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# The difficulties faced by primary school teachers in using the modern techniques of pedagogic assessment according to the theory of multiple intelligences (MI) in teaching physical education (PE)

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**Abstract:**

This study aims at knowing the difficulties faced by primary school teachers in using the modern techniques of pedagogic assessment according to the theory of multiple intelligences (MI) in teaching physical education (PE) and the extent of the difference in these difficulties according to gender and qualifications from their perspective. The study sample is made up of 30 female and male teachers in the Wilaya of Biskra in Algeria; the sample has been chosen on purpose. We used a questionnaire designed by the two researchers relying on previous studies. The main findings show that the teachers face high degrees of difficulty and that there is no difference between the teachers in the difficulties because of gender or qualifications. The researchers recommend using the assessment strategies and tools according to the MI theory in assessing learning in PE sessions

**KEY WORDS :** MI- Assessment- PE session - Primary education - Teacher- Learner.

**الملخص:**

**هدفت الدراسة إلى التعرف على الصعوبات لدى معلمي التعليم الابتدائي في استخدام أساليب التقويم البيداغوجية الحديثة و فق نظرية الذكاءات المتعددة في تدريس مادة التربية البدنية و الرياضية ومدى اختلاف درجة هذه الصعوبات عندهم باختلاف جنسهم ومؤهلهم العلمي من وجهة نظرهم وكانت أبرز نتائج الدراسة أن المعلمين يواجهون صعوبات بدرجة مرتفعة.كم انه لا يوجد فروق بين المعلمين في الصعوبات تعزى لاختلاف الجنس أو المؤهل العلمي في الأخير أوصى الباحثون بضرورة استخدام استراتيجيات التقويم و أدواته وفق الذكاءات المتعددة في تقويم التعلم خلال تدريس مادة التربية البدنية و الرياضية.**

**الكلمات المفتاحية: الذكاءات المتعددة ؛ التقويم ؛حصة التربية البدنية و الرياضية ؛التعليم الابتدائي؛ معلم؛ تلميذ .**

## 1-Introduction:

Assessment witnessed core changes in its concepts, principles,

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methodologies, and techniques throughout the few past decades. Experts focused on inventing methods and styles that guide and orient the assessment processes . (Bouallag , 2004 : 138)

Assessment, with its large concepts, falls in the heart of the educational reforms. It must be integrated in the dynamics of the comprehensive qualitative change. Among these changes in the concepts, principles, methods, styles, and techniques of assessment, we find the theory of MI which refers to the comprehensive method to understand the intelligence. The modern advance in epistemology, psychology, and neurology indicates that the individuals' IQ is made up of many independent potentials that can work individually or together in harmony. The theory of MI is the result of many scientists' efforts and studies that took around 25 years in which cross-disciplinary studies have been carried out relying on the modern advance in epistemology. These studies have been supported by the scientific outcomes of neurology and confirmed the mental multifunction and the organization of thought according to its different functions. These studies resulted in MI theory, also called the human nature theory by the American Association of Research in Education. Therefore, MI theory can be used o draw a map of the human potentials because it exceeded the narrow vision of the intelligence into a large one that unites the biological and environmental sides. (Abbas , 2011: 17)

MI theory gave birth to many intelligences mentioned by Howard Gardener in his book "The mind frames" in which he gave intelligence a multiplicity nature. Thus, the individual is said to be intelligent or competent in a specific field and incompetent in another. Gardener and others worked to delete the idea of short answers or the paper and pen tests that do not adequately measure the intelligence. His theory, according to (Afana , Khazandar , 2004) indicates that all individuals have at least 9 types of intelligences depending on their personalities due to different factors such as: heritage and environment. Gardener mentioned that the learner who has intelligence capacities can increase them through training and learning. The theory suggests, according to (Armstrong , 2006) restructuring the way pedagogues assess the learners' achievements. It proposes a system that relies less on the official exams (standard exams) and relies on real life standards because the assessment philosophy in MI goes with the perspectives of many pedagogues such as (Gardner ,1993) ، (Herman et al.,1992) ، who proposed in the last

