MULTIPLE INTELLIGENCES PROFILES: STUDENTS VERSUS TEACHERS

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“An intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings”.

Abstract
The educational popularity of multiple intelligence (MI) theory is related to the basic needs of teachers as they try to create teaching instruction that is both affective and effective. It is essential to promote understanding and appreciation among students and create classrooms, which help foster learners’ self-esteem and self-motivation. The application of MI theory allows to meeting the needs of different types of learners. Teachers, who understand and use basics of MI theory, can apply human diversity for better teaching.

The respondents in this study are students, who study English at Klaipėda University, and their teachers. The findings have been obtained from the online survey completed by the students and the teachers. It contains 56 statements on a 5-point Likert’s scale ranging from (1) to (5). Having completed the survey, respondents received online assessment of their intelligences. The responses of both samples have been compared and processed by a means of the Software Package for Social Sciences (SPSS). Pearson’s Correlation Coefficients rho demonstrate strong relationships between the profiles of both samples: their magnitudes are close to 1 and the Significance levels Sig p correspond to probabilities of either 99% or 95%. The obtained data can be extended beyond the researched samples despite their small size.

KEY WORDS: multiple intelligences, profiles, assessment of learning strengths, overlapping of scores.

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Introduction

The multiple intelligence (MI) theory has become very popular among teachers since it was first introduced by Howard Gardner in the 20th century. It is related to the basic needs of language practitioners who try to create effective teaching instruction. It allows promoting understanding and appreciation among students in order to create classrooms, which help foster learners’ self-esteem and self-motivation. The creative application of MI theory helps to meet the needs of different types of learners. Teachers can apply human diversity for better teaching and learning.

Literature review

Howard Gardner defined the first seven intelligences in his famous book “Frames of mind” in 1983, and he added two more intelligences later (1999). Currently it is believed that each individual has nine intelligences: 1) Verbal-Linguistics Intelligence, i.e. well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words; 2) Mathematical-Logical Intelligence, i.e. ability to think conceptually and abstractly, and capacity to discern logical or numerical patterns; 3) Musical Intelligence, i.e. ability to produce and appreciate rhythm, pitch and tune; 4) Visual-Spatial Intelligence, i.e. capacity to think in images and pictures, to visualize accurately and abstractly; 5) Bodily-Kinesthetic Intelligence, i.e. ability to control one's body movements and to handle objects skillfully; 6) Interpersonal Intelligence, i.e. capacity to detect and respond appropriately to the moods, motivations and desires of others; 7) Intrapersonal Intelligence, i.e. capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes; 8) Naturalist Intelligence, i.e. ability to recognize and categorize plants, animals and other objects in nature; 9) Existential Intelligence, i.e. sensitivity and capacity to tackle deep questions about human existence, such as the meaning of life, why we die, and how we got here.

According to Hirsch (1988), multiple intelligence theory does not encourage educators to teach "core knowledge", i.e. a common collection of essential facts that every American needs to know. Moreover, critics of the MI theory claim that it is not new, it is not well defined, it is impractical and it is culturally embedded.

Gardner’s theory (1993) regards the human mind as possessing different features of cognition. The author proposes a pluralistic view of the human mind, which has many different facets of cognition, and acknowledges that people have different learning styles. Each person has a different intelligence profile.
However, such a profile is by no means a permanent fixture and might undergo change and development under supervision or through new experiences. In Gardner's view (1999), learning is both a social and psychological process. When students understand the balance of their own multiple intelligences, they begin, first, to manage their own learning and, second, to value their individual strengths.

The answer to the question why teachers are attracted to using MI theory in their classrooms is straightforward: to create classrooms where learners experience a sense of loving and belonging, to foster learners’ self-esteem, personal intellectual empowerment and self-motivation (Wilson, 1994).

Multiple Intelligences Model is one of a number of models of student learning styles. It raises teacher awareness of learner diversity and interest and it might encourage teachers to plan instructional diversity. Methodology in the 21st century suggests appropriate educational activities, which are dependant on the type of learner’s intelligence and are presented below (Rodgers, 2003):

<table>
<thead>
<tr>
<th>Intelligence Type</th>
<th>Appropriate Educational Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linguistic:</td>
<td>lectures, worksheets, word games, journals, debates</td>
</tr>
<tr>
<td>Logical/maths:</td>
<td>puzzles, estimations, problem solving</td>
</tr>
<tr>
<td>Spatial:</td>
<td>charts, graphic organizers, drawing, films</td>
</tr>
<tr>
<td>Bodily:</td>
<td>“hands-on,” mime, craft, demonstrations</td>
</tr>
<tr>
<td>Musical:</td>
<td>singing, poetry, Jazz Chants, mood music</td>
</tr>
<tr>
<td>Interpersonal:</td>
<td>group work, peer tutoring, class projects</td>
</tr>
<tr>
<td>Intrapersonal:</td>
<td>reflection, interest centers, personal values tasks</td>
</tr>
<tr>
<td>Naturalist:</td>
<td>field trips, show and tell, plant/animal projects</td>
</tr>
</tbody>
</table>

