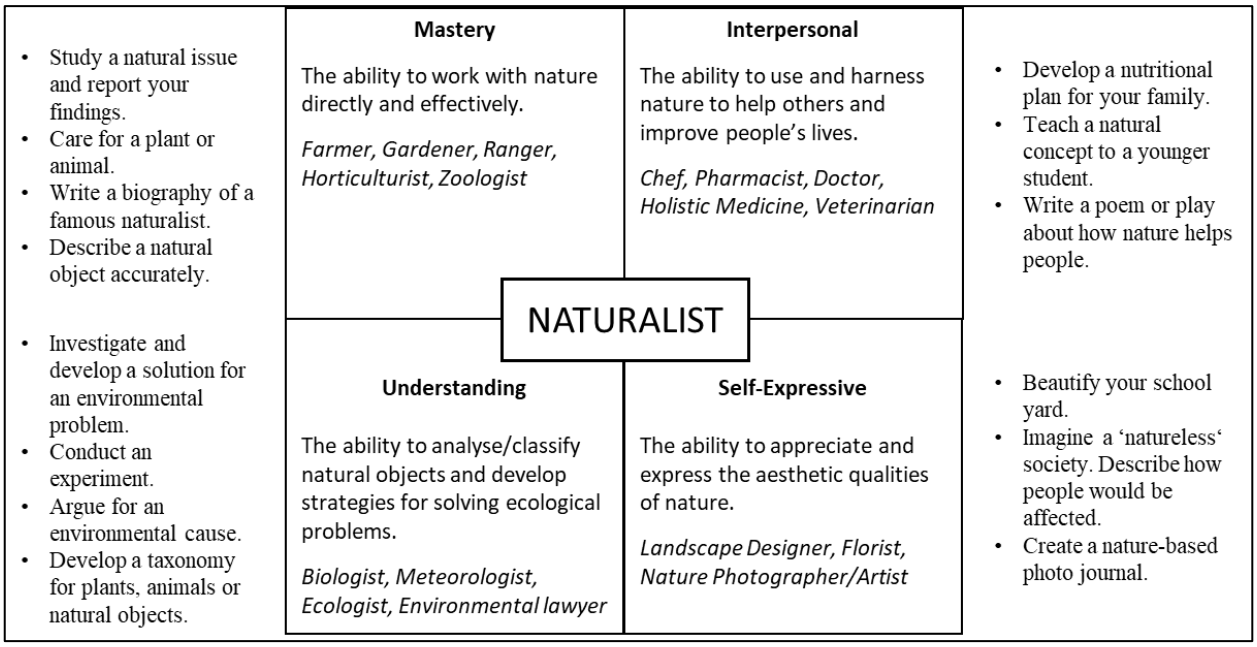


Figure 3: Integration of learning style and naturalistic intelligence (Resource: Adapted from Silver et al. (p. 75, 2000))

The beforementioned authors are not the only ones concerned with the integration. Seifoory and Zafrei (2011) researched relationships between perceptual learning styles and multiple intelligences. They found a positive relation between tactile style and logical-mathematical, spatial, bodily-kinaesthetic intelligences. Moreover, a positive association was found between kinaesthetic style and logical-mathematical, bodily-kinaesthetic intelligences. Another study confirming the link is from Panahandeh et al. (2015). They used Ken Willing's learning style model, distinguishing communicative, concrete, authority, and analytical styles. Communicate, concrete and authority styles correlated positively with most of the intelligences. The exceptions are listed below:

1) The communicative style did not correlate positively with intrapersonal and naturalistic intelligence.

2) The concrete style did not correlate positively with musical and naturalistic intelligence.

3) Authority style did not correlate positively with musical and intrapersonal intelligence.

The least intelligences were associated with the analytical style (verbal-linguistic, spatial, existential). On the contrary, Jaramillo et al. (2020) found no relationship between

learning styles and multiple intelligences. They used Kolb's original model with accommodating, diverging, assimilating and converging styles.

Hence, considering the information, it cannot be answered whether there is a positive correlation between learning styles and multiple intelligences as there are innumerable learning styles models. What correlates with one model does not correlate with the others. The choice of the model may influence the results as well as other variables.

4. Importance of Learning Styles

The following two subchapters provide contradictory views of researchers. While the first subchapter sums up resources which support the implementation of learning styles theory into lessons and stresses its positive importance (Awla, 2014), (Turek, 2008), (Mareš, 1998), the other subchapter argues against the practical application of the theory as there is no proper evidence to do so (Curry, 1990), (Kirschner, 2017), (Furey, 2020).

4.1. Importance of the Learning and Teaching Process

Although it may seem redundant to be acquainted with learning styles, one of the lower secondary teachers' responsibilities is to lead pupils on how to learn independently. One of the learners' output competences is called learning competence which is characterised by the goals learners have to achieve. The goals generally describe the deep approach (subchapter 2.4.) to learning driven by inner motivation. For instance, learners are about to choose the right strategies and methods to learn and acquire a positive relationship to learning (Rámcový vzdělávací program pro základní vzdělávání, 2021). Knowing one's learning style and subsequently choosing the most suitable strategies eases the learning process for both the learners and their teachers (Awla, 2014).

The learning styles of pupils are not the only vital factor. The teacher's learning style is also important because it reflects the teacher's teaching style (Lojová and Vlčková, 2011). The teaching style influences the teaching approaches, such as giving instructions during the lesson (Oxford et al., 1991). Oxford et al. (1991) and Lojová and Vlčková (2011) mention that the difference between a learner's learning style and a teacher's teaching style may cause problems during the evaluation. It happens because teachers unconsciously employ many activities and practices which suit them personally. Learners with the same style as their teacher are more likely to get better outcomes than those whose styles vary. Lojová and Vlčková (2011) state that this problem may be solved if the teachers become acquainted with their personal learning styles and afterwards master the rest of the learning styles to be more flexible during the lessons. The trouble frequently occurs by trainee teachers who are preparing for their teaching career.

Trainee teachers with the same style as their supervisor might get better evaluations and gain more from positive and supportive communication. On the other hand, those whose learning styles vary from the learning style of their supervisor may suffer from a lack of understanding (Oxford et al., 1991). The dissension of learning styles may cause problems not only for learners but also for teaching assistants. When the teaching style of the teachers does not match the learning style of the assistant, it may cause problems in terms of the teaching process and personal relationships. Subsequently, it can be projected in the assistant's evaluation by the teacher. (Oxford et al., 1991) Teachers need to be more objective and aware of the possibility of this style conflict.

There are two possible ways teachers may work with the learners' learning styles. Teachers can either influence the learners' learning styles (change them) or try not to interfere (Mareš, 1998).

Non-influence strategy means that teachers are aware of the theory of learning styles and have diagnosed their learners' styles, but they do not try to change them. The only presented exception is intervention when the learner's style causes serious trouble to the learner. There are more reasons why teachers do not want to change learners' styles, such as the belief in natural maturing and the lack of proper knowledge about the issue support the non-influence strategy. These teachers try to adapt their teaching to the learners' styles. This solution involves its risks. The following sentence mentions only selected ones, as there are more possible problems that could be stated. Learners may feel that their style is unchangeable, and they may feel that the institutions and the outer world will always adapt to their needs (Mareš, 1998).

The other strategy, which focuses on the influence of learners' learning styles, is a sensitive approach as it tries to modify their experiences and views (Mareš, 1998). Moreover, attempting to change each learner's learning style seems impossible (Awla, 2014). Pritchard (2009) warns that labelling learners with a particular learning style may push them to ignore the other ways of learning and even refuse to use the remaining modalities. Being labelled by a sticker may be uncomfortable, making it less flexible to possible changes.

One of the tools which help teachers integrate learning styles into lessons is the 4MAT model. Bernice McCarthy created the 4MAT model in 1979 (O'Neill-Blackwel, 2011). The foundations of this model can be found in Kolb's experiential learning theory,

but the 4MAT model is also enriched with new theories (McCarthy et al., 2002). The graphical representation is shown in figure 4.

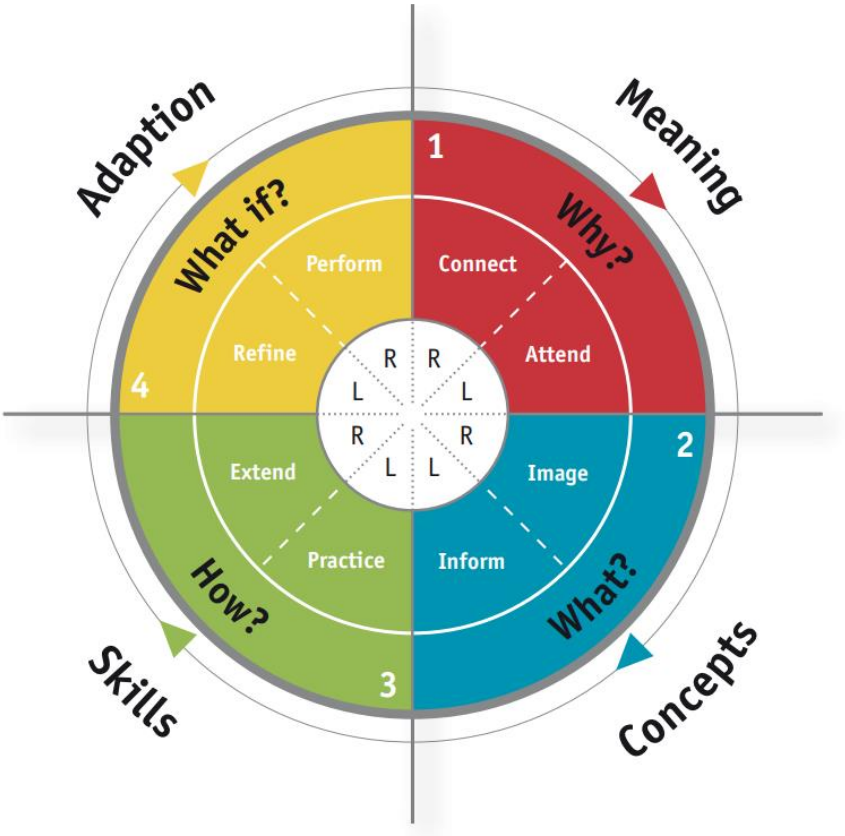


Figure 4: 4MAT learning cycle (Resource: http://www.4mat.eu/media/19623/mtd.procesmodel.eng.pdf))

As illustrated in figure 4, the 4MAT learning model resembles Kolb's model, which was derived from the experiential learning cycle (as displayed in figure 2) in terms of quadrats (horizontal processing continuum and vertical perception continuum). Additionally, McCarthy halved each quadrant into the left and right half, symbolising brain hemispheres. Each quadrant is equipped with a question which the particular style tries to answer: why, what, how, what if.

Teachers may, to a certain extent, influence learners' relationships with the subject. It is impossible to make all the learners love the teacher's specializations. On the other hand, teachers can support learners' inner motivation so the learners become deep-approach oriented instead of surface-approach oriented. According to Turek (2008), teachers' tools to support deep-approach learning include teaching learners how to learn, creating a pleasant working climate, and insisting on understanding the curriculum. Mareš (1998) adds that high-quality teaching using proper methods and exercises, individual approach

towards learners and enabling independent learners' work may also help the forming of deep-approach. The benefits of deep-approach learning are presented in subchapter 2.4.

4.2. Doubts about Learning Styles Existence

Even though the term learning styles is frequently used in university textbooks as Vacek's book Pedagogická psychologie (2017) or Kalhous et al.' Školní didaktika (2002) and other functional types of literature, there are objective concerns about whether learning styles really exist and whether teachers should adapt their teaching techniques to learners' styles.

These doubts are fortified by the absence of a proper definition of learning styles described in the first chapter in more detail. It is one of the reasons why Curry (1900) criticises the research on learning styles.

The other general problem Curry (1900) depicts is a lack of reliability and validity in diagnosing learning styles. The author claims that learning styles' research does not dedicate enough time to scientific confirmation of their measurement tests. They publish their work quickly as possible for marketing purposes. A similar thought is made by the Association for Psychological Science (2009), which understands today's use of learning styles as a business. The newest research conducted by Kirschner (2017) supports the idea, as none of the literature dealing with the validity of learning styles did meet all essential criteria, which would make them a valid theory.

What is more, Furey (2020) summarises that there is no evidence that teaching adapted to learners' learning styles makes their learning faster. It is also not a rule that the learner's style is the most effective and efficient way to learn a particular curriculum (Kirschner, 2017). Willingham (2005) claims that teachers should think about the best modality for the current content, which would be the same for all children, not modify one content for different learning style modalities. He does not refuse that the learners vary in their ability to remember things more in a particular modality, giving them an advantage in specific tasks. They may have a different span of auditory and visual memories. Still, it does not make a big difference in classroom results. The author understands that teachers require meaning of the content, and the specific perceptual memory's instruction of the content does not matter that much.

There is also no proper evidence to declare the existence of learning styles, according to Furey (2020). The absence of supporting literature for school usage of the learning styles is also mentioned in Pashler et al. (2008).

Research conducted by Husmann and O'Loughlin (2018) among university learners showed that the strategies learners used during their learning did not correspond to their results in perceptual learning styles tests. There was no correlation between their final exam results and their learning styles.

