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# Evaluating the Quality of Teaching Performance among Jordanian Teachers in Light of Certain Demographic Variables

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## Abstract

The quality of teachers' teaching performance depends on several factors, and development of their performance should be made according to a sound scientific methodology, so the study aims to assess the teachers' teaching performance quality in Ma'an, Southern Jordan, and identify the extent to which their performance is affected by some variables (Gender, Professional Experience, Teaching Stages, and Training). In order to achieve the study objectives, the descriptive survey method was used, and a measure of teaching performance quality was determined, consisting of three fields (Planning, Implementation, and Assessment) and including (40) items. The scale was used by educational supervisors to assess the quality of teachers' performance in Ma'an, and (347) male and female teachers were assessed. The results showed that teachers' performance was average in general, but their performance of the first three grades was the weakest, while it was also shown that the female teachers' performance was superior to that of male teachers. The performance of specialized teachers in the scientific field was better than the performance of their counterparts in the humanitarian field. The study showed the positive impact of professional experience and training on the quality of teaching performance. The study also demonstrated the importance of the first five years in the teachers' work, therefore, the necessity of focusing on training and qualification at this stage was recommended, as well as training pre-service teachers appropriately.

**Keywords:**

Teaching Performance Quality - Professional Experience - Training - Teacher Assessment - Ma'an

## Introduction

International and local interest in education quality has increased, as countries deeply believe that the best preparation for the twenty-first century is through education quality (Abdeen, 2000). Evidence indicates an increased interest in education quality in the near and distant future as well, and this was accompanied by a global complaint about the low levels of education quality that included both developed and developing countries (Hegazi, 2008). In view of the contemporary educational changes and challenges,

and the increasing requirements of education; Many educational institutions have resorted to increasing interest in the educational frameworks (cadres) working for them, developing their capabilities, raising their levels, and raising their professional competencies, in order to perform their multiple and different roles, following everything new in their field of work, stressing the necessity and importance of the teachers' educational performance quality of the twenty-first century (Al- Otaibi, 2020).

Education is considered the product of many diverse resources, and the teacher's role as the main factor in achieving high standards is increasingly emphasized in schools. Although there is agreement on the importance of high-quality teachers, researchers, and educational policymakers have not been able to reach a consensus on the specific qualities and characteristics that make a good teacher (Rice, 2003).

The era in which we live has created new responsibilities for the teacher that did not exist previously; these responsibilities require the teacher to be an education provider and a facilitator of learning and growth. Attention should also be paid to the teacher's role because the education process is developing and changing. Curricula are constantly changing, teaching methods and techniques are in rapid development, and research on teaching, teaching, and learning methods still presents new ideas every day in dealing with students and improving teaching (Ahmed, 2006).

*Teaching Performance Quality*

The teacher's work requires a set of skills that work effectively to increase the quality of educational performance and educational tasks, which is represented by the use of skills, strategies, and modern teaching methods, and employing them in a way that is commensurate with the cognitive and scientific content. Which increases the quality of the teacher's teaching performance (Thoonen et al, 2011 ; Reynolds et al. 2002; Scheerens et al. 2007; Hattie, 2009). The teacher's possession of the skills of using modern educational technologies constitutes a new challenge in addition to the improvement of his work and tasks. The use of self-learning and e-learning increases the imperative of quality and raises the level of performance, which is an inevitable modern requirement (Al Khaddab, 2015). Those interested in evaluating teachers' performance focused on their knowledge of the basics of classroom management and teaching and evaluation strategies (Hamid, Hassan & Ismail, 2012).

Those in charge of the educational program in Jordan, since its inception at the beginning of the twenty-first century, have realized the importance of preparing teachers on the basis of providing them with the appropriate teaching competencies, and their good practice in performing their educational profession with the highest levels of proficiency and mastery. In response to this, the Ministry of Education in Jordan held several conferences, part of which was devoted to discussing the importance of raising the teacher's professional competence, including the National Conference for Educational Development 1987, National Conference for Educational Development 1995, Integrated Educational Development Project 1990 - 2000, and Education Reform for Knowledge Economy (ERFKE) in 2003; Among these conferences and seminars is the National Standards Conference for Professional Teacher Development, which was held in Amman in 2006. The conference recommended the adoption of a number of standards necessary to develop the performance of teachers in Jordan in the following areas: the field of education, special academic and pedagogical knowledge, teaching planning, implementation of the teaching, assessment of student learning and teaching assessment, self-development and the field of ethics of the teaching profession (Jordanian Ministry of Education, 2007).