Teachers, who know the students’ multiple intelligences, understand which activities are beneficial for them and can create better learning opportunities for their students. Therefore, the theory of MI suggests a number of educational applications. It can be applied to teaching English by taking into account the students’ MI profiles. The first step in application of MI theory is to determine the MI profiles of the students. The first well-known inventory designed for teachers by M.A. Christison (1998) consisted of 80 questions to answer, 10 for each intelligence. A modified assessment of MI profiles is available online (Assessment, website). It comprises 56 statements and uses a 5-point Likert’s scale. Its advantage is an immediate assessment of respondent’s strengths online with the detailed interpretation of MI profile. Regrettably, neither Christison’s inventory nor the current online version of MI assessment includes the 9th intelligence, i.e. Existential Intelligence, which was added by H. Gardner in 1999. Nevertheless, the online Assessment survey can be employed to obtain MI profiles of students and teachers with the aim of finding out their strengths in learning.

Respondents and research methodology

The respondents in this study are students, who study English at Klaipėda University and their teachers. The design of the English courses reflects the students’ needs for their future profession. The courses are adjusted to the requirements for a Bachelor degree. The level of students’ proficiency is either B2 or C1 according to the Common European Framework of Reference for Languages.

The findings have been obtained from the online survey (Assessment: Find your Strengths, http://www.literacynet.org/MI/assessment/findyours strengths.html) completed by the students and the teachers. There were 20 students and 8 teachers who participated in this research. The survey contains 56 statements on a 5-point Likert’s scale ranging from (1) to (5). Having completed the survey, respondents received online assessment of their intelligences. The responses have been processed by a means of the Software Package for Social Sciences (SPSS) in order to determine if there are any correlations between the findings.

Results and discussion

The respondents submitted their responses in the form of tables containing the scores of their Multiple Intelligence (MI) profiles, which were assessed after they had completed an online survey. MI profiles include eight intelligences: nature, body movement, language, self, social, musical, spatial and logic/math.
The analyzed data are presented in two Charts, which demonstrate the students’ profiles versus teachers’ profiles. Chart 1 shows the Means of positive responses, i.e. scores above 3, which is a neutral value, up to 5. Chart 2 shows the Means of negatives responses, i.e. scores below a neutral value of 3.

Chart 1. The Means of positive MI scores: 1st bars – students’ data, 2nd bars – teachers’ data

At the first sight, there are no significant differences between positive responses of both samples. In negative responses, the differences for ‘nature’ and ‘social’ profiles seem more noticeable. However, in this study visual image of scores’ similarity is misleading. The point is that the data refer to a different number of respondents who have a certain developed intelligence, but the Means are computed for a concrete number of respondents. To make this point clear, Table 1 shows the number of respondents that collected positive responses.

<table>
<thead>
<tr>
<th>MI profile</th>
<th>Number of students</th>
<th>Number of teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>nature</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>body movement</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>language</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>self</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>social</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>musical</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>spatial</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Logic/maths</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

It is obvious from Table 1 that majority of students are good at understanding ‘nature’, ‘language’, ‘self’, being ‘social’ and ‘musical’, well oriented in space and ‘body movements’, but very poor at logic/maths. Only 3 teachers out of 8 are good at ‘body movement’ and 2 out of 8 – at spatial activities. Logic/math profile is problematic to learners and teachers: 2 versus 4 revealed positive scores.
Aiming to determine if there are any correlations between the responses of students and teachers the data had to be statistically analyzed.

**Statistical Processing of Data**

Statistical processing is usually conducted by a means of the Statistical Package for the Social Sciences (SPSS). This procedure allows comparing the results and determining their reliability. Internal consistency reliability is estimated by computing Cronbach’s Alpha coefficient. Results are considered to be reliable if the value of Cronbach’s Alpha coefficient is at least 0.70. In correlation analysis, correlation coefficients \( \rho \) are computed. They indicate the degree of relationships between the samples. In order to determine whether a correlation coefficient shows a real relationship, it is necessary to compute the probability, i.e. the value of significance level \( \text{Sig } p \). Statistical significance with \( p \) values of .01 or .05 indicates that there is either 99% or 95% probability that an observed correlation coefficient is not a chance finding, i.e. it is meaningful. Once the value of Sig \( p \) has been computed, the meaningfulness of the correlation coefficient depends on its magnitude. The larger the coefficient is, the stronger the
relationship is. If a correlation coefficient is close to 1, it means a very strong relationship, while a coefficient that is near zero indicates a very weak relationship. In computation of correlations, it is normally assumed that both samples are of equal size.