Nevertheless, even if the learning styles do not exist, individuality among learners is indisputable. Teachers should incorporate various activities, use diverse methods, and balance the practice of learners' language skills during the lessons. They also need to realise that their preferred way of learning does not have to match the learners' preferences which has to be beard in mind during the lesson activities and evaluation.

5. Diagnostics of Learning Styles

This last chapter of the theoretical part provides the diagnostics of the learning styles, which complement the stated theories and outlines the practical usage. If teachers want to consider learners' learning styles, they need to be aware of the issue.

The diagnostic methods can be divided into direct and indirect, while the direct method requires direct observation. Its advantage is that the teacher does not need special training (Lojová and Vlčková, 2011). On the other hand, the indirect method comprises questionnaires, analyses of learners' work or various interviews (Mareš, 1998), which are usually employed because some features of learning styles are hard to be captured by only bare direct observation (Lojová and Vlčková, 2011).

This chapter introduces a detailed description of several types of questionnaires. Mareš (1998, pp. 198-204) provides an overview of the main questionnaires, while this chapter mentions only a few examples appropriate for lower secondary school learners, which are mentioned from the stated source. The first is the Learning Process Questionnaire (LPQ) by J.B. Biggs in which the estimated time needed to complete the questionnaire is 12 minutes, an appropriate duration for young learners. Thirty-six scale-like questions have five possible options; the questionnaire distinguishes deep, surface and performance approaches. The more demanding Learning Style Profile (LSP) questionnaire by J.W. Keefe and J.S. Monk contains 126 closed-ended questions with three to five options, but the duration is not stated there. It consists of four dimensions: cognitive style, learning preferences, perceptual response and teaching preferences (Mareš, 1998).

The existence of online questionnaires cannot be disregarded. The VARK questionnaire, assessing perceptual preferences, is not only available in printed form but also in the form of an easily accessible online survey. There is a particular questionnaire version for younger people with 16 questions, while each question contains four options, and learners may choose an unlimited number of choices for each question. The results are immediately available, and learners can directly find information about their learning style on the same web page (VARK, 2022a).

In conclusion, some specific issues and problems can arise with diagnostics. The researchers must be aware of certain factors, such as the respondents' age, gender,

ethnicity, etc., which may influence the research results. The other factors are social and family environment, health and chronobiological issues (Mareš, 1998).

PRACTICAL PART

6. Goals, Research Questions and Hypotheses

The practical part of this work has one main goal. The research aims to map learning styles based on grades, gender, modalities, English proficiency and English learning motivation among learners of one lower secondary school. This case study gathers data obtained from a questionnaire.

The main goal of the research question is further divided into six sub-questions which contribute to the overall response of the main research question. The main one is written in bold text, and the sub-questions are in italics in the following lines:

Research question: Which learning styles occur by the lower secondary school learners of the particular school?

1a) What will be the most frequent learning style among the learners?

1b) How will the distribution of learning styles differ between girls and boys?

1c) How many learners will be multimodal?

1d) What correlation can be found between learning styles and English proficiency?

1e) What correlation can be found between learning styles and English learning motivation?

Accordingly, there are stated hypotheses for the sub-questions, written in italics, and their justifications:

Hypothesis 1a

h_0: *The visual style will be the most frequent.*

This hypothesis is based on the statements of Mezera and Topičová (2015) and Oxford (1995) mentioned in Lojová and Vlčková (2011). They consider the visual learning style as the dominant one in the population. The hypothesis suggests that the visual style will be the most frequent in each grade and the total result for the whole lower secondary school.

h_1: *The visual style will not be the most frequent.*

Hypothesis 1b

h_0: *The difference between girls and boys will not be significant. (less than 5%)*

The difference between the girls' and boys' distribution of learning styles would not exceed 5%. The basis of this hypothesis is taken from Shah et al. (2013) and VARK (2022b), who found no significant differences between men and women in terms of learning styles distribution results.

The 5% value is chosen according to Mills (2021), who states that this is the typical value for statistical significance.

h_1: *The difference between girls and boys will be significant. (more than 5%)*

Hypothesis 1c

h_0: *At least half of the pupils will be multimodal.*

This hypothesis is based on the studies by Shah et al. (2013) and VARK (2022b), which found that most participants are multimodal. The multimodality will comprise both bimodal and trimodal results together.

h_1: *More than half of the pupils will be unimodal.*

Hypothesis 1d:

h_0: None of the learning styles will correlate positively with English proficiency.

This hypothesis is based on the research from Al-Zayed (2017) and Jaya (2019), who found no positive correlation between learning styles and English proficiency.

h_1: At least one of the learning styles will correlate positively with English proficiency.

Hypothesis 1e

h_0: There will not be a positive correlation between learning styles and motivation for English learning.

The hypothesis is based on the work of Jin-Suk & Tae-Young (2011) and Moneva et al. (2020).

h_1: There will be a positive correlation between learning styles and motivation for English learning.

7. Methodology

The following subchapters provide an outline of the realisation of the research process. It incorporates detailed information about consent, research tool, the realisation of the research, and data processing.

7.1. Getting Consent

Some consents needed to be given before the research was conducted. The first one was from the school's headmaster, while the learners' parents gave the second. The way of informing the parents was discussed with the school's management. The content of consent document included a notification about the research, which would be conducted at school one week before the research began. Parents had enough time to react and express potential disagreement with the research. None of the parents expressed a disagreement. The learners also had a right to refuse to participate in the research. One of the learners did not want to participate, so he was given another work.

7.2. Research Tool

The final product comprises the basic information about the learner (appendix A), an inquiry form investigating learners' perceptual learning style (appendix B), and a set of questions investigating their motivation towards English language learning (appendix C). These three sections create one complete questionnaire for the learners. The questionnaire is anonymous.

Learners must fill in the basic information in the introductory part of the questionnaire, such as date, grade, gender, name of their English teacher, and mark obtained in the English language from the last term. The name of their English teacher is used with the objective to inform particular teachers about the class learning styles and English motivation situation.

The perceptual learning styles questionnaire divides learners according to their perceptual preferences. This model is chosen as the interpretation of the results is easy to decode by the young learners and their teachers. The chosen questionnaire is the Learning Style Survey for Young Learners: Assessing Your Own Learning Styles (Cohen and Oxford, 2001, cited by Cohen and Weaver, 2004). The cited survey consists of four

individual parts. Nevertheless, only the first part, which focuses on the use of perceptual learning styles, is used for the purposes of this research. The first part, used in this work, is divided into three units. There are seven statements in units A and B and nine in unit C. These statements are translated into the Czech language by the author so that the original meaning, corresponding with the particular learning style, is preserved. Next to each statement, there are three possible options to circle. Learners have to decide how they accomplish the mentioned activity based on the adverbs of frequency: *often/always, sometimes, never/rarely*. Each option has a different value: 3 points for *often/always*, 2 for *sometimes*, 1 for *never/rarely*. In the original version, these options are represented by emojis: *often/always* is shown as three smiling emojis, *sometimes* is pictured as two smiling emojis and *never/rarely* is shown as one frowning emoji. It was decided to use words instead of emojis because young learners may be misled when using emojis as they may forget what emojis mean. They also might waste much time constantly checking what the emojis mean or ignore their meaning.

Learners are allowed to circle only one option even though they may like more than one. If more than one option is chosen, the item is taken as invalid. Subsequently, the points are counted up in units A, B and C. The unit with the most points shows the dominant perceptual learning style of the learner. Unit A stands for the visual style, unit B for the aural style, and unit C for the kinaesthetic style. It is probable that some learners are multimodal, which means they will have the same amount of the highest points in more than only one unit. In this case, they can be bimodal or trimodal.

The questionnaire assessing learners' motivation towards English learning is taken from the book Motivation, Language Identity and the L2 Self, particularly from the chapter Motivation and Vision: The Relation Between the Ideal L2 Self, Imagination and Visual Style (Al-Shehri, 2009). It consists of 17 items which are assessed by the 3-point Likert scale. In the original questionnaire, there are 18 items, but one is omitted because it is unsuitable for local teaching methods. The items are sentences describing a situation associated with English learning motivation. These statements are translated into the Czech language by the author. The original Likert scale of this questionnaire is 5-point. The reduction aims to simplify the questionnaire as the learners are young. The 3-point scale consists of these options: *agree, neutral*, and *disagree*. The more answers of agreement - *agree,* the more significant the motivation towards learning English. Learners

can choose only one option for each item. If more than one is chosen, the item is taken as invalid.

The results gathered from these three parts are analysed in order to answer the research question.

7.3. Realisation of Research

The preparation for the research took about two months. First, the questionnaires had to be found, adjusted, translated into Czech and fused. Afterwards, they needed to be printed and distributed among the other teachers. Before that, the consent of all the subjects had to be taken. There is more information about consent in subchapter 7.1.

The process of collecting data took about three weeks in May 2023. I gathered data from only two classes. The rest was collected by other English teachers, factually three. I met all of them and gave them both oral and written explanations of how to lead the lesson. In total, eight classes participated in this research. It was highly complicated to gather the data as most of these classes were divided into halves during English lessons, so it took more time and effort from the other teachers. Nonetheless, they were also intrigued by the study's results and understood the importance of learners thinking more deeply about their learning process.

At the beginning of each lesson, the teacher introduced the issue of learning importance and learning styles. Teacher mentioned that the learning styles may be divided according to the dominant sense we use during learning and split the blackboard into three sections. An eye, ear and hand were drawn in the sections. Teachers asked the learners how a person who learns by sight acquires English the best and wrote their ideas on the board. If the typical characteristics were missing, they could be added by teacher. The same technique was done with the remaining two learning styles. The ideas were mostly the same throughout the classes. Their ideas are recorded in figure 5. Interestingly, some learners took this topic seriously and did well in the brainstorming. Especially one girl from the sixth grade, who was able to fill in all the gaps her classmates missed.

The following chart gathers the ideas acquired during the brainstorming activity.

Learning style	Learners' ideas
visual	teachers' writing on the board, reading textbooks, notebook editing (as using colours), reading on social media sites
aural	listening to the teacher, talking with a friend, listening to Youtube / Tiktok videos / Instagram, listening in textbooks, speaking with native speakers, learning aloud
kinaesthetic	writing by hand, writing on social media sites, games in the classroom, using flashcards, tangible aids (playing pairs, domino)

Figure 5: Learners' ideas of manifestation of particular learning styles

Afterwards, learners filled in the basic information about themselves (more information about the questionnaire can be found in subchapter 7.2). Then, teacher gave them instructions on filling in the questionnaire and assured them they might ask questions if they needed.

Usually, it took about 15-20 minutes to complete it. Some learners required more time than others.

When everyone was ready, the teacher instructed them to assess the questionnaire's first part, the perceptual learning styles. Some doubts emerged at this point, but it was solved individually. I also walked across the classroom and peeked at their unfinished work. Sometimes, I pointed out that they forgot to fill in the introductory information or omitted some statements. Some also misunderstood the instruction to circle only one option by each statement. I found some minor mistakes in counting points later at home, but generally, they succeeded in assessing their work. Two students counted their points absolutely differently. One student totalled all the points together and did not divide it into three sections. The other student's way of counting points could not be deciphered. Finally, teacher discussed their results with the learners and asked them if it fits into their learning habits.

Some of the learners mentioned that it was exhausting to read all the statements. Interestingly, these comments came from older learners. The younger ones were generally more excited about the questionnaire.

I asked the teachers to collect the questionnaires one by one so they could check whether the learners filled in all the essential information at the beginning of the questionnaire. The missing crucial information would lead to eliminating the questionnaire from the results. This happened only once. Furthermore, I discovered skipped item of gender on one occasion. It was one of my students, and I could recognise the gender by comparing the handwriting with previous written exams and found out the student's name. Fortunately, the handwriting was very distinctive. Later, I realised this could be a case of violating the anonymity. On the other hand, I forgot who it was at this point, so the anonymity was preserved.

The questionnaire was also applied among learners with a distinct native language from the Czech language. They spoke Czech quite well but needed more time to read the statements. Occasionally, I had to help them understand the statements by describing the situation in other words.

I emphasised that the questionnaires were not up-to-date, so some statements had to be converted to today's modern world trends. For example, I pointed out that the statement including watching TV might be substituted for watching videos on mobile phones, laptops, etc.

Younger learners were generally more interested in their results and discussions than older ones. However, some older learners who were usually not engaged in ordinary classroom activities were deeply attentive during this research activity and personally asked more questions after the lesson ended.

The schedule of the lessons varied. I did not have much information about the schedule of the other teachers, but the research in the classroom did not cover the whole lesson. The brainstorming usually lasted up to 5-10 minutes. The time to fill in the questionnaire took about 10 minutes, and the assessment of the results lasted approximately 5-7 minutes on average. The subsequent discussion and comments took from 2 to 5 minutes.