years assessment tools that have a real measurement and that checks the learners' understanding of the subject matter. These assessment tools allow the learners to exhibit what they learned according to their personal styles in real-life situations. As for the standard measures, they always evaluate the learners in imaginary situations as confirmed by (Harvy, Stong , 2006) when they say that they want the learners to discover their talents, potentials, and inclinations and learn how to apply them in real world situations outside the classroom. This is the meeting point between the performance assessment and learning styles from one side, and MI from another side. The integration of styles and MI provides us with a comprehensive map of the various methods that the learners can use to express themselves and their understanding of the topic in a scientific way. (Dossary, 2004) indicates that the assessment used to limit the learners' capacities before the appearance of MI because it was believed that there had been only one type of intelligence in all the learners. Therefore, many teachers assess learners in inadequate manner considering intelligence as one type and as a general potential. This hindered assessment according to the learners'learning styles. Consequently, the multiplicity of intelligences and their differences in the learners need the use of various assessment techniques to reach communication with all learners according to their intelligences. The MI theory relies on various methods and styles for assessment. This diversity is due to the diversity of intelligence because there are, according to (Adjaj ,2011), seven types of intelligences. Each of these needs a specific style of measurement. Hence, quality in choosing, collecting, and analyzing data gives a clear image on the learner's characteristics in this or that type of intelligence. Therefore, the theory focuses directly on the measurement tools that are suitable for the type of intelligence in each learner. Based on: 1-what has been said, 2- the interest of many studies in the theory of MI such as the study of (Chafaa et al. , 2018), 3- the importance of the primary education and the assessment in the PE session which serve the general outcomes of education, 4-the urgent need to lift up the level of our teachers and learners at the primary education especially in PE, 4- the search for techniques to develop their competencies in assessment, 5- and our attempt to take advantage of the experiences of the others through reviewing the literature on education and educational curricula, we did not find studies that shed light on the MI theory concerning assessment in the

PE session. Thus, the importance of this research emerges from the endeavor of tackling the issue through raising the following question:
- Are there any difficulties faced by primary school teachers in using the modern pedagogic assessment techniques according to MI theory in the PE sessions?
From this question arise other sub-questions that can be stated as follows:
- Are there any statistically significant differences due to the gender variable (male/female) in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions?
- Are there any statistically significant differences due to the variable of qualifications in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions?
To answer these questions, the researchers suggested the following general hypothesis:
- There are high difficulties in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions.
Thus, other sub-hypotheses emerge and can be stated as follows:
- There are no statistically significant differences due to the gender variable (male/female) in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions.
- There are no statistically significant differences due to the variable of qualifications in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions.

## 2- General objective of the study

The main aim of this study is knowing whether there are statistically significant differences in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions. Moreover, other sub-aims emerge aiming at knowing the statistically significant differences due to the variables of qualifications and gender (male/female) in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions. The importance of the study lies within the fact that this topic is vital since it tackles one f the recent styles in education that needs an effort to be enhanced in

reality and to be effectively used. As a result, the study is a step forward that provides a new scientific vision. This paper shall provide recommendations and suggestions for the education stakeholders especially at the level of the National Education Ministry on how to overcome the difficulties faced by teachers at the primary education mainly in assessing during the PE sessions according to MI theory. This work is a feedback that seeks to figure out the issues that hinder the use of such assessment to lift up the educational process in the PE sessions. Besides, the researchers want this paper to be a scientific contribution that opens new horizons for researchers in educational assessment and in PE.

## 3- Procedural definition of the concepts mentioned in the research:

- **The concept of assessment :** (Kacem, El-Baz, 2015) define it as a process of making judgments on whether the learner achieved the set objectives of the course, diagnosing and boosting the strengths in his performance, and findings and remedying the weaknesses. The researchers conclude that assessment is a process of data collection, analysis, and interpretation to make judgments and provide feedback in a scientific style according to MI theory.