In this study, samples are of unequal sizes (20 students against 8 teachers), which complicates both computation and interpretation of the results. Moreover, computation is tricky due to some missing scores: sizes of profiles vary within samples.

In this research, the Means of the students’ and teachers’ MI scores, which are shown in Chart 1 and Chart 2, have been computed statistically taking into account the different numbers of respondents for each profile. The obtained values of the Cronbach’s Alpha coefficient for each sample are equal to 0.88 and 0.82, respectively, which is acceptable in the Social Science research settings, i.e. the obtained results are reliable. The Pearson’s correlation coefficients $\rho$ and statistical significance $\text{Sig } p$ should also be computed. One important feature of statistical significance is that it is the function of not only the magnitude of the result but also the size of the sample investigated (Dorney, 2003). SPSS procedures take the combined effect of magnitude and sample size into account when the significance of the result is computed. Statistical tests do not make assumptions about sample size, particularly when samples are very large. The situation with small samples of unequal sizes is more complex (Colassa 2014, Flom 2014). The point is that correlations for unequal size samples might contain errors. A so called type I error (type one error) is the incorrect rejection of a true null hypothesis, and a type II error (type two error) is the failure to reject a false null hypothesis (Taylor, 2014). More simply stated, a type I error is detecting an effect that is not present, while a type II error is failing to detect an effect that is present (Bachman, 2005). Summing up the issue of possible errors when comparing two Means: concluding the Means were different when in reality they were not would be a Type I error; concluding the Means were not different when in reality they were different would be a Type II error. Therefore, in order to avoid possible errors dealing with samples of unequal sizes, it is essential to calculate the correlations on the full pairs.

As it has been mentioned before, the data in Table 1 and Table 2 show clear mismatches between learners’ and teachers’ MI profiles, i.e. they cannot be correlated due to the unequal size samples. Here, however, we have conducted the computation on full pairs of positive scores (omitting data with missing scores), which allowed to obtain some correlations. It should be mentioned that 5 out of 8 profiles have been statistically analyzed. Three profiles (‘body movement’, ‘spatial’ and ‘logic/math’) cannot have been computed due to few scores (3, 2 and 4) in the teachers’ sample, which is seen in Table 1. The results of computation for 5 profiles are shown in Table 3. The 1st column shows the MI profiles, the 2nd column presents the values of Pearson’s Correlation Coefficient $\rho$, which are significant at the probability of 99% (followed by one star after the value) or 95% (followed by two stars after the value). The 3rd column displays the values of the Coefficient of Determination $(\rho)^2$, and the 4th column – the magnitudes of the Significance level $\text{Sig } p$ (2-tailed).

<table>
<thead>
<tr>
<th>MI profile</th>
<th>Pearson’s Correlation coefficient $\rho$</th>
<th>Coefficient of Determination $= (\rho)^2$</th>
<th>$\text{Sig } p$ (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nature</td>
<td>0.859*</td>
<td>0.738 (73.8%)</td>
<td>0.013</td>
</tr>
<tr>
<td>language</td>
<td>0.839**</td>
<td>0.704 (70.4%)</td>
<td>0.001</td>
</tr>
<tr>
<td>self</td>
<td>0.701**</td>
<td>0.491 (49.1%)</td>
<td>0.008</td>
</tr>
<tr>
<td>social</td>
<td>0.851**</td>
<td>0.724 (72.4%)</td>
<td>0.001</td>
</tr>
<tr>
<td>musical</td>
<td>0.808**</td>
<td>0.653 (65.3%)</td>
<td>0.003</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (probability 95%), **Correlation is significant at 0.01 level (probability 99%).

Pearson’s Correlation Coefficients $\rho$ proved to demonstrate strong relationships between students’ and teachers’ profiles: their magnitudes are close to 1 and the Significance levels $\text{Sig } p$ correspond to probabilities of either 99% or 95%. Some researchers prefer Coefficient of Determination to Correlation Coefficient. The appropriate values of Coefficient of Determination are presented in the 3rd column of Table 3. The Coefficient of Determination is calculated by taking a square $(\rho)^2$ of the Pearson’s Correlation Coefficient (Brown and Rodgers, 2002). It is thought to be easier to interpret than correlation relationship, because it shows the overlap between the two sets of scores involved. It can be seen that
overlapping of learners’ and teachers’ profiles is equal to 73.8% for ‘nature’, 70.4% for ‘language’, 49.1% for ‘self’, 72.4% for ‘social’, and 65.3% for ‘musical’. These findings are quite promising because there are similarities between learners’ and teachers’ profiles.