7.4. Processing of Data

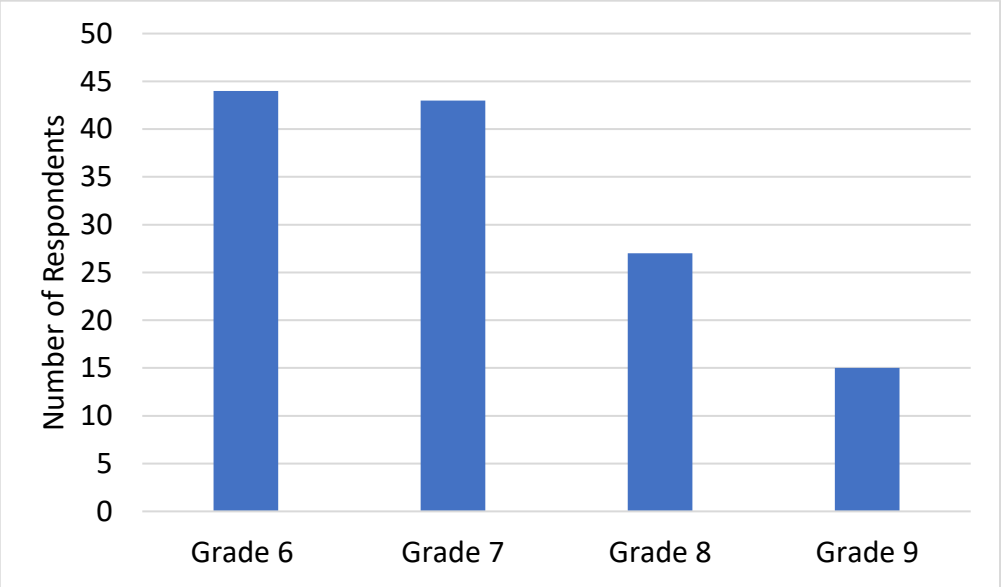
The data were processed mainly in Microsoft Office Excel and Microsoft Office Word. As the questionnaires were printed on paper, it was necessary to assess and rewrite the results on the computer. I did not do it all at once, so the exact time of rewriting and processing was hard to estimate. Discontinuously, it took three weeks to process it all. The data were re-counted as there was a high risk of making mistakes. Some mistakes were found.

There was one crucial issue with the processing of data and the final results. When the learner was multimodal, each style was counted in the final result, so it could happen that the absolute number of learning styles per class or gender would be higher than the total number of respondents. Nevertheless, these data were usually displayed in percentages.

8. Target Sample

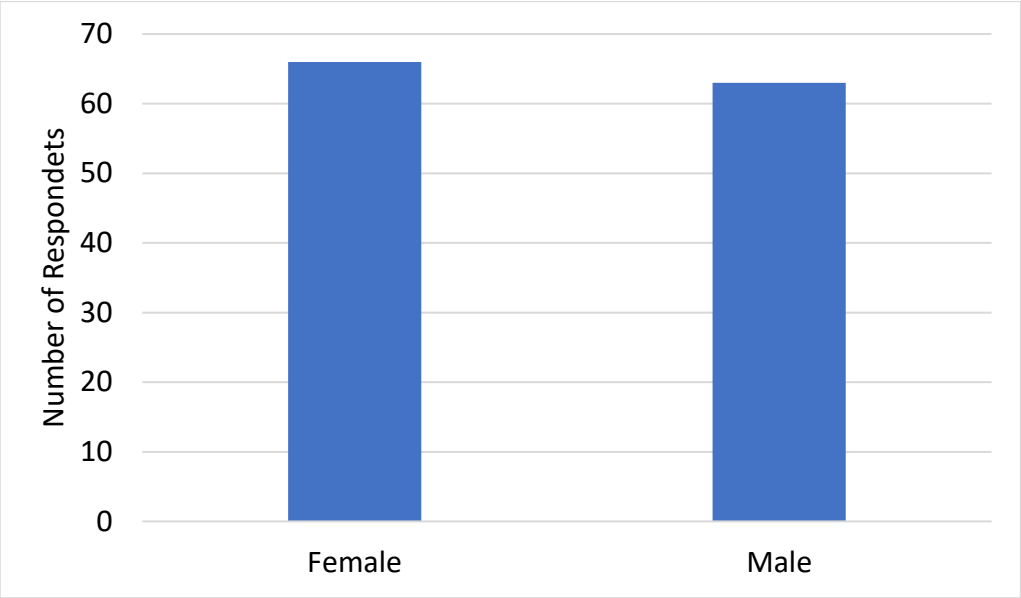
The research was conducted in a lower secondary school in Prague. The school runs eight grades at a lower secondary school. There are three classes of the sixth grade, two classes of the seventh, two classes of the eighth, and one class of the ninth grade. The total number of learners is around 200. This school was chosen because I had worked there since September 2022 and knew the local conditions and learners.

From the total number of N=130 questionnaires, there were 129 valid ones and only one invalid. The invalid one could be used as the learner forgot to fill in the gender and grade in English. The questionnaire was given to 44 learners in the sixth grade, 43 learners in the seventh grade, 27 learners in the eighth grade and 15 learners in the ninth grade. The number of learners was comparable in the sixth and seventh grades. However, the numbers were lower in the eighth and ninth grades. This contrast was caused by the lower number of learners in these grades and the higher absence on the data-gathering day. The final proportion is pictured in graph 1.



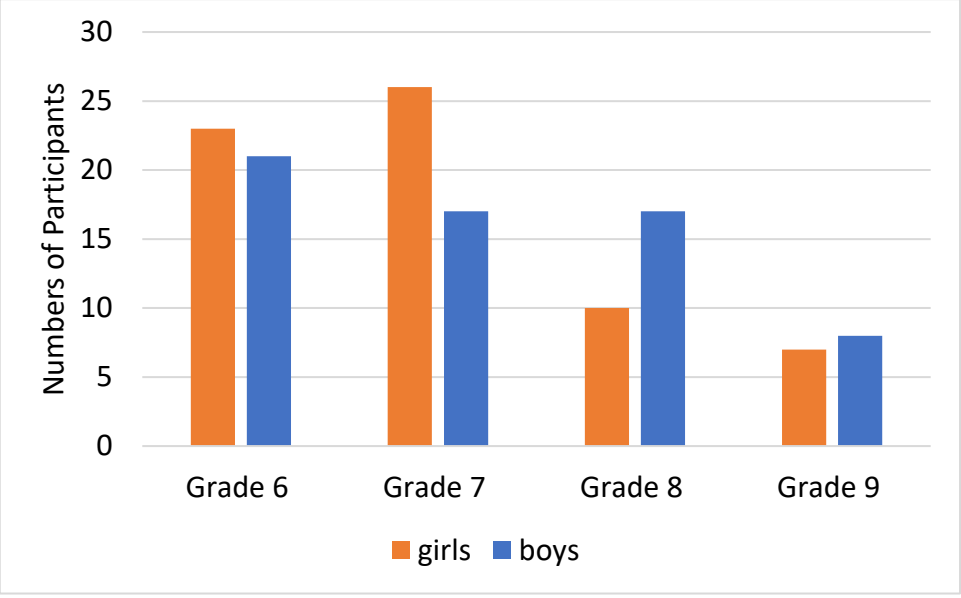
Graph 1: Number of respondents per grade

There were 66 female and 63 male participants whose results were valid. The numbers of the genders are comparable, as shown in graph 2.



Graph 2: Numbers of respondents per gender

The representation of gender in each grade separately is displayed in graph 3. Female participants dominated in the sixth and seventh grades. On the contrary, male participants prevailed in the eighth and ninth grades. The seventh grade had the highest number of female participants, as there were 26 girls. The highest number of male participants was found in the sixth grade, as there were 21 boys. On the contrary, there were only seven girls in the ninth grade, which was the lowest number of female participants. Among boys, the lowest number was also in the ninth grade, with eight male participants.



Graph 3: Numbers of respondents per gender in particular grades

None of the learners was removed from the process, so the research contains children with all different marks in English and motivation towards learning English.

9. Results

The following chapter presents the results of the conducted research. Each research question is described in the individual subchapter. There are five subchapters of data gathered from the research, which are enriched with graphs and charts. The aim of the research questions is mentioned at the beginning of each subchapter. The end of each subchapter contains information about the verification of the hypotheses.

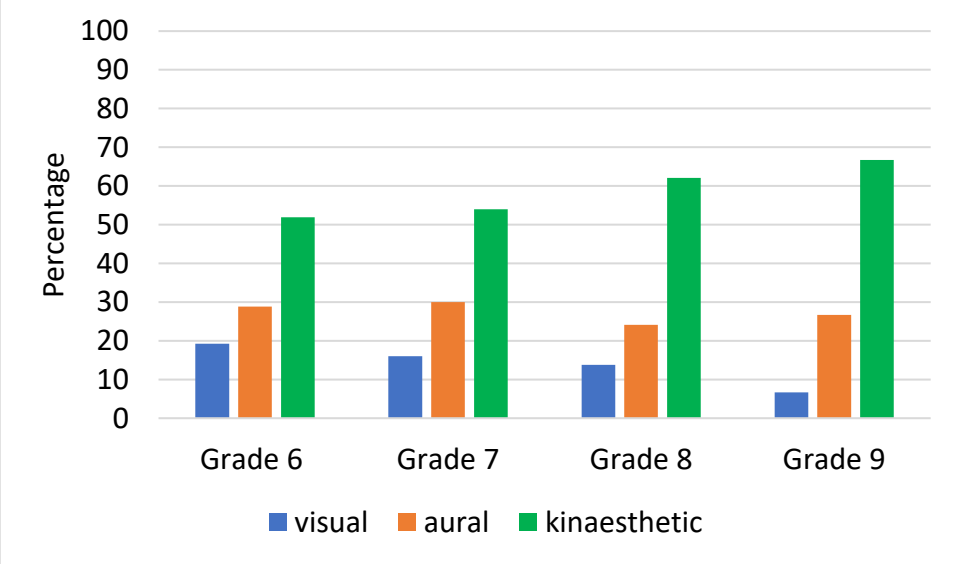
9.1. Research Question 1a

Research question 1a studies the most frequent learning style among the learners. H_0 claims that visual learners will be dominant.

The strict dominance of the kinaesthetic learning style occurs across all the grades, as pictured in graph 4. The highest rate is in the ninth grade, with 66.7%, and the lowest is in the sixth grade, with 51.9%.

The aural learning style is always in second place. The highest rate can be found in the seventh grade, with 28.8%. The lowers rate is in the eighth grade, with 24.1%.

The least representation occurs within the visual learning style. The highest rate is in the sixth grade, with 19.2%, and the lowest in the ninth grade, with 6.7%.



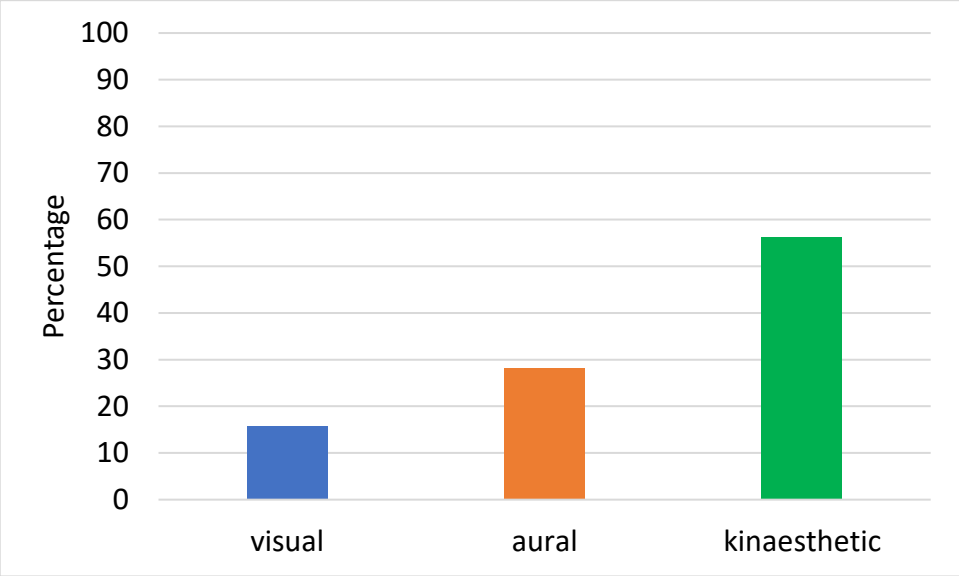
Graph 4: Total percentage of learning styles by grade

The exact percentage is shown in figure 6.

	visual	aural	kinaesthetic
Grade 6	19.2	28.8	51.9
Grade 7	16	30	54
Grade 8	13.8	24.1	62.1
Grade 9	6.7	26.7	66.7

Figure 6: Total number of learning styles per grade (%)

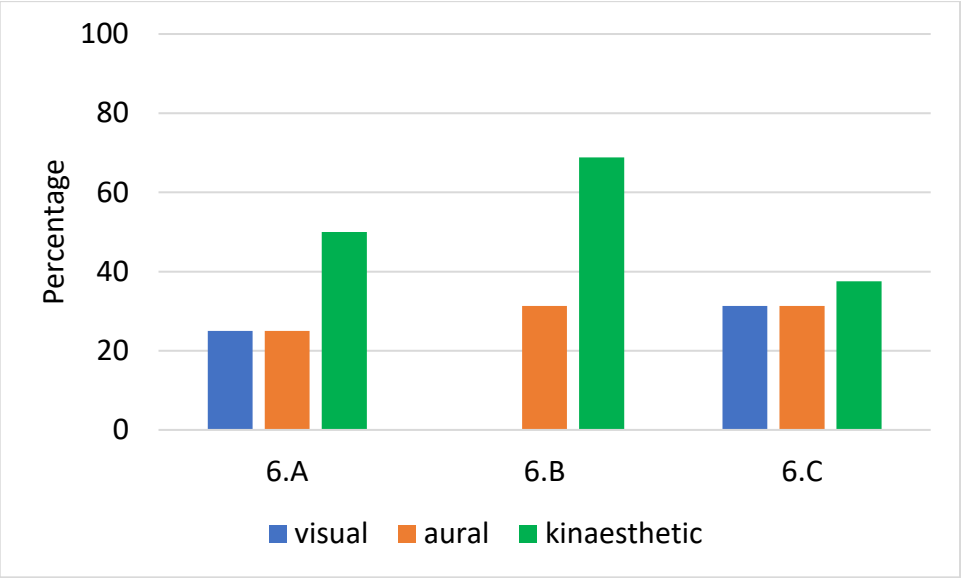
Regardless of the grades, the total percentage of each learning style is shown in graph 5. There were 15.8% visual, 28.1% aural and 56.2% kinaesthetic learners. The kinaesthetic learning style leads with a 28.1% margin.