- **The concept of MI :** (Abdel Majid , Youssef , 2013) see that it is a biopsychological potential because there are multiple skills that can be activated in the cultural environment to enable the individual from processing data, solving problems, and inventing outputs that have a cultural value in his culture or other cultures. This definition is important in the sense that it supposes that intelligence types are unseen or uncountable; rather, they are potentials and skills since they are neurologic units. The researchers deduce that MI is a theory established by Howard Gardener in 1983 that indicates the existence of many types of intelligence, and not a one general potential. It is a beneficial theory in assessment styles since it discovers the weaknesses and strengths of the learner according to his type of intelligence and then remedies or boosts.

## 4- The methodological procedures used in the study:

### 4-1 Method and tools:

-**The exploratory study** : has been carried out on 09 primary school teachers chosen as a primary sample to make this study in order to check the validity of the research tool, calculate the psychometric characteristics of the tool (validity and consistency), and find its

deficits in order to adapt it before making the main study despite the health circumstances and the continuous disruption of the study due to health conditions. Through this study, we managed to shape the final version of the questionnaire.

**-Method of the study**: We shall use the descriptive method to know, analyze, interpret, understand, and describe the variables levels and the differences attributed to variables of gender (male/female) and qualifications.

**-Study sample:** The sample includes 39 teachers (male/female) from different primary schools in Biskra. 9 teachers (male/female) have been excluded randomly to calculate the psychometric coefficients of the study tool. Thus, the sample included only 30 primary school teachers chosen on purpose because the nature of the topic and the human scope of the study obliged us to do this. The researchers made a survey on the sample members which constitute the study population because of:

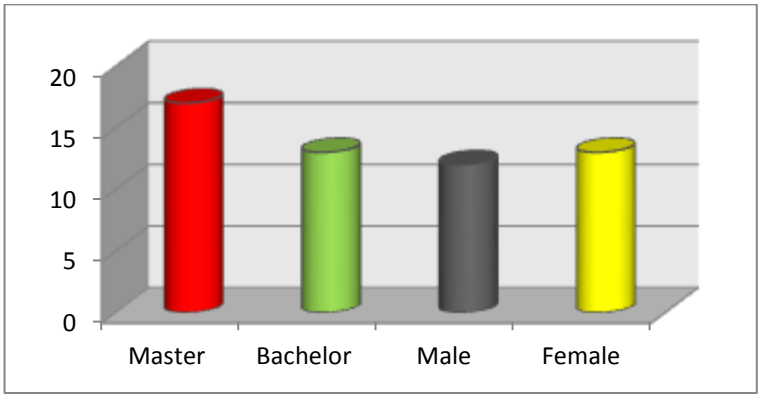
- The low number of the study population which makes it easy to carry the study on all of them.
- Applying the study on every individual leads to the results validity.

The characteristics of the study sample according to the study variables are illustrated in the following table.

Table N°1: Study sample distribution according to variables of (professional experience, qualification, gender)

| **Members of the sample** | **Qualification** | | **Gender** | |
|---|---|---|---|---|
| | **Master degree** | **Bachelor degree** | **Male** | **Female** |
| | 17 | 13 | 12 | 13 |
| **Total** | 30 | | | |

Figure N°1: Study sample distribution according to variables of (qualification and gender




**Source: achieved by the researchers**

**- Scopes of the study:**

- The spatial limitations of the study

The questionnaire was distributed and then collected in primary schools of Biskra municipality, Wilaya of Biskra.

- Temporal limitations:

The study started on 03 November 2020 and finished on 03 March 2021.

**- The study tool**: After reviewing the literature is are similar to our study and has a relation with our topic (educational assessment, MI), the researchers prepared a questionnaire to be the study tool made up of 16 statements and based on the 5 points scale as follows (strongly agree= 5, agree= 4, neutral= 3, disagree= 2, and strongly disagree= 1). The 5 points scale was turned into a 3 points scale as follows (5-1)= 4, 4/3= 1.33. This value has been used to determine the duration of the scale as follows:

- 1-2.33 low .
- 2.34 – 3.67 average.
- 3.68 – 5.00 high.