Sokar and Khaznadar (2005, 126) define the evaluation of teaching performance as "judging the level of teachers' possession of some performance competencies in order to improve levels by overcoming the causes and factors of their weak performance and strengthening the causes and factors of their strength". Issa (2012) mentions that the teachers' teaching performance is to identify the reality of the teacher's practices, diagnose and assess them, as the assessment of the teacher's teaching performance affects all aspects of the educational process, and contributes to improving the level of the teacher's performance. Seifan (2014) adds that the evaluation of teaching performance reveals defects in the teaching process and improves them, by developing scientific methods of observation and its tools and teaching evaluation. As Karam (2002) confirms, performance evaluation aims at diagnosis, treatment, prediction, and decision-making, because evaluation is followed by decision-making. It also aims to judge the extent to which the educational process achieves its goals and objectives. Al-Hariri (2008) indicates the necessity of evaluating the teaching performance of the teacher, by knowing the extent of his competence, the extent of his ability to achieve goals, and the aspects in which he needs support and assistance such as guidance and training.

There are several criteria for evaluating the teacher's performance, including what is related to the learning outcomes or what is related to the teacher's conduct, and it was considered that the teacher's conduct criterion is one of the most important and most accurate evaluation criteria in the educational system, during which observation lists can be used (Al-Olaymat, 2010).

The results of the national and international tests (PISA) and (TIMSS) showed that there is an impact of the emotional characteristics of the teacher on students' achievement at times (Al-Sawalmeh, 2014). The results also showed, with statistically significant differences, that teaching performance in girls' schools and mixed schools in Jordan is better than performance in boys' schools (Ababneh et al., 2011; Abu Tayeh, Al-Rsa'i, & Al-Shugairat, 2018). The evaluation of teaching performance has a long history in many countries. The evaluation methodologies used depended on the policies of the country or the organization and varied according to the professional experience of the assessors (Huber & Skedsmo, 2016). In Jordan, the task of evaluating teachers is entrusted to educational supervisors and school principals based on multiple visits and records of teaching planning as well as student evaluation records.

The efficiency of the teacher's performance and his possession of the necessary competencies for teaching according to the requirements of quality is in the center of attention of education institutions and those in charge of their management, due to their conviction that the teacher's performance is an indicator of the quality and effectiveness of these institutions and a prerequisite for achieving the goals of the entire educational process (Papay, 2012). Qualifying the teacher and enabling him with all professional competencies has become a major challenge for the education departments due to the multiplicity of these competencies with the development in the inputs and education processes, in addition to the requirements and additions imposed by the new technology on the teaching and learning processes. As well as the results of research concerned with the quality of performance, whether in educational institutions or in pedagogical practices and related planning, teaching, and evaluation processes. Many researchers have reviewed the concept of the quality of teacher performance. Saeed (2007, 474) defined it as "perfecting scientific performance and enabling him to specialize and follow up on every newcomer, and developing his performance includes his ability to derive goals, work to achieve them and measure them, using modern teaching methods and methods, and appropriate and varied evaluation methods. It was also defined as "a set of characteristics and criteria that are available to the teacher in his personality, thinking, beliefs, and teaching and educational methods" (Abdul Mawla & Abboud, 2010).

Al-Agha (2004) shows that the areas of teacher performance evaluation include knowledge related to the scientific subject and methods of teaching it, knowledge of the learning process and learners' characteristics, knowledge of the procedures for designing, planning, implementing and evaluating the lesson, knowledge related to the teacher's professional growth, and knowledge related to the school's relationship with society.

The teaching competencies are numerous and distributed over the areas of teaching planning, teaching implementation, and the field of learning evaluation, so that they cover all the requirements of the learning process comprehensively (Huwaidi, 2005), except that the teaching competencies are one of the comprehensive competencies for the teacher. Teaching competencies are related to the teaching process in the classroom or school facilities, and the teaching practices implemented by the teacher to achieve the intended outcomes (Grant & Gillette, 2006; Ball & Forzani, 2009).