It is important to remember that a statistically significant correlation coefficient with Sig $p$ of either 0.05 or 0.01 does not occur by chance. In other words, the data can be extended beyond the researched samples of small size.

**Application of MI profiles in teaching English**

The possibilities of using MI theory in English language classroom are numerous. Language teachers believe that it has a potential to create a positive influence on both learners and teachers. It is essential for teachers, first, to find out what intelligences students prefer and, second, to be able to adapt to a novel way of teaching. It is a well-known secret that language practitioners have their own likes, dislikes to various teaching techniques, and are keen on using the same routine all over again. What do we know about how second languages are learnt? We know that learners do not necessarily learn according to the teacher’s objectives, and that the learning that actually occurs in each learner’s head is often difficult to predict or control (Lightbown and Spada, 2013).

Teachers must be prepared to use MI in English classes. They might need training to raise the awareness of how to apply various activities that suit their learners. Obviously, the practical application of MI theory will be time consuming and need a large amount of preparation in selecting suitable activities for students of different profiles. However, it might be beneficial for developing students’ creativity and increasing their motivation by providing opportunity to learn according to their preferences. Moreover, teachers might benefit from using a MI approach by improving their own pedagogical skills and making their classes enjoyable to learners.

**Conclusions and implications**

The study investigated the students’ and teachers’ Multiple Intelligence (MI) profiles by employing the online assessment of respondents’ strengths. The Pearson’s correlations on the full pairs of scores have been computed by a means of the Statistical Package for the Social Sciences (SPSS). The obtained data can be extended beyond the researched samples despite their small size due to a statistically significant correlation coefficient – its Sig $p$ is either 0.05 or 0.01 – which does not occur by chance.

It has been found that the overlapping of profiles of students and teachers is between 49% and 74% for different MI and its magnitude depends on a particular intelligence. The result suggests that teachers will be able to apply appropriate educational activities for different intelligence type of their learners in English classes.

The limitation of this research is unequal sizes of investigated samples, which prevented statistical processing of all the profiles. The future research into MI profiles of learners and teachers needs to involve more respondents and form samples of the same size.

**References**


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STUDENTŲ IR DĖSTYTOJŲ DAUGIALYPIŲ INTELEKTŲ PROFILIAI

Irena Darginavičienė

S a n t r a u k a

H. Gardener’io daugialypių intelektų teorija tapo populiari jam paskelbus jos pagrindinius teiginius 1983 m. Straipsnyje ši teorija siejama su dėstytojų ir studentų pagrindiniiais poreikiais, nes leidžia suderinti efektyvų bei emocinį mokymą. Dėstytojams svarbu sukurti tokią aplinką auditorijoje, kurioje studentai yra skatinami puoselėti savitarbą ir motyvaciją. Šios teorijos taikymas leidžia atsižvelgti į skirtingus studentų poreikius bei mokymosi įvairovę. Tyrimo respondentai buvo Klaipėdos universiteto studentai, kurie studijavo anglų kalbą specialiesiems tikslams, ir jų dėstantys dėstytojai. Informaciją apie respondentų daugialypių intelektų profilius buvo surinkta įsakus internetinę ankstelą http://www.literacynet.org/assessment/findyourstrengths.html. Anketa susideda iš 56 teiginių, ir atsakymai į juos yra vertinami naudojant 5 balų Likert’o skalę. Atlikus ankstelą, kiekvienas respondentas gauna elektroninį savo intelektų profilį, kuris rodo, kokios yra kiekvieno asmens stipriosios savybės ir kokie metodai taikyti geriausiam mokymui/-si užtikrinti. Respondentų atsakymai buvo lyginami ir apdorojami naudojant SPSS (Software Package for Social Sciences) programinę įrangą. Pearson koreliacijos koeficientų (Pearson’s Correlation Coefficients rho) vertės rodo, jog egzistuoja aiškios priklausomybės tarp studentų ir dėstytojų profilių: gauti reikšmingumo lygiai Sig p lygūs 0.05 arba 0.01, o tai reiškia, kad jie atitinka 99% arba 95% tikimybės. Nustatyta, kad profilių sutapimas (overlapping of profiles) yra 49% ir 74% priklausomai nuo konkrečaus intelekto. Rezultatai rodo, kad dėstytojai galės taikyti tinkamia mokymo metodikas savo pratybose. Tyrimų trūkumas yra nelygūs nagrinėtų imčių skaičius kai kurių intelektų atvejais, tačiau tai nesumažina gautų rezultatų svarbos.

REIKŠMINIAI ŽODŽIAI: daugialypių intelektų profiliai, intelektų internetinis vertinimas, profilių sutapimas.