The psychometric base of the study tool: To calculate the validity of the questionnaire and the correlation of the statements, and make sure that they do not interfere in each other, we found the correlation coefficients using Pearson Correlation coefficient by using SPSS to calculate the correlation coefficient between each statement and the

total scale scores. All the coefficients were significant as illustrated in the following table:

Table N°2: Correlation coefficient of each statement with the total scale score

| **N° of the statements** | **statement 01** | **statement 02** | **statement 03** | **statement 04** |
|---|---|---|---|---|
| **Pearson Correlation** | 0,947** | 0,854** | 0,993** | 0,993** |
| **Sig. (bilateral)** | 0,000 | 0,003 | 0,000 | 0,000 |
| **N°** | 9 | 9 | 9 | 9 |
| **N° of the statements** | **statement 05** | **statement 06** | **statement 07** | **statement 08** |
| **Pearson Correlation** | 0,958** | 0,692* | 0,993** | 0,993** |
| **Sig. (bilateral)** | 0,000 | 0,039 | 0,000 | 0,000 |
| **N°** | 9 | 9 | 9 | 9 |
| **N° of the statements** | **statement 09** | **statement 10** | **statement 11** | **statement 12** |
| **Pearson Correlation** | 0,993** | 0,947** | 0,785* | 0,993** |
| **Sig. (bilateral)** | 0,000 | 0,000 | 0,012 | 0,000 |
| **N°** | 9 | 9 | 9 | 9 |
| **N° of the statements** | **statement 13** | **statement 14** | **statement 15** | **statement 16** |
| **Pearson Correlation** | 0,923** | 0,723* | 0,854** | 0,993** |
| **Sig. (bilateral)** | 0,000 | 0,028 | 0,003 | 0,000 |
| **N°** | **9** | **9** | 9 | 9 |

We deduce that the questionnaire used for data collection has an acceptable degree of validity because the correlation coefficients of the statement with the total scale score were between (0.692*, 0.947**) with a significance level of (0.001-0.005). This increases the

validity of the data the researchers shall collect through distributing this questionnaire to the study sample.

To calculate the consistency of the questionnaire, Alpha Cronbach's coefficient has been calculated giving a value of (0.986) which is high indicating a high degree of consistency.

Table N°3: Alpha Cronbach's coefficient of consistency of each statement with the total scale scores.

| Statistics of consistency | |
|---|---|
| **Alpha Cronbach** | **Number of elements** |
| 0,986 | 16 |

We deduce that the questionnaire designed for data collection has an acceptable degree of consistency.

**-Statistical tools:**

Data have been collected using a questionnaire. Then, they have been recorded on SPSS for analysis after codifying the answers. The descriptive statistics has been used to calculate Pearson Correlation coefficient, Alpha Cronbach's coefficient, the standard deviation, arithmetic means, and T.test, of 02 independent samples to know the significance of the variances.

## 4-2 Presentation and Analysis of Results:

Results of the main hypothesis state that there are high difficulties in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions. To check the answer of the main hypothesis, the arithmetic means and standard deviations of the statements of the questionnaire have been calculated.

Table N°4: shows the arithmetic means and standard deviations of the answers of the study.

| N° of the statement | Statement | Average | Variation type | Training | Level |
|---|---|---|---|---|---|
| **1** | Unawareness about the assessment types according to MI theory in teaching PE | 4,1 | 1.2134 | **15** | High |
| **2** | Lack of pedagogical materials obliges me to turn a blind eye towards assessment according to MI | 4,533 | 1.1366 | **10** | High |
| **3** | The use of the traditional methods of teaching decreases the application of assessment according to MI | 4,667 | 0.6609 | **7** | High |
| **4** | The lack of resources and references about assessment according to MI hinders its use | 4,733 | 0.5208 | **6** | High |
| **5** | The absence of an educational curriculum that explains the assessment according to MI theory in teaching PE makes its use difficult | 4,867 | 0.3457 | **3** | High |