Graph 5: Total percentage of learning styles

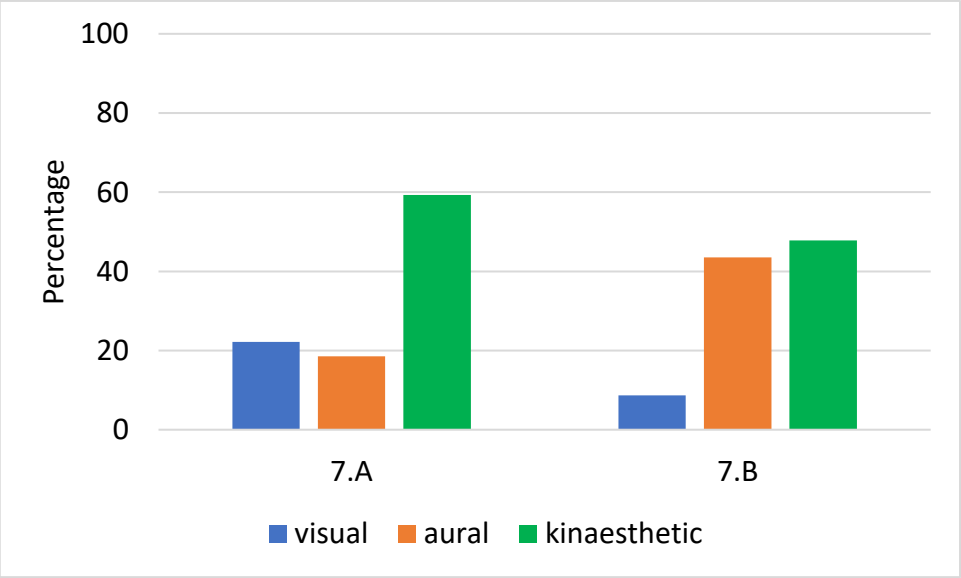
The distribution of the learning styles can be further investigated grade by grade. As mentioned, there were three classes of the sixth grade, two classes of the seventh grades, two classes of the eighth and one class of the ninth grade. The ninth grade cannot be compared as there is only one class.

The distribution of the classes of the sixth grade is presented in graph 6. The kinaesthetic learning style dominates in all of them. The highest percentage is found in 6.B, with 68.8% and the lowest in 6.C, with 37.5%. While there is no visual learner in 6.B, there is a significant number of both visual and aural learners in 6.A and 6.C. Furthermore, both classes have equal distribution of visual and aural learning styles. The 6.C has a slightly higher percentage of these two styles, with 31.3% in contrast with 6.A whose percentage is 25%. The most significant gap between the first and the second position of learning styles can be found in 6.B with 37.5%.



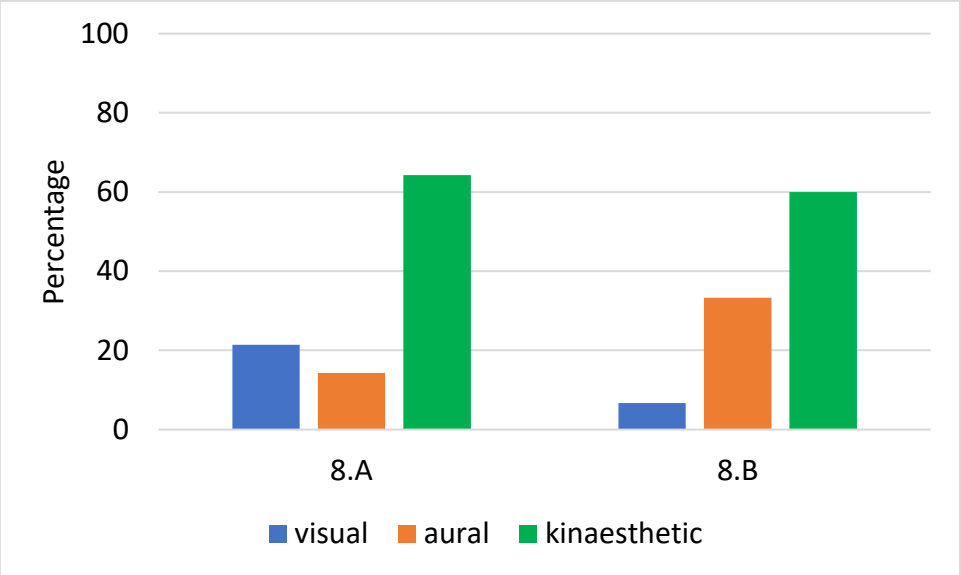
Graph 6: Percentage of learning styles in the sixth grades

There is another distribution within classes of the seventh grade, as seen in graph 7. Although the kinaesthetic learning style is dominant in both classes with an overall majority, the other styles differ significantly. The second most frequent style in 7.A is the visual one, with 22.2%. The visual style in 7.B covers only 8.7%. Aural style is in second place in 7.B with 43.5%. There is only a 4.3% difference between the aural and kinaesthetic styles in 7.B. The difference between the first and second dominant learning styles in 7.A is 37.1%.



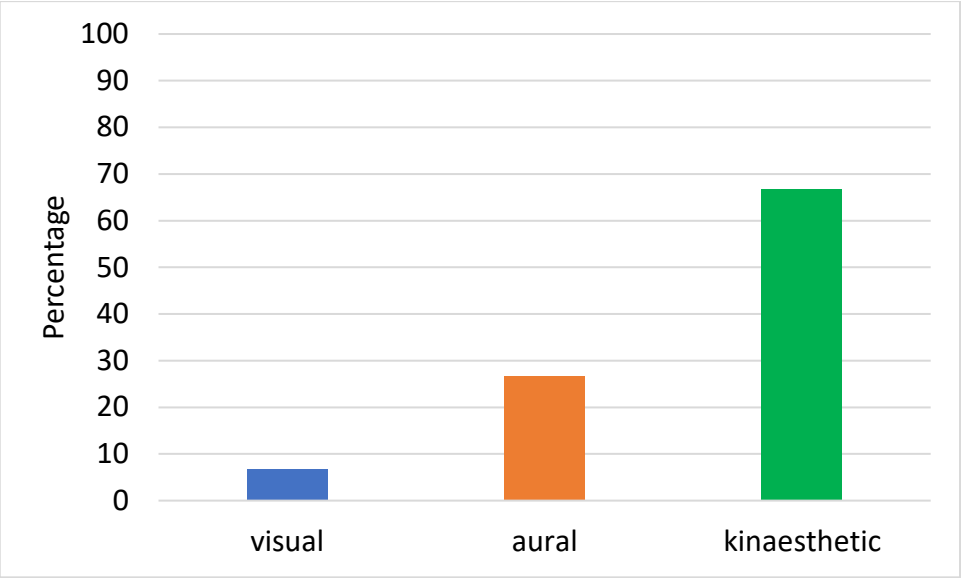
Graph 7: Percentage of learning styles in the seventh grades

The kinaesthetic learning style dominates in both classes of the eighth grade, as pictured in graph 8. The 8.A has a slightly higher percentage of this style, with 64.3%. The aural learning style is the second most dominant in 8.B with 33.3%, while there is only 14.3% in 8.A. On the other hand, 8.A has a higher percentage of visual learners, with 21.4%. The 8.B has only 6,7% of them. There is a more significant difference between the first and the second learning style in 8.A with 42.9%.



Graph 8: Percentage of learning styles in the eighth grades

As mentioned before, there is only one class of the ninth grade, so there is no opportunity for comparison to be made. The graphical distribution is shown in graph 9. The kinaesthetic style dominates with 66.7%. The second most common learning style is the aural one, with 26.7%. The difference between these two styles is 40%. Visual learning style is represented with only 6.7%.



Graph 9: Percentage of learning styles in the ninth grade

To sum up, H_0, claiming that the visual learning style will be the most frequent- has been disproved. H_1claiming that the visual learning style won't be the most frequent is confirmed as the most common learning style by all grades is kinaesthetic.

9.2. Research Question 1b

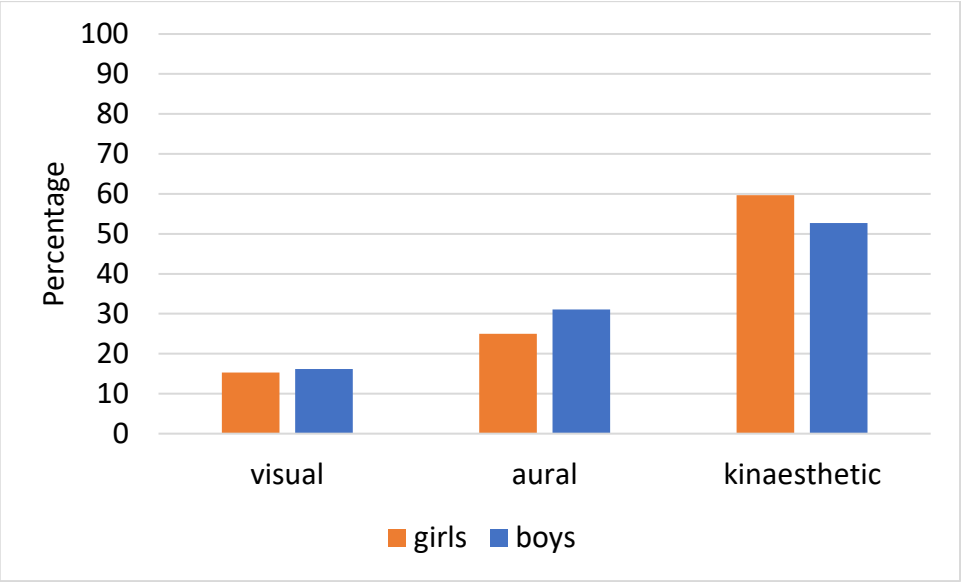
Research question 1b examines how the learning styles between girls and boys differ. H_0 suggests that the difference between girls' and boys' learning styles will not exceed 5%.

Figure 7 and graph 10 show the total distribution of the learning styles through all the grades.

	visual	aural	kinaesthetic
girls	15.3	25	59.7
boys	16.2	31.1	52.7

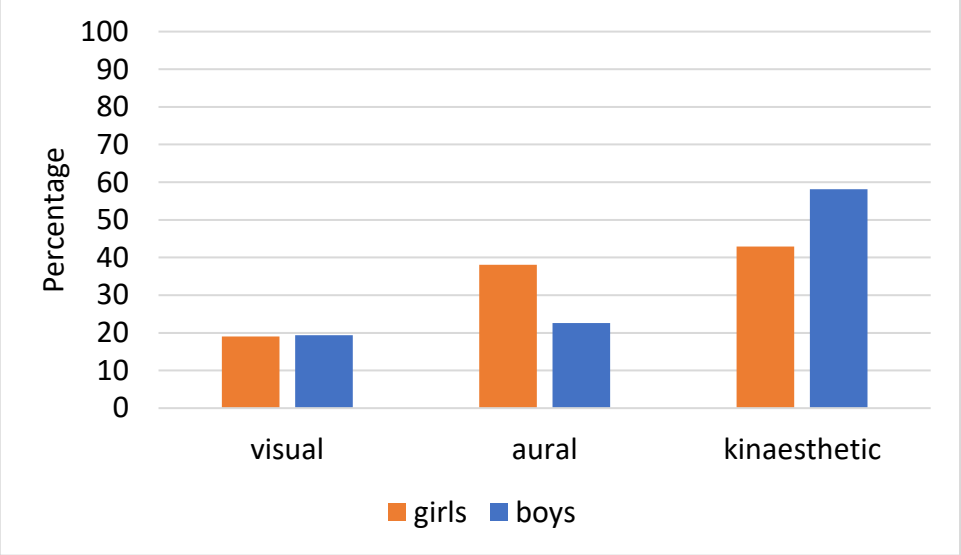
Figure 7: Distribution of learning styles among girls and boys (%)

The percentage contrast is visible among the variability of gender, but it is not significant. There are 15.3% girls and 16.2% boys with visual style preference, so there is only 0.9% difference between genders. There are 25% girls and 31.1% boys with the aural style, so the difference is 6.1%. Finally, there are 59.7% of girls and 52.7% of boys with the kinaesthetic style, so the gap between them is 7%. The biggest gap can be found throughout the kinaesthetic style and the lowest in the visual style. The arithmetic mean of the differences between boys and girls is 4,6%.