In the field of planning, the quality of the teacher's performance appears in his preparation of teaching plans in which the learning outcomes appear clearly and are observable and measurable. He chooses the appropriate teaching and evaluation strategies and learning activities to achieve these outcomes. These strategies and activities in the teacher's plan must take into account the roles of students, and be compatible with circumstances such as students' characteristics and abilities, the learning environment, scientific developments, and modern technology, in addition to time management requirements.

In the field of teaching implementation, teacher's competence appears in preparing students physically and psychologically to begin the learning process, and linking targeted learning to prior learning. Competence is represented by the strong and influential presence of the teacher in the educational situation, and providing active roles for students in learning activities that should take into account thinking skills, intelligence, and the reality and life of students (Thoonen et al., 2011).

A teacher's performance also appears through his ability to build a positive classroom environment, and this is achieved by taking into account individual differences, justice and equity, and motivating students to participate and interact (Foran, Mannion, & Rutherford, 2017).

A good teacher is keen to assess his students' learning and diagnose the extent to which the objectives of the lesson are achieved. This is followed by developing a plan to redress the imbalance and raise the level of their possession of the learning outcomes, which requires designing tools to measure the learning level such as achievement tests, assessment records, performance lists, and observation, and then preparing remedial plans and programs. The teacher is also keen on achieving modern trends in assessment, such as assessment for learning and continuous formative assessment.

Teaching performance is affected by many factors, including the teacher's philosophy and his vision of his role and mission that he performs through teaching, and the efficiency of teaching performance varies according to the teacher's gender, and the teacher's professional experience affects his teaching performance due to the accumulation of knowledge and skills over time. In the study (Krishan et al., 2020), the result of experience was clear on the efficiency of classroom teaching practices for physics teachers in secondary schools in southern Jordan, in favor of more experienced teachers.

The training and professional development of the teacher also affects his performance and teaching practices, as his teaching skills develop with the increase in the number of courses and training programs he undergoes. Several studies showed that professional development that focused on specific teaching strategies at advanced levels increased teachers' use of these strategies in the classroom, it was also found that professional development activity as a kind of reform and not as a traditional activity had a stronger impact on teachers, and this indicates the importance of the quality and level of professional training and development programs directed to teachers (Porter et al., 2000; Moon & Lee, 2023).

The teaching performance of the teacher in the classroom is considered the most important factor for the quality of teaching and achieving the goals of the education process, thus contributing effectively to sustainable national development, and achieving a great developmental return in all sectors of modernization and development in society. Studies have indicated that the teaching performance of teachers is affected by many factors, including development and training, professional experience, gender and motivation of teachers, as well as the teaching environment, and the many incentives that drive the teaching process for more quality and effectiveness. The study of Al-Amrat (2011) showed that there are statistically significant differences in the gender variable in the level of teachers' practice of effective teaching methods in Ma'an Governorate, in favor of females. The study of Al-Sawalmeh (2014), which focused on the study of teachers' training and appointment policies in Jordan, showed no effect of teachers' educational qualification on students' results in national and international tests, as well as years of experience and training programs. The study also demonstrated that female students excelled compared to male students. In the Ma'an in southern Jordan, many educational supervisors in the Ma'an Education Directorate pointed to differences in the teaching performance between male and female teachers. Therefore, this study came to assess the quality of the teaching performance of Ma'an teachers in the light of variables that have an impact on the level and quality of this performance, such as the teacher's gender, his professional experience, his teaching specialization, and the number of training courses he attended.

Therefore, this study aims to diagnose the reality of the teachers' teaching performance in the Directorate of Education in the Ma'an according to the variables: gender, professional experience, teaching specialization, educational stage and training, and to provide a set of recommendations to develop the teaching performance of teachers in the Directorate based on the results of this study.

## Methodology

The descriptive survey approach was applied, through the staff of the educational supervision department evaluating the level of teaching performance of the teachers working in the schools affiliated to the Directorate of Education in Ma'an, and their number is (830), according to the statistics of the Directorate of Education in Ma'an.