| N°of the statement | Statement | Average | Variation type | Training | Level |
|---|---|---|---|---|---|
| 6 | The lack of training sessions on how to apply assessment according to MI theory hinders its application | 4,900 | 0.3051 | 2 | High |
| 7 | The low number of teachers specialized in PE hinders assessment according to MI | 4,767 | 0.6261 | 5 | High |
| 8 | The absence of encouragement and interest in me from the administration does not motivate me to use this assessment | 3,867 | 1.5253 | 16 | High |
| 9 | The use of assessment according to MI is difficult in PE sessions due to the many assessment activities the learners are assigned with in other sessions. | 4,600 | 1.0034 | 8 | High |
| 10 | The absence of a manual that explains and clarifies the mechanisms of using assessment according to MI in PE sessions makes me avoid it | 4,933 | 0.3651 | 1 | High |

| N° of the statement | Statement | Average | Variation type | Training | Level |
|---|---|---|---|---|---|
| **11** | The big number of learners in the class makes it difficult to use assessment according to MI | 4,500 | 0.9002 | **11** | High |
| **12** | The small hourly volume devoted for PE does not serve me in assessing according to MI | 4,400 | 1.2758 | **12** | High |
| **13** | The number of intelligences makes it difficult to use the assessment | 4,567 | 0.6261 | **9** | High |
| **14** | The absence of experts in measurement and assessment according to MI theory in education directorates makes its application difficult | 4,800 | 0.5509 | **4** | High |
| **15** | The low motivation of learners makes it difficult to apply assessment according to MI | 4,0197 | 0.1022 | **14** | High |
| **16** | The lack of pedagogic utilities makes me avoid assessment according to MI | 4, 33 | 0.1067 | **13** | High |

We see from the arithmetic means and standard deviations of the study sample on the questionnaire statements in table 04 that the total arithmetic mean (3.9761) is high. Moreover, we find that the statement "The absence of a manual that explains and clarifies the

mechanisms of using assessment according to MI in PE sessions makes me avoid it" is in the first rank with a mean of (4.933), then the statement "The lack of training sessions on how to apply assessment according to MI theory hinders its application" with a mean of 4.9, then the statement of "The absence of an educational curriculum that explains the assessment according to MI theory in teaching PE makes its use difficult" with a mean of (4.867, while the lowest statement in their answers was "The absence of experts in measurement and assessment according to MI theory in education directorates makes its application difficult" with a mean of 4.8, then the statement of "The low number of teachers specialized in PE hinders assessment according to MI" with a mean of 4.767, then the statement of "The lack of resources and references about assessment according to MI hinders its use" with a mean of 4.733, then the statements of "The use of the traditional methods of teaching decreases the application of assessment according to MI", "The use of assessment according to MI is difficult in PE session due to the many assessment activities the learners are assigned with in other sessions", "The number of intelligences makes it difficult to use the assessment", "Lack of pedagogical materials obliges me to turn a blind eye towards assessment according to MI" with means that are 4.667/4.600/4.567/4.533) respectively, then statements of "The big number of learners in the class makes it difficult to use assessment according to MI", "The small hourly volume devoted for PE does not serve me in assessing according to MI", "The lack of pedagogic utilities makes me avoid assessment according to MI", "The low motivation of learners makes it difficult to apply assessment according to MI" with means of 4.500/4.400/4.33/4.0197 respectively, and finally the statements of "Unawareness about the assessment types according to MI theory in teaching PE" and " The absence of encouragement and interest in me from the administration does not motivate me to use this assessment" with means of 4.1/ 3.867 respectively. These results show the existence of different degrees of difficulty in applying the modern assessment styles according to MI by the teachers of primary school in PE sessions. These results agree results with assessment difficulties reported by (Harizi , 2018) and Our study agrees with the study of (Ben Lakhal, Bakhiti ,2017) .

Results of the 1st sub-hypotheses that stated that there are no statistically significant differences due to the gender variable (male/female) in using the modern pedagogic assessment techniques

according to MI theory for primary school teachers when teaching PE sessions have been checked using T. Test on two independent samples. Results are shown in table 05.