Graph 10: Learning styles among boys and girls – total distribution

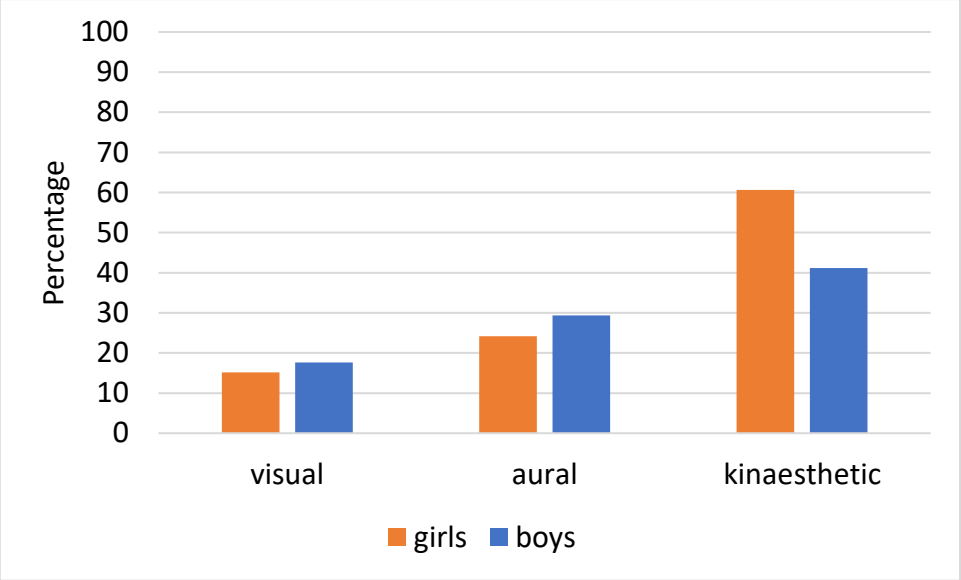
The situation in the sixth grade is presented in graph 11. There are 19% of girls and 19.4% of boys with a preference for visual style, so the difference is only 0.4%. The results show that 38.1% of girls and 22.6% of boys have the aural style, so there is a 15.5% difference. Finally, 42.9% of girls and 58.1% of boys have the kinaesthetic style, so the gap is 15.2%. The most significant difference occurs in the aural style and the lowest in the visual style.



Graph 11: Learning styles among boys and girls – Grade 6

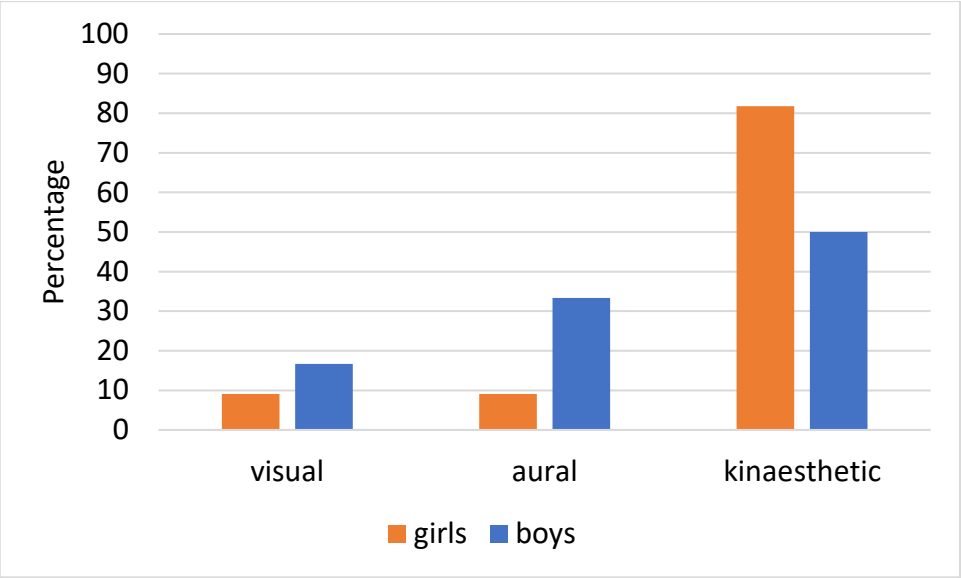
The arrangement of the seventh grade is shown in graph 12. There are 15.7% of girls and 17.6% of boys with a visual style, so the difference is 2.4%. There are 24.2% of girls and 29.4% of boys with the aural style, so the difference is 5.2%. Finally, 60.6% of

girls and 41.2% of boys have the kinaesthetic style, so there is a 19.4% difference. The most significant contrast is seen within the kinaesthetic style, and the lowest within the visual style.



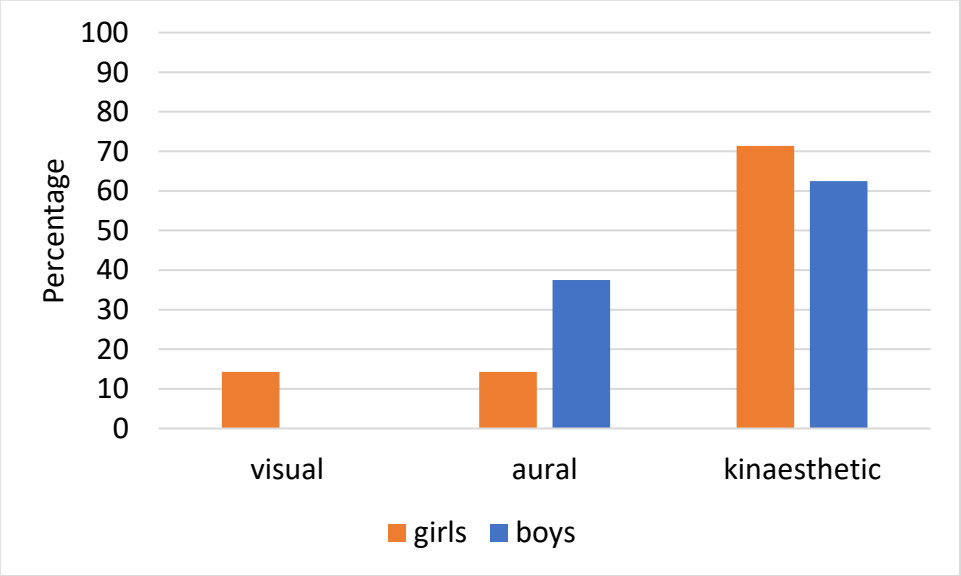
Graph 12: Learning styles among boys and girls – Grade 7

The distribution in the eighth grade is presented in graph 13. There are 9.1% of girls and 16.7% of boys with the visual style, so the difference is 7.6%, while there are 9.1% of girls and 33.3% of boys with the aural style, so the difference comprises 24.2%. Finally, 81.8% of girls and 50% of boys have the kinaesthetic style, so they differ by 31.8%. The most significant difference occurs by the kinaesthetic style, with 31.8% and the lowest by the visual style, with 7.6%.



Graph 13: Learning styles among boys and girls – Grade 8

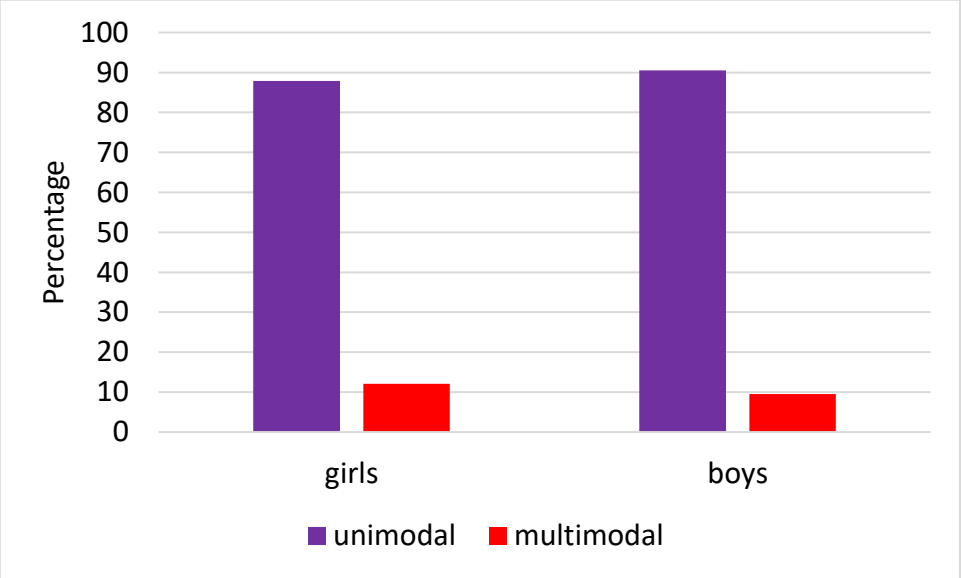
Lastly, the situation in the ninth grade is seen in graph 14. There are 14.3% of girls with visual style. There is no boy with the visual style in this grade, so the difference is 14.3%. There are 14.3% of girls and 37.5% of boys with the aural style, so they differ by 23.2%. There are 71.4% of girls and 62.5% of boys with the kinaesthetic style, so there is an 8.9% difference. The most significant dissimilarity occurs within the aural style and the lowest in the kinaesthetic style.



Graph 14: Learning styles among boys and girls – Grade 9

Furthermore, differences in modalities between boys and girls are demonstrated. These results are presented in graph 15, which shows 87.9% of unimodal girls and 12.1%

of multimodal girls compared to 90.5% of unimodal boys and 9.5% of multimodal boys. It proves that there are slightly more girls with more than one learning style; the difference between girls and boys according to their modality is only 2.6%.



Graph 15: Proportion of modalities between girls and boys

H_0, claiming that the difference between boys and girls will not be significant, has been proved as the arithmetic mean from the total distribution of learning styles between the gender shows 4.6% difference which is less than 5%. What is more, the difference between girls and boys according to modality is 2.6%.

9.3. Research Question 1c

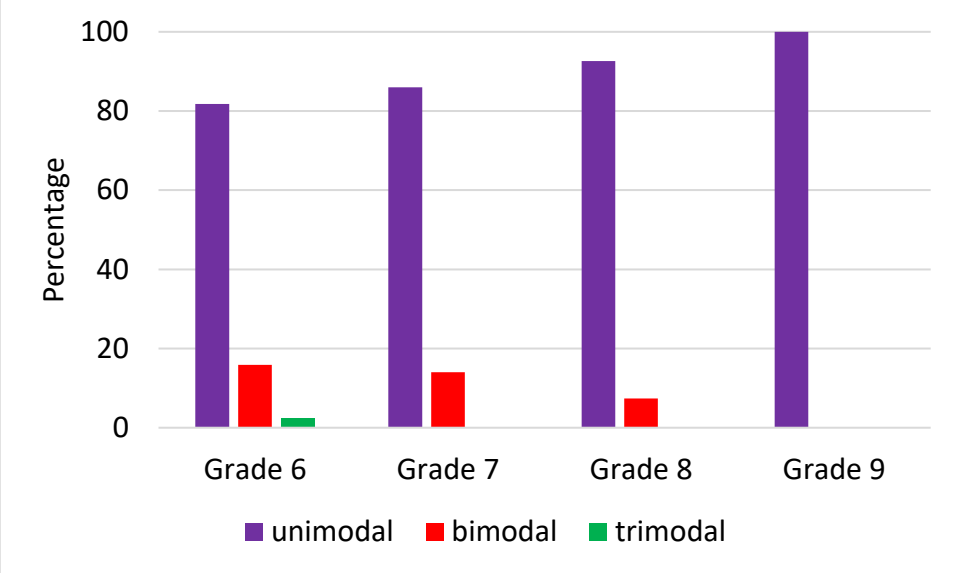
Research question 1c studies how many learners will be multimodal. H_0 suggests that at least half of the pupils will be multimodal.

The results present the massive predominance of unimodal learners in all grades. This feature is displayed in figure 8 and graph 16. The highest percentage of unimodal learners is in the ninth grade. There are no bimodal or trimodal learners in this grade. On the contrary, the lowest percentage of unimodal learners is found in the sixth grade, which contains only trimodal learner from the whole sample.

	unimodal	bimodal	trimodal
Grade 6	81.8	15.9	2.3
Grade 7	86	14	0
Grade 8	92.6	7.4	0
Grade 9	100	0	0

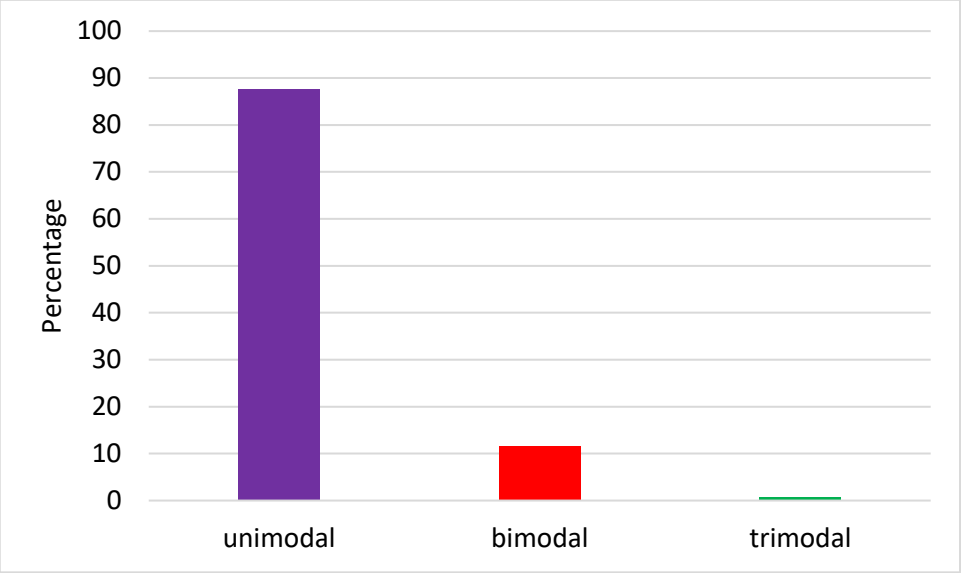
Figure 8: Modalities per grade (%)

It is distinguishable that the trend of unimodality is rising with the grades. On the other hand, the trend of bimodality is falling.