The study aimed to answer the following questions:

1. What is the degree of the teaching performance of teachers working in the schools affiliated to the Directorate of Education in Ma'an according to the teachers' performance scale applied by the educational supervisors?

2. Does the average performance of teachers working in schools affiliated with the Directorate of Education in Ma'an statistically differ according to certain variables (gender, professional experience, teaching specialization, educational stage, training)?

### *Participants*

The study sample consisted of 347 male and female teachers in the schools affiliated with the Directorate of Education in Ma'an, and they were chosen randomly. Table (1) shows how the study participants were distributed.

All variables were taken into account in selecting participants in the study, with female teachers representing the largest number compared to male

**Table 1**

*Distribution of the Study Participants*

| Sex | | Specialty | | Teaching stage | | Professional Experience | | Training/ Number of Courses | |
|---|---|---|---|---|---|---|---|---|---|
| Males | 108 | Humanistic | 228 | First Three Grades | 56 | 5 | 102 | 5 | 173 |
| Females | 239 | Scientific | 119 | From 4th - 10th Grades | 232 | 5 – 10 | 144 | 5 - 10 | 125 |
| | | | | 11th -12th | 59 | More than 10 | 101 | More than 10 | 49 |

teachers, as well as teachers from the humanities specializations (arts and language, social sciences, Islamic education, vocational and artistic education) representing a larger segment compared to those in the scientific specializations (sciences, mathematics, computer). The participants also took into account the differences in training and job experience.

*Study Instrument*

Researchers have examined several measures of teacher effectiveness and performance. The most important measure relied upon to design the study tool is the teacher performance measure approved by the Ministry of Education in Jordan. A brainstorming session was held for a group of academics specialized in the field of teaching, measurement, and educational assessment along with some educational supervisors and expert teachers to suggest several items that measure the effectiveness of teachers' performance. Accordingly, the study instrument was formed in its initial form from (46) paragraphs distributed over three fields of teaching: planning, implementation, and assessment. The assessment scores for the teacher on each paragraph are from (1) to (5).

The study instrument was presented in its initial form to a group of educational specialists to verify its validity and suitability for the study objectives. The arbitrators presented a set of recommendations regarding deleting and adding some paragraphs and amending the wording of some of them. The instrument now consists of (40) items among the three fields. To measure the stability of the instrument, it was applied to a group of (23) male and female teachers from outside the study community then the instrument was re-applied to the same survey sample after two weeks. The reliability coefficient of the instrument and its three fields were calculated.

**Table 2.**
*Reliability Coefficients for the Study Instrument and Its Fields*

| No. | Fields | Reliability Coefficient |
|---|---|---|
| 1 | Performance quality standards in lesson planning | 0.82 |
| 2 | Performance quality standards in the lesson implementation | 0.86 |
| 3 | Performance quality standards in learning assessment | 0.79 |
| 4 | Instrument in General | 0.81 |

Consequently, the study instrument has become appropriate to be used in the data collection process that achieves the study objectives. Similar studies can also be used, in addition to the possibility of their application in evaluating the performance of teachers in educational institutions.

To interpret the arithmetic means, the following statistical criteria were calculated by below equation: Long Interval= High level – low level / No of the ratings. Therefore the study had three ratings: (1-2.33) Low, (2.33-3.67) Average, (3.67-5) High.

**Results and Discussion**

*Results Related to the First Question*

To answer the study's first question which is concerned with determining the degree of teaching performance of teachers working in schools affiliated with the Directorate of Education in Ma'an according to the teachers' performance scale applied by educational supervisors.

Arithmetic means and standard deviations of teachers' performance in the Directorate of Education for Ma'an were calculated according to the instrument used.

Table (2) summarizes the arithmetic means and standard deviations of the teachers' performance in Ma'an according to the three fields of teaching assessment: planning, implementation, and assessment. Most of the assessment criteria were average except (6) paragraphs that came with a high degree, (5) paragraphs came in the field of teaching implementation, a paragraph (taking into account the logical sequence in achieving educational outcomes) got the highest assessment, and all the items in the field of learning assessment came with a moderate degree. The paragraph (providing the opportunity for students to evaluate each other) ranked last among all paragraphs of assessment.