Table N°5: Value of T of the variances significance.

| Category | Sample | Arithmetic mean | Standard deviation | Calculated T | Scheduler T | Freedom degree | Significance level | decision |
|---|---|---|---|---|---|---|---|---|
| **Male** | 12 | 72.1111 | 4.37760 | -2.918 | 2.769 | 28 | 0.005 | Not significant |
| **female** | 18 | 76.1667 | 2.40580 | | | | | |

We see from the results of table 05 that the value of T calculated for the assessment difficulties for the primary school teachers is (-2.918) while T scheduled is (2.763) at a significance level of (0.005) and a freedom degree of (28). From the comparison, we notice that calculated T is less than scheduled T which indicates there are no statistical significant variances in the levels of difficulty in assessment by primary school teachers at level (a=0.05) due to gender (male/female). This agrees with the second hypothesis whose results agree, according to the theoretical readings, with the study of (Ben Lakhal, Bakhiti ,2017) and also the study of ( Grine, Maaouche, 2017) that says there are no statistical significant differences between males and females in the assessment difficulties because of the same professional duties for both genders that are about preparing, executing, and assessing learning situations, in addition to their trials to assess the same program and reception of the same training in seminars and study days, same orientations and recommendations by education stakeholders, and work in the same conditions that do not differentiate the two genders.

Results of the 2nd sub-hypothesis that stated that there are no statistically significant differences due to the variable of qualification in using the modern pedagogic assessment techniques according to MI theory for primary school teachers when teaching PE sessions

Table N° 06 : T value of the variances significance.

| Category | Sample | Arithmetic mean | Standard deviation | Calculated T | Scheduler T | Freedom degree | Significance level | decision |
|---|---|---|---|---|---|---|---|---|
| **Bachelor degree** | 13 | 73.2308 | 4.90160 | -0.568 | 2.763 | 28 | 0.005 | Not significant |
| **Master degree** | 17 | 74.1176 | 3.65517 | | | | | |

We see from the results in table 06 that the value of T calculated for the assessment difficulties faced by the primary school teachers is (-0.5680) while scheduled T reached (2.763) at significance level of (0.05) and freedom degree of (28). From their comparison, we see that calculated T is less than the scheduled which indicates the absence of statistically significant variations in the levels of assessment difficulty by the primary school teachers at level (a=0.05) due to the qualifications (Bachelor degree, Master degree). This confirms the second hypothesis whose results agree with the study of (Qishaw, Bashiwa,2021) also agree with the results study of (Grine , Maaouche, 2017), according to the theoretical readings, who indicate in their study: 1-the absence of variations, 2-the dominance of the theoretical nature on the university training, 3- not giving the opportunity to the graduates to be good educators, 4- the focus of the university training on some modules about how to teach or the characteristics of growth in the educational cycles, 5-not giving importance to assessment or training on building assessment styles, their application, and for the scientific bases for correcting, interpreting, and taking advantage of their results in enhancing the outcomes of the educational process, and

6- the marginalization of assessment in the professional continuous development programs.

**Conclusion:**

The study found a number of results mainly that the teachers face difficulties in using the modern pedagogic assessment techniques according to MI in PE sessions with high levels. Moreover, there are no statistically significant differences, either because of gender or qualifications, between the teachers in facing the difficulties. Therefore, we recommend using the assessment techniques and tools according to MI theory in assessing learning in PE sessions since assessment is a pillar in the educational process and highly linked to the educational development that many educational systems and philosophies seek. It is the tool that enables the education stakeholders from making judgments on the success of education and its suitability to the learners' levels, growth, potentials, and skills. As a result, the theory of MI provides a set of strategies of assessment in PE sessions. It takes into consideration many problems through using these strategies. It is interesting for the teacher to discover the strengths and weaknesses of the learner according to this theory. The teacher's role is so vital in this theory. (Abadou ,2014) confirms that every learner can be assessed in 7 different ways at least to provide him with real active exciting experiences. MI provides as well many resources for assessment that give a more objective and fair vision on the learner's progress and, most importantly, creating a comfortable environment that is full of success opportunities. Through the findings of the study, we can recommend carrying out a study on the training needs of the primary school teachers for assessment according to MI theory in PE sessions.

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