Graph 16: Modalities per grade

The total percentage of modalities is shown in graph 17. There are 87.6% unimodal, 11.6% bimodal and 0.8% trimodal learners.



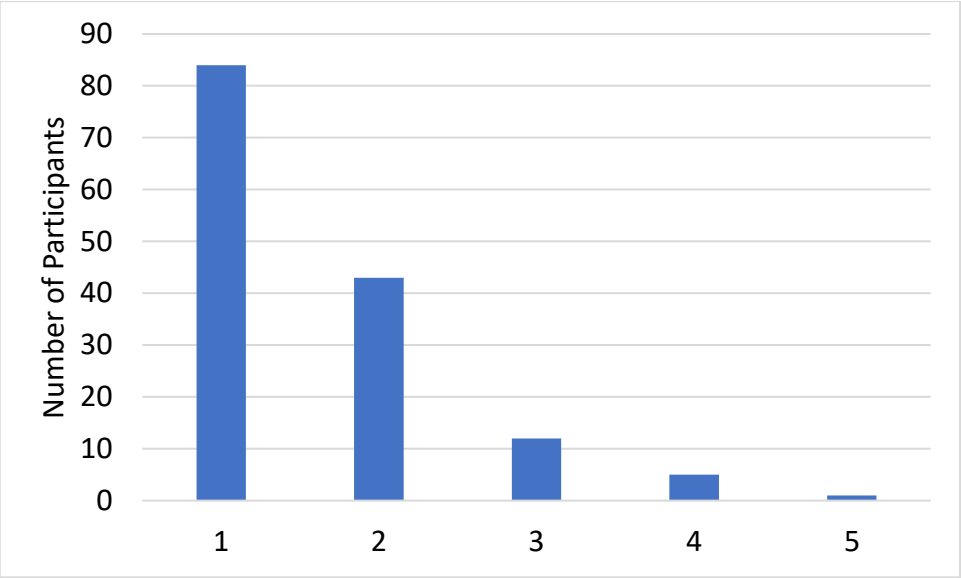
Graph 17: Total modalities

The results prove the predominance of unimodal learners with more than 50% in all grades which means that h_0, suggesting that at least half of the learners will be multimodal, has been rejected and h_1, claiming that more than half of the learners will be unimodal, has been proved.

9.4. Research Question 1d

Research question 1d investigates the correlation between learning styles and English proficiency. H_0 claims that none of the learning styles will correlate positively with English proficiency.

For illustration, graph 18 depicts marks in the English language by all the participants. There are 84 learners with mark 1 and 43 learners with mark 2. These two values are the highest and best comparable. Further results show significantly lower numbers of participants with marks 3 (12 learners) and 4 (5 learners). Finally, there is only one learner with mark 5.



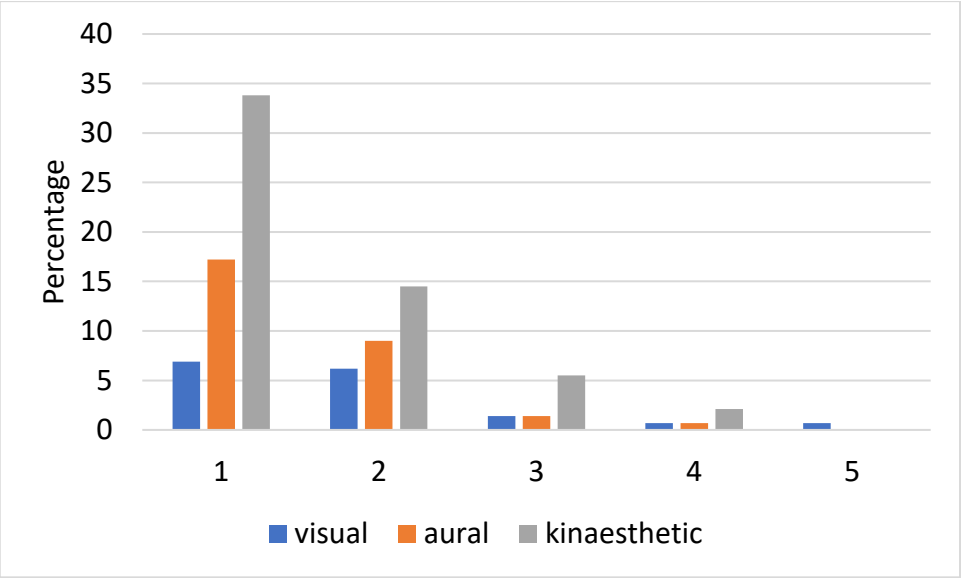
Graph 18: Participants' marks in the English language

The distribution of learning styles according to marks in the English language is shown in figure 9 and graph 19.

	1	2	3	4	5
visual	6.9	6.2	1.4	0.7	0.7
aural	17.2	9	1.4	0.7	0
kinaesthetic	33.8	14.5	5.5	2.1	0

Figure 9: Distribution of marks from the English language according to learning styles (%)

The kinaesthetic style dominates within all the marks in the English language except in mark 5. This result may be misleading as there was only one participant with this mark, so it is not considered in the following comparison. The second place is taken by the aural learning style within marks 1 and 2. For marks 3 and 4, there are identical scores for the visual and aural styles, placing them both in the second and third positions, probably because of the low number of participants within these marks. Therefore, the best comparison can be made for marks 1 and 2.



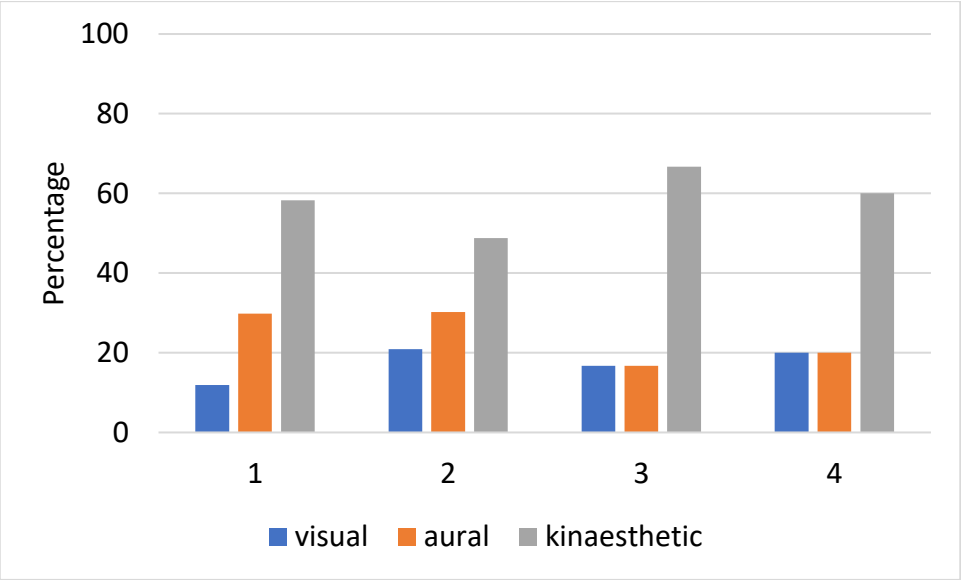
Graph 19: Total distribution of learning styles

Additionally, the marks can be examined independently one by one. Results are shown in figure 10 and graph 20.

	1	2	3	4	5
visual	11.9	20.9	16.7	20	100
aural	29.8	30.2	16.7	20	0
kinaesthetic	58.3	48.8	66.7	60	0

Figure 10: Distribution of learning styles by individual marks (%)

The graph 19 and figure 9 show the percentage obtained from the total number of participants and their related marks. Graph 20 shows the arrangement of percentage mark by mark separately in more detail. Mark 5 is not stated.

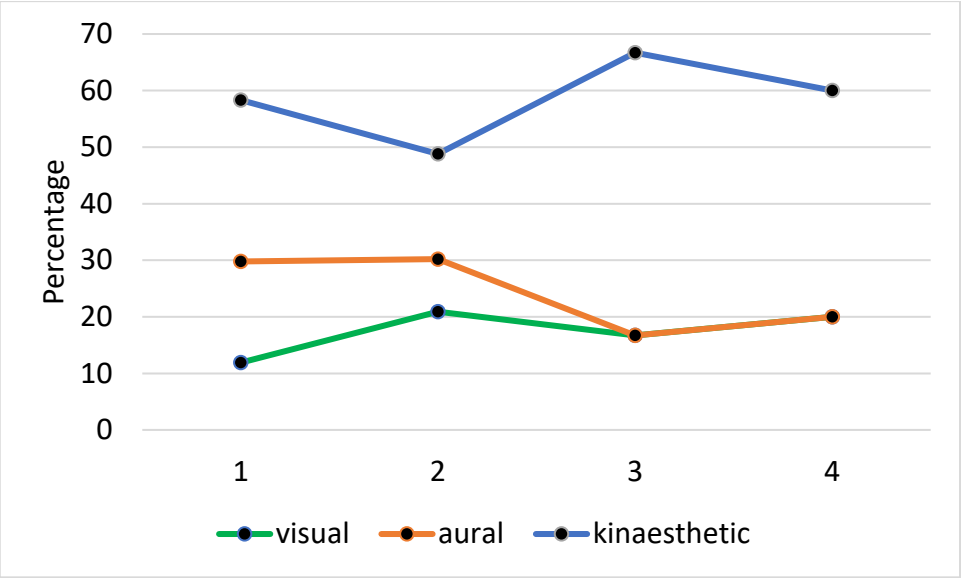


Graph 20: Distribution of learning styles by individual marks

The results show that participants who got mark 1 are classified into groups who prefer visual style - 11.9%, aural- 29.8% and kinaesthetic learning style - 58.3%. Within mark 2, it is observed that 20.9% of participants have visual, 30.2% aural and 48.8% kinaesthetic learning styles. Mark 3 has gathered scores of 16.7% for visual and aural style and 66.7% for kinaesthetic style. Lastly, mark 4 consists of 20% of participants who prefer the visual and aural style and 60% kinaesthetic style.

Most learners were marked 1 and 2 in English, so a comparison is realized between the distribution of learning styles within these two marks. The kinaesthetic style dominates within mark 1 with 58.3%, which is 9.5% more than within mark 2. Aural style is represented by 30.2% of learners within mark 2, which is 0,4% more than those within mark 1. Finally, the visual learning style dominates within mark 2 with 20.9%, which is 9% more than in mark 1.

The trend of learning styles evolution throughout marks in the English language is best seen in graph 21. The kinaesthetic learning style has a fall-rise tendency. Aural learning style stagnates initially but begins to fall by mark 3. The slight rising tendency is shown within mark 4. The visual style starts with a rising tendency from mark 1 to 2 and then declines slightly. The end of the curve is the same as by the aural style.



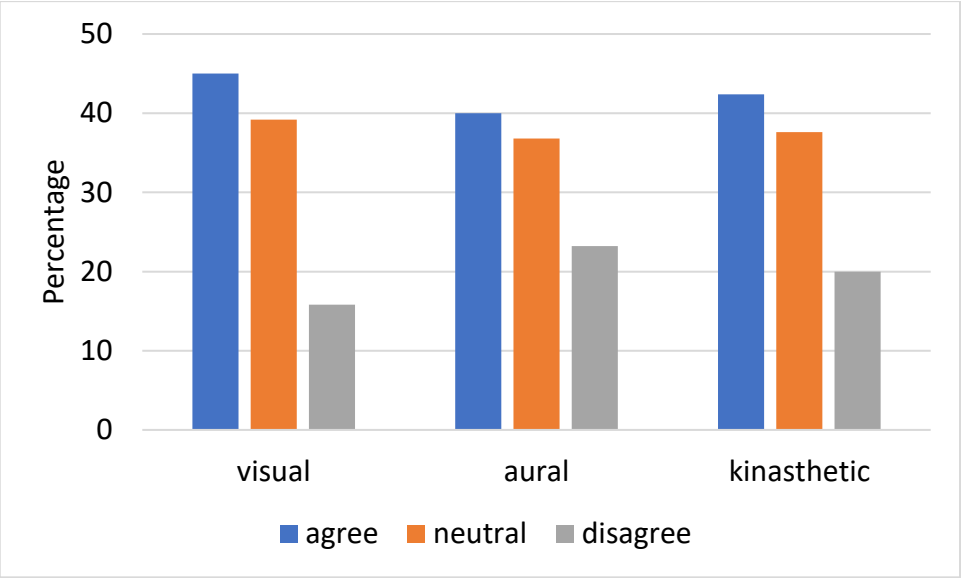
Graph 21: Distribution of learning styles by individual marks

H_0, suggesting that none of the learning styles will correlate positively with English proficiency, has been confirmed as the distribution of the learning styles throughout the marks in the English language is similar. The kinaesthetic style takes the first place in all the cases, and no mark showed a significant difference in its distribution of learning styles. All the styles evince rotating of falling and rising tendency or the other way round.