The acquisition by Ma'an Directorate teachers of an average degree on most standards of quality of teaching performance may be due to several reasons. The most important of which is the modesty of training and the weakness of the impact of the training programs that teachers receive, in addition to the traditional tendency in teaching, the unwillingness to follow the approach of change in classroom practices, and the implementation of advanced tasks in the teaching process especially in the field of assessment, such as employing assessment for learning and familiarizing students of evaluation criteria, training students on the skills of investing reflection and self-evaluation (Zaydyeen & Ja'ferah, 2016). Teachers don't tend to ask questions that require higher thinking skills as well as a lack of diversification in the evaluation strategies used in the

**Table 3**

*Arithmetic Means and Standard Deviations of the Teaching Performance Quality Standards*

| Performance quality standards in teaching planning | | Arithmetic Mean | Standard Deviation | Degree |
|---|---|---|---|---|
| 1 | The existence of a written educational plan for the lesson to be implemented | 3.7176 | .80519 | High |
| 2 | The educational outcomes are defined comprehensively and accurately | 3.6196 | .88302 | Average |
| 3 | The outputs are of various levels linked to the content | 3.6052 | .90104 | Average |
| 4 | The results to be achieved are measurable and evaluable | 3.6657 | .80680 | Average |
| 5 | The stages of the lesson plan are consistent with the principle of time management | 3.5187 | .95359 | Average |
| 6 | Teaching strategies appropriate for the outcomes to be achieved | 3.4467 | .87971 | Average |
| 7 | Evaluation strategies and tools appropriate for the results to be achieved | 3.2680 | .95275 | Average |
| 8 | The activities appropriate for students' abilities, needs, and interests | 3.2997 | .95389 | Average |
| Performance quality standards in the lesson implementation | | Arithmetic Mean | Standard Deviation | Degree |
| 1 | Preparing students for the lesson topic in an appropriate manner | 3.5677 | .79127 | Average |
| 2 | Taking into account the pre-learning of the lesson topics | 3.8646 | .88527 | High |
| 3 | Taking into account the logical sequence in achieving educational outcomes | 3.8703 | .79790 | High |
| 4 | Mastery of the educational content of the lesson | 3.8242 | .90822 | High |
| 5 | Using sound language appropriate for the level of the students | 3.6455 | .85379 | Average |
| 6 | Using body language to activate communication with students | 3.7867 | .81212 | High |
| 7 | Linking lesson topics to real life | 3.6744 | .96085 | High |
| 8 | Encouraging students and motivating them to participate positively | 3.2767 | 1.00284 | Average |
| 9 | Linking the educational content of the lesson with other academic subjects | 3.3602 | .88415 | Average |
| 10 | Using teaching methods that encourage students to interact during the lesson implementation | 3.6110 | 1.18106 | Average |
| 11 | Taking into account the management of the educational situation in a manner that serves the investment of time | 2.8646 | 1.05539 | Average |
| 12 | Directing students to refer to the various scientific sources | 3.1153 | .96583 | Average |
| 13 | Using supportive strategies in teaching | 3.3141 | 1.07590 | Average |
| 14 | Raising students' questions and integrating them into the educational situation | 3.0375 | 1.05336 | Average |
| 15 | Considering individual differences and differentiation | 3.2219 | 1.04936 | Average |
| 16 | Using educational or technical means in the lesson implementation | 3.0029 | 1.11606 | Average |
| 17 | Motivating students to self-study | 2.9914 | 1.11558 | Average |
| 18 | Taking into account students' learning styles by diversifying learning activities | 2.9366 | 1.030066 | Average |
| 19 | Developing different thinking styles (problem-solving - critical thinking - creative thinking) | 3.6225 | 1.18528 | Average |
| 20 | Class management and creating a positive atmosphere | 2.7666 | 1.06320 | Average |
| 21 | Discovering and developing multiple intelligences | 3.3977 | .79127 | Average |
| 22 | Observing justice and providing opportunities for all | 3.5677 | .88527 | Average |
| Performance Quality Standards in Learning Assessment | | Arithmetic Mean | Standard Deviation | Degree |
| 1 | Application of continuous evaluation during the educational situation | 3.2824 | .87404 | Average |
| 2 | Diversifying evaluation strategies and tools | 3.0836 | .93823 | Average |
| 3 | Assessment is linked to the results | 3.3256 | .93765 | Average |
| 4 | Asking questions requires higher mental skills | 2.8934 | 1.12904 | Average |
| 5 | Providing an opportunity for self-assessment for students | 2.6484 | 1.18408 | Average |
| 6 | Providing an opportunity for students to evaluate each other | 2.6225 | 1.20157 | Average |
| 7 | Providing feedback on students' performance on time | 3.1210 | 1.07912 | Average |
| 8 | Investing in self-reflection to improve the educational situation | 2.8242 | 1.13570 | Average |
| 9 | Using assessment for learning | 2.9654 | 1.06112 | Average |
| 10 | Educate the students about the assessment criteria | 2.6945 | 1.25115 | Average |

education process (Salah, Alzboon & Atalahoni, 2020). These reasons may encourage conducting studies on teachers' motivations in Ma'an and their attitudes toward the teaching profession and developing their professional skills.

The results of this study differed from the results of Amawi's study (2018) where the level of teaching skills among teachers in Jordan was low. It also differed from the results of the Al-Mousa study (2015) which aimed to evaluate the teaching performance of social studies teachers in the higher primary stage in schools of northern Jordan in the light of quality standards.

To compare the performance of teachers in the Directorate of Ma'an on the three fields of performance quality, their average performance was calculated on each field and on the total fields as a whole.

**Table 4.**
*The Arithmetic Means and Standard Deviations of Teachers' Performance According to the Evaluation Fields*

| Teaching performance quality standards | Arithmetic Mean | Standard Deviation | Degree |
|---|---|---|---|
| Teaching planning | 3.5177 | 0.76349 | Average |
| Teaching implementation | 3.3820 | 0.77106 | Average |
| Learning assessment | 2.9461 | 0.92146 | Average |
| Total | 3.3001 | 0.77171 | Average |

Table (4) shows that all fields came with an average degree and that teachers' performance was better in the field of planning with an arithmetic mean of (3.5177) and a standard deviation of (0.76349) followed by their performance in the field of teaching implementation with an arithmetic mean of (3.3820) and a standard deviation of (0.77106). Lastly, the field of learning evaluation with an arithmetic mean of (2.9461) and a standard deviation of (0.92146). This may explain why the process of planning for teaching does not require much effort compared to the processes of implementing teaching and learning assessment. In addition, the implementation and assessment processes depend mainly on training and experience so the performance of less experienced and qualified teachers decline in these two skills (Thoonen et al, 2011). The performance of the teachers in the assessment skill was in last place compared to the rest of the skills. This may be due to the teachers' weak skills in this field. In addition to their tendency to a traditional evaluation in the teaching process in addition to the lack of training focus on these skills (Habashneh, 2013). These results are consistent with the results of similar studies such as the study (Al-Mousa, 2015). As well as the study (Alison & Hon, 2011) examined the performance of teachers in Hong Kong but it did not agree with the results of the study (Alnoor, et al, 2006) which tested the performance of mathematics teachers in China. They excelled in the field of teaching implementation while their performance was low in the field of planning and average in the field of assessment.

*Results Related to The Second Question:*

The second question is concerned with identifying statistical differences at the level of significance ($\alpha$ = 0.05) among the average performance of teachers working in schools affiliated with the Directorate of Education in Ma'an which are attributed to the variables (gender, professional experience, teaching specialization, educational stage, training). The second study question aims to investigate the impact of variables on teachers' performance separately as follows:

A. Gender

To identify the impact of the teacher's gender (male-female) in Ma'an on his teaching performance, the arithmetic mean and standard deviation of their performance were calculated according to the gender variable, and the "T" test for differences among the means was used to determine the statistical significance of the differences.