9.5. Research Question 1e

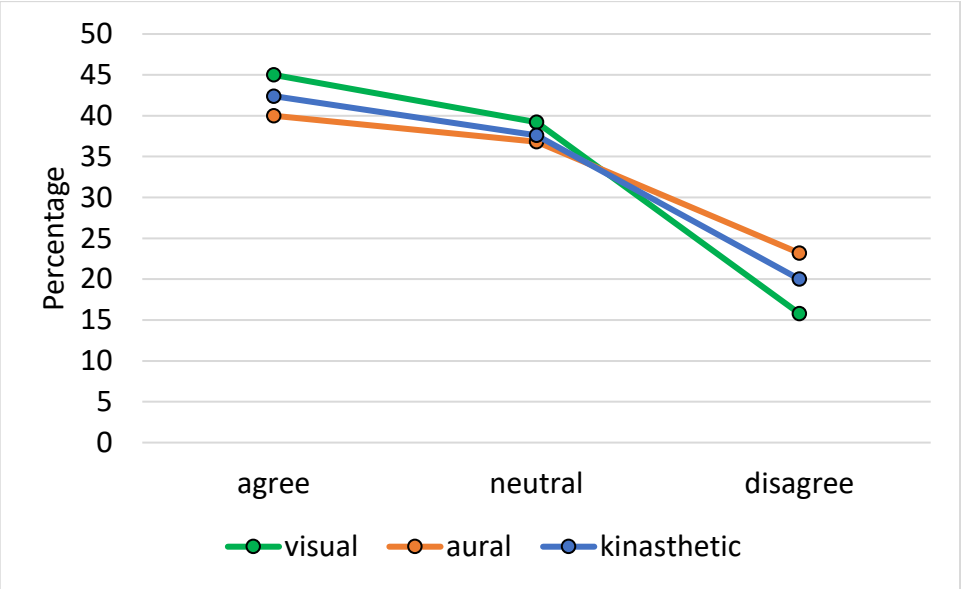
Research question 1e studies the correlation between learning styles and English learning motivation.H_0 claims that there will not be a positive correlation between learning styles and motivation for English learning.

Graph 22 displays the percentage distribution within each learning style according to the participants' choices in the questionnaire, mapping the English learning motivation. As mentioned in subchapter 7.2., the more *agree* choices, the more significant the motivation towards English learning.



Graph 22: English learning motivation and learning styles – the total percentage

Each learning style places the option *agree* in the first place, option *neutral* in the second place, and option *disagree* in the third place. Nevertheless, the highest percentage of *agree* option appears within the visual style, with 45%. The highest percentage of *disagree* option is within the aural style with 23.2%. The lowest percentage of *agree* option appears within aural style with 40%. On the contrary, the lowest *disagree* option is within the kinaesthetic style with 15.8%. The trend may be once again seen in graph 23. All learning styles show a falling tendency from *agree* option through *neutral* option to *disagree* option.



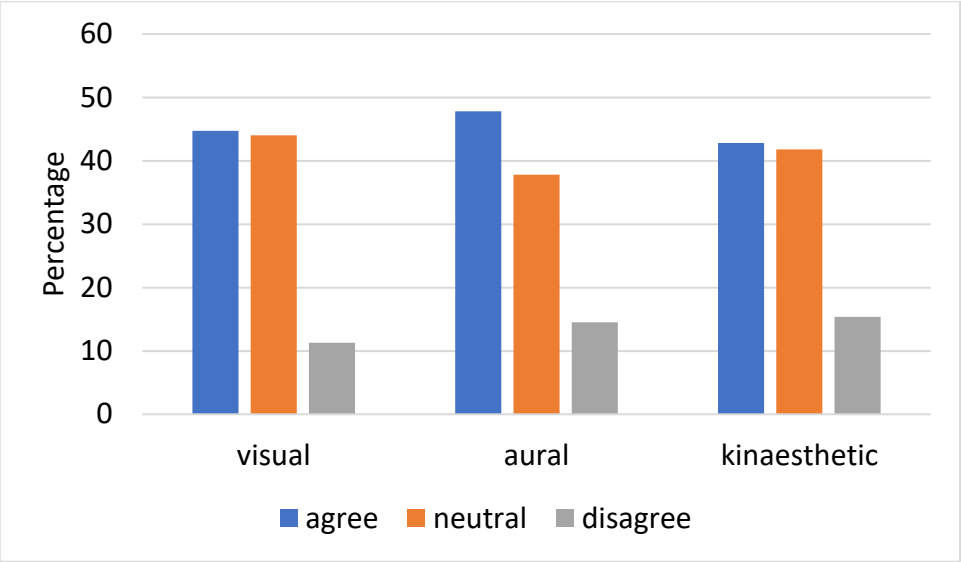
Graph 23: English learning motivation and learning styles – trend

The gaps between the *agree* and *disagree* options vary. Within the visual style, the difference is 29.2%. Within the aural style, the difference is 16.8%, and within the kinaesthetic style 22.4%. The average difference is 22.8%.

Looking closer at individual grades, there is a contrast in the proportion of the three options. The situation by the grades is shown in graphs 24-27.

All learning styles by sixth grade are dominated by the *agree* option, as pictured in graph 24. However, the aural style found the highest value of the *agree* option, with 47.8%. The lowest value is within the kinaesthetic style, with 42.8%.

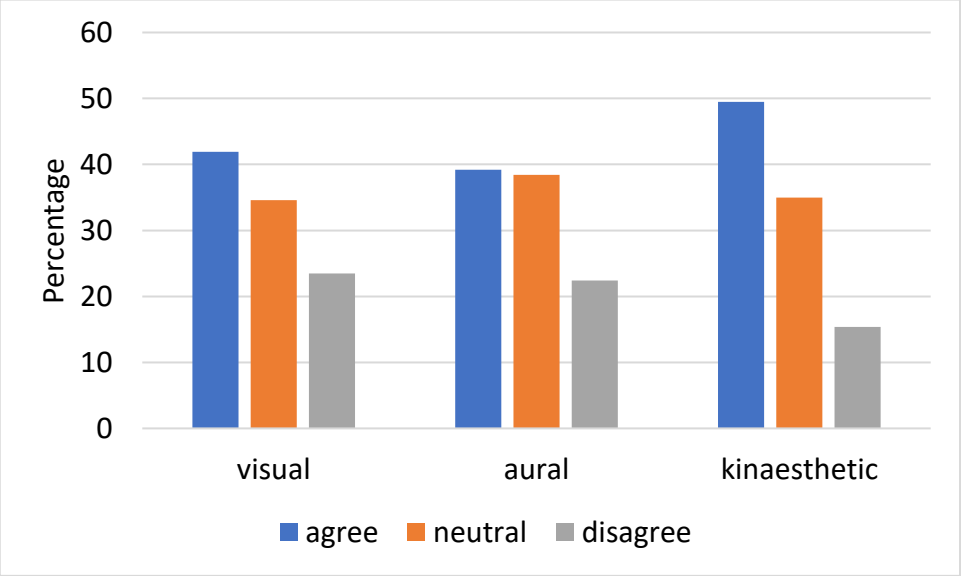
The differences between *agree* and *disagree* options are 33.4% within the visual style, 33.3% within the aural style and 27.4% within the kinaesthetic style. The average gap is 31.4%.



Graph 24: English learning motivation and learning styles – Grade 6

The situation is similar in the seventh grade, as displayed in graph 25. The *agree* option dominates within all the learning styles. The highest figure emerges within the kinaesthetic style, with 49.5% and the lowest within the aural style, with 39.2%.

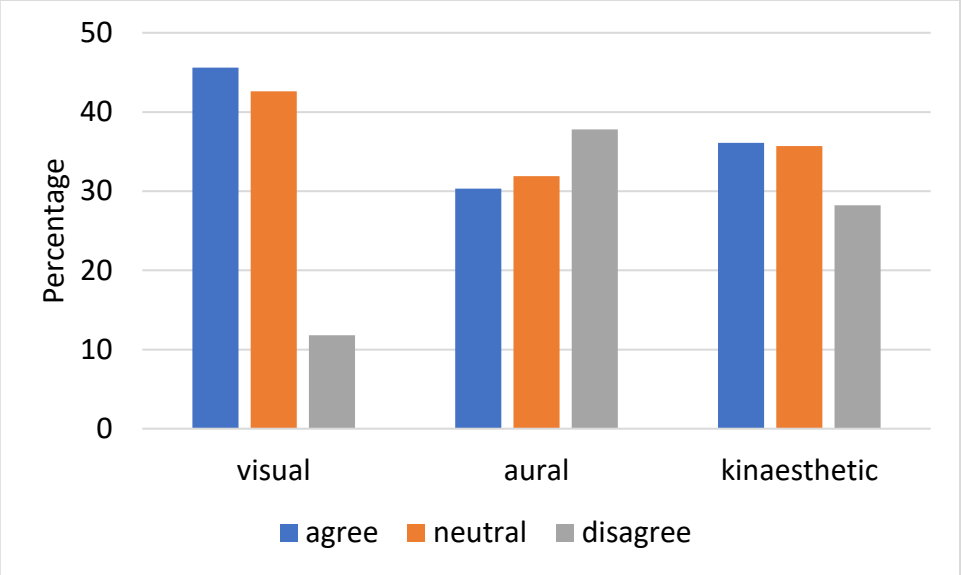
The average difference between *agree* and *disagree* options is 23.4%.



Graph 25: English learning motivation and learning styles – Grade 7

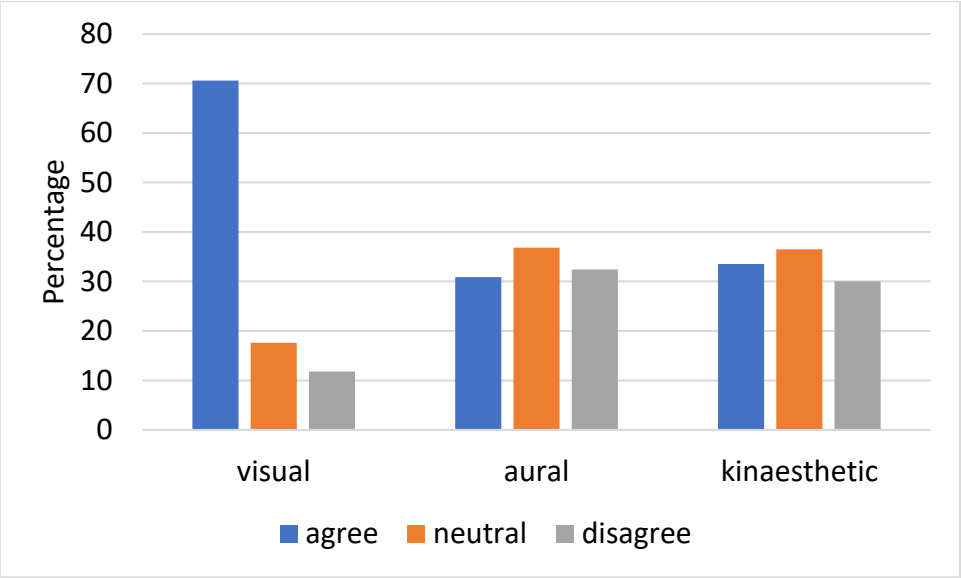
The figures in eighth grade are visibly distinct from the previous two grades. Graph 26 illustrates that the *agree* option prevails within the visual and kinaesthetic style but occupies the third place within the aural style. In this case, the *disagree* option has 7.5% margin.

However, the highest difference between the *agree* and *disagree* option is found within the visual learning style, with 33.8%.



Graph 26: English learning motivation and learning styles – Grade 8

The situation in the ninth grade differs even more from that in the sixth and seventh grades, as shown in graph 27. The *agree* option dominates only within the visual style, but the ascendency is quite distinct. The difference between the *agree* and *disagree* options is 58.8%. The *neutral* option dominates within the aural and kinaesthetic styles. In aural style, the *agree* option obtained the last place. The *neutral* option has 36.8%, the *disagree* option 32.4% and the *agree* option 30.9%. The kinaesthetic style has the agree option in the second place with 33.5% and the *disagree* option in the third place with 30%.



Graph 27: English learning motivation and learning styles – Grade 9

According to the results, none of the learning styles correlates exclusively positively with the motivation towards English language learning, so h_0, claiming that there will not be a positive correlation between learning styles and motivation for English learning, has been proved.

10. Discussion

This chapter aims to summarize the results of the practical part and compare them with the literature from the theoretical part. Additionally, the contribution of the research is shown here. It also demonstrates the limitations of the research and factors influencing the research. In the end, the ideas for future research are listed.

The research question investigates which learning styles appear among pupils of the lower secondary school of the studied school. The model of perceptual learning styles is chosen because of its user-friendliness in terms of interpretation for young learners. This primary research question is divided into five sub-questions 1a-1e.

In research question 1a, which investigates the distribution of learning styles, h_0, suggesting that the visual style will be the most frequent, has been disproved. The literature agreed that the visual style is the most dominant perceptual learning style (Mezera & Topičová, 2015) (Oxford, 1995 mentioned in Lojová & Vlčková, 2011). However, the results from this study show the exact opposite. The kinaesthetic style, proved to be the least common in the work of Mezera & Topičová (2015), was demonstrated to be the most common style in this thesis and based on the study it dominates with over 50%. Surprisingly, the visual style appears to be the least represented in this research, with around 15%. As a result, the h_1, claiming that the visual style will not be the most frequent, has been proved.

Research question 1b deals with the differences in learning styles considering the variable of gender, boys and girls. The value of 5% is considered a significant difference drawing on the scientific publication by Mills (2021). H_0, which claims that the differences would not be significant, has been proved. It agrees with the outcomes of Shah et al. (2013) and VARK (2022b), who state that there are no significant differences between boys and girls. The arithmetic mean of the differences reveals a 4.6% difference between the genders, which demonstrates that h_1, suggesting that the difference between girls and boys will be significant, has been disproved.

Research question 1c studies how many learners will be multimodal. The cited literature suggests that most of the population is multimodal. This study indicates an utterly opposite outcome as only 14 out of the total number of 129 valid questionnaires show multimodality; it makes 87,6% of unimodal learners. Only one trimodal learner

appears to abound with all three given perceptual learning styles. It means that h_0, suggesting that at least half of the learners will be multimodal, has been disproved, and h_1, claiming that at least half of the learners will be unimodal, has been proved.

Research question 1d studies the connection between learning styles and English proficiency. The English proficiency data, which have been contrasted with learning styles in this research, are taken from the learners' mid-term school report, containing marks in the English language. The h_0 is based on Al Zayed's (2017) and Jaya's (2019) research which found no positive correlation between English proficiency and learning styles. This thesis study approves their point. All learning styles evince alternating fluctuations among the marks. Kinaesthetic learning style is in first place within all the grades, with at least 18.6% difference from the learning style placed in second place. H_0, suggesting that none of the learning styles will correlate positively with English proficiency, has been proved. H_1, claiming that at least one of the learning styles will not correlate positively with English proficiency, has been disproved.

Research question 1e investigates the correlation between learning styles and English learning motivation. H_0 stems from the works of Jin-Suk & Young (2011) and Moneva et al. (2020), who found no correlation. Similarly, as in the previous research question, this research confirms the data from the cited literature, as no correlation is seen between learning styles and English learning motivation. As mentioned in the methodology, the more *agree* option in the Likert scale shows higher motivation. All learning styles evince the same evolution pattern: *agree* option dominates, and *disagree* option is in the last place. H_0, suggesting that there will not be a positive correlation between learning styles and motivation for English learning, has been proved. H_1, claiming that there will be a positive correlation between learning styles and motivation for English learning, has been disproved.

In conclusion, two out of five research questions do not meet the expectations of the null hypotheses and alternative hypotheses are approved. The reasons, mentioning the limitations of this research are described in the following paragraph.

This paragraph points out some limitations of the research. As with all case studies, even the case study presented in this thesis cannot be generalized and applied to the whole population. First and foremost, the results should serve as a teaching aid for teachers to create a broader awareness of the learners' learning preferences. Another

limitation is the presence of unexpected and unavoidable outer and inner factors during data collection. Learners may struggle to focus as the questionnaire contains much reading. Especially the learners, who are less interested in the topic, may have this problem, and their answers may not be accurate. They also may have misread the statements because of the distractions. The focus and accuracy can be affected by personal factors such as current mood, tiredness or other emotional proportions. Furthermore, the results might be affected because of learners' limited range of options, as only one option that suits them the best is permitted to tick off. If they could choose more than one, the results could vary, but on the other hand, the accuracy would not be still guaranteed, and the learners might circle all the options because of indecisiveness.

The research outcomes may help learners and their teachers of the particular school to cooperate more efficiently in the educational process. Teachers can modify their learning methods to be more practically directed, as most learners have a kinaesthetic learning style. As mentioned in the theoretical part, this learning style is often left behind among the other learning styles. Since more than 50% of learners are kinaesthetic, they may welcome the changes. On the contrary, the results show no positive correlation between learning styles and English proficiency or motivation. The question arises if the modification of the teaching methods would change the learning behaviour of the learners, but it would be worth trying at least.

Further research may be done on two different levels: local and national level. The local level could assess learners' learning styles in longitudinal research with the same research tool, but with adequate time gaps, for instance, five months. This step may show the importance of the learners' current state of mind and body while filling in the questionnaire, as the same person's results can differ after a few months. It may also help answer the question of whether learning styles change considering ontogenesis. This would require learners' repetitive participation during their lifetime, making it time-consuming for both learners and researchers. Research at the national level could assess the learning styles of more learners from different schools and regions with the objective of mapping the styles of the Czech learners in lower secondary schools, contrasting not only the basic data about the learning style but the connection to English proficiency and English learning motivation could be integrated too.

CONCLUSION

The research maps the perceptual learning styles of particular lower secondary school learners and analyses them according to the stated components.

The theoretical part sums up the essential literature and data already discovered about the issue of learning styles. It coherently introduces the topic, starting with the definition and ending with the diagnostics of learning styles.

The first chapter includes various definitions of learning styles from multiple authors. It tries to distinguish it from learning strategies and cognitive styles. Two dimensions of cognitive styles are described there. The second chapter concerns the models of learning styles. Perceptual learning styles are described within individual subchapters for visual, aural and kinaesthetic/tactile learners. The other characterised models are Kolb's model, Honey and Mumford's model and the Deep/Surface approach. Chapter 3 interconnects the theory of learning styles with the theory of multiple intelligences. However, the positive correlation between the theories cannot be confirmed as the literature and research resources are ambivalent. Chapter 4 summarises two strategies for working with learners' learning styles and their potential risks in subchapter 4.1. The 4-MAT model is briefly mentioned, and the issue of a linkage to the teaching styles is described as well. Subchapter 4.2. of this chapter describes doubts and problems of the learning styles. Chapter 5 divides diagnostical learning style methods into direct and indirect ones, while the questionnaires (indirect method) are depicted in more detail. It introduces one publicly accessible online questionnaire too.

The practical part examines the perceptual learning styles of one particular lower secondary school in Prague. The total number of participants is 130, but only 129 are valid for analysis. This case study uses a questionnaire as a research tool. There are five sub-questions to the main research question. Two out of five null hypotheses have been disproved as the results do not meet the expectations stemming from the literature mentioned in the theoretical part. Three null hypotheses have been proved, as they agreed with the results from the beforementioned theory.

The findings show that there is a majority of kinaesthetic learners without a significant difference in the distribution of the learning styles between girls and boys. Most of these learners are unimodal, meaning they are characterized by only one learning

style. Finally, there was no correlation between learning styles and neither marks in the English language nor English learning motivation.

Notably, this case study's limitations need to be considered as the results cannot be generalised to the whole population. Furthermore, the situational factors may have influenced the research too.

The topic of learning styles is broad, so there are many opportunities for further theoretical and practical research. This research can be done on both local and national levels. On the local level, the research can be repeated after some time to see if the results vary by the identical learners. On the contrary, on the national level, the research would get much more participants, which can show more objective results.

The contribution of this work lies in passing the information about learning styles in particular classes to their teachers, who may modify the way they teach their students and integrate more activities while employing a dominating learning style. It also informs the learners themselves about their personal way of learning. Overall, the final results gathered from students through questionnaires can help learners to find their most suitable and efficient way of learning in order to achieve their goals and success.

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APPENDICES

A. Introductory Information about Learners

DOTAZNÍK PRO ŽÁKY

Datum: _____

Jméno Tvého vyučujícího (angličtina): _____

Ročník: _____

Jsem (zakroužkuj): dívka / chlapec

V pololetí školního roku 2022/2023 jsem měl/a na vysvědčení z anglického jazyka známku: _____

B. Perceptual Learning Styles Questionnaire for Young Learners

Část 1. Přečti si výrok a poté v pravém sloupci zakroužkuj, co na Tebe nejvíce sedí během učení se anglickému jazyku:

Lépe si něco zapamatuji, pokud si to napíšu.	*často/vždy*	*někdy*	*vzácně/nikdy*
Když poslouchám, zobrazují se mi v hlavě obrázky, čísla a slova.	*často/vždy*	*někdy*	*vzácně/nikdy*
Během čtení si text zvýrazňuji různými barvami.	*často/vždy*	*někdy*	*vzácně/nikdy*
K vypracování úloh potřebuji psané pokyny.	*často/vždy*	*někdy*	*vzácně/nikdy*
Potřebuji se na lidi dívat, abych porozuměl tomu, co říkají.	*často/vždy*	*někdy*	*vzácně/nikdy*
Vyhovuje mi, když učitel píše výpisky na tabuli.	*často/vždy*	*někdy*	*vzácně/nikdy*
Grafy, schémata, mapy a nákresy mi pomáhají pochopit to, co někdo říká.	*často/vždy*	*někdy*	*vzácně/nikdy*

Výsledek A_____

Lépe si něco zapamatuji, pokud to s někým prodiskutuji.	*často/vždy*	*někdy*	*vzácně/nikdy*
Mám rád, když mi někdo pokyny říká nahlas.	*často/vždy*	*někdy*	*vzácně/nikdy*
Rád poslouchám hudbu, když se učím.	*často/vždy*	*někdy*	*vzácně/nikdy*
Rozumím lidem, co říkají, aniž bych je u toho viděl.	*často/vždy*	*někdy*	*vzácně/nikdy*
Snadno si pamatuji vtipy, které mi někdo řekne.	*často/vždy*	*někdy*	*vzácně/nikdy*
Dobře poznávám lidi podle hlasu (např. přes telefon).	*často/vždy*	*někdy*	*vzácně/nikdy*
Když zapnu televizi, raději ji poslouchám, než se na ni dívám.	*často/vždy*	*někdy*	*vzácně/nikdy*

Výsledek B_____

Místo soustředění se na instrukce se raději hned pustím do práce.	*často/vždy*	*někdy*	*vzácně/nikdy*
Když se učím, musím si často dělat přestávky.	*často/vždy*	*někdy*	*vzácně/nikdy*
Když se učím nebo si čtu, potřebuji něco jíst.	*často/vždy*	*někdy*	*vzácně/nikdy*
Pokud mám na výběr mezi sezením a stáním, tak raději stojím.	*často/vždy*	*někdy*	*vzácně/nikdy*
Dlouhé sezení mě znervózňuje.	*často/vždy*	*někdy*	*vzácně/nikdy*
Lépe se mi přemýšlí, když se hýbu (např. chodím, poklepávám nohou).	*často/vždy*	*někdy*	*vzácně/nikdy*
Když s někým mluvím, hraji si s propiskou (nebo ji koušu).	*často/vždy*	*někdy*	*vzácně/nikdy*
Když mluvím, hodně hýbu rukama.	*často/vždy*	*někdy*	*vzácně/nikdy*
Během vyučovacích hodin si hodně kreslím.	*často/vždy*	*někdy*	*vzácně/nikdy*

Výsledek C_____

C. English Learning Motivation Questionnaire

Část 2: Přečti si výrok a poté křížkem označ políčko, jak moc s daným výrokem souhlasíš:

	souhlasím	tak napůl	nesouhlasím
1. Pokud by mi učitel chtěl dát z angličtiny úkol navíc, určitě bych ho dobrovolně udělal.			
2. Pokud by mi v budoucnosti byl nabídnut kurz angličtiny, účastnil bych se ho.			
3. Často přemýšlím nad tím, co jsme probírali v hodině angličtiny.			
4. Jsem připraven vynaložit velké úsilí v učení angličtiny.			
5. Pokud by se angličtina nevyučovala ve škole, snažil bych se zajistit si její výuku jinde.			
6. Domácí úkoly z angličtiny vypracovávám pečlivě.			
7. Mám silnou chuť/touhu učit se angličtinu.			
8. Pokud se zamyslím nad tím, jak se učím angličtinu, mohu o sobě říct, že se opravdu snažím něco naučit.			
9. Učení se anglicky je jedna z nejdůležitějších částí mého života.			
10. Jsem odhodlán se zlepšit ve znalostech angličtiny.			
11. V hodinách angličtiny se hlásím co nejvíc to jde.			
12. Kdybych měl přístup ke sledování TV stanic v angličtině, snažil bych se na ně dívat často.			
13. Při učení angličtiny jsem ochotný pracovat tvrdě.			
14. Když slyším anglickou písničku, snažím se porozumět všem slovům.			
15. Je pro mě důležité učit se anglicky.			
16. Pokud bych měl možnost mluvit anglicky mimo školu, využil bych příležitosti co nejvíc by to šlo.			
17. Pokud mám problém něčemu v hodině angličtiny porozumět, hned řeknu učiteli o pomoc.			