**Table 5**
*The Results of the "T" Test for Differences in Teachers' Performance According to the Gender Variable*

| Teaching performance quality standards | Gender | Arithmetic Mean | Standard Deviation | T | Sig. |
|---|---|---|---|---|---|
| Teaching planning | Male | 3.2708 | 0.84546 | -4.142 | 0.000 |
| | Female | 3.6292 | 0.69701 | | |
| Teaching implementation | Male | 3.2386 | 0.76423 | -2.343 | 0.020 |
| | Female | 3.4467 | 0.76739 | | |
| Learning assessment | Male | 2.7491 | 0.98593 | -2.702 | 0.007 |
| | Female | 3.0351 | 0.87851 | | |
| Total | Male | 3.1227 | 0.79775 | -2.910 | 0.004 |
| | Female | 3.3803 | 0.77741 | | |

Table (5) shows that female teachers are superior to male teachers in the quality of teaching performance in all fields and in the grand total. The average performance of male teachers was (3.2708) while the performance of female teachers was (3.3803). The results of the "T" test indicate that the differences among the averages were significant in all fields of teaching performance as well as in general

performance where the "t" value was (-2.910) and statistical significance (0.004).

These differences can be attributed to the fact that teaching is not a professional aspiration for male teachers in Jordan unlike female teachers, the emotional nature of female teachers is more consistent with the teaching profession than males, in addition to the fact that competition is often more intense among female teachers than males (Hayat, Bibi & Ambreen, 2016) . In Ma'an, there is a peculiarity in that the teaching experience of female teachers exceeds the teaching experience of teachers who come from outside the governorate and move to work in their areas after a short time.

These results are consistent with several studies that focused on studying the variation in teacher performance according to gender (Al-Mousa, 2015), (Al-Nashiri, 2014), and Al-Amrat (2011). It differed from the study of Amawi (2018), which showed no statistically significant differences in the average performance of male and female teachers. It also differed from the study (Al-Habashneh, 2013) which showed the superior performance of male mathematics teachers compared to females in Karak Governorate in southern Jordan but the assessment in that study was by students only

B. Teaching Field (Specialization)

With regard to the impact of the teaching field (humanitarian-scientific) on the teacher on his teaching performance, the arithmetic means and standard deviations were calculated and the results of the "T" test for the differences among the averages were extracted.

**Table 6**

*T-test Results for Differences in Teachers' Performance According to the Teaching Field Variable*

| Teaching performance quality standards | Gender | Arithmetic Mean | Standard Deviation | T | Sig. |
|---|---|---|---|---|---|
| Teaching planning | Humanitarian | 3.4035 | 0.81247 | -3.953 | 0.000 |
| | Scientific | 3.7363 | 0.60493 | | |
| Teaching implementation | Humanitarian | 3.2506 | 0.81784 | -4.515 | 0.000 |
| | Scientific | 3.6337 | 0.59944 | | |
| Learning assessment | Humanitarian | 2.7632 | 0.95878 | -5.317 | 0.000 |
| | Scientific | 3.2966 | 0.72564 | | |
| Total | Humanitarian | 3.1593 | 0.81502 | -4.856 | 0.000 |
| | Scientific | 3.5700 | 0.59723 | | |

The results shown in Table (6) show that the performance of teachers specialized in the scientific field is superior to their counterparts in the humanitarian field and in all teaching fields, as well as in teaching performance as a whole. The average performance of teachers in the scientific field was (3.57) while it was (3.15) in the humanitarian field. This can be explained by the fact that teachers who specialize in scientific fields and interest in scientific methodology are characterized by accuracy and objectivity, and resort to measurement and experimentation. All of these features reflected in their teaching performance and classroom practices as well as the nature of the academic subjects of a scientific nature require additional efforts to conduct applications and experiments from teachers and students, as well as the implementation of more teaching activities and events.

C. Professional Experience

Because of the researchers' expectation that professional experience has an impact on the teaching performance of the teachers, the arithmetic means and standard deviations of the performance of the teachers according to their professional experience were calculated.

**Table 7**

*The Arithmetic Means and Standard Deviations of Teachers' Performance According to the Professional Experience Variable*

| Teaching performance quality standards | Professional Experience | Arithmetic Mean | Standard Deviation |
|---|---|---|---|
| Teaching planning | Less than 5 years | 3.1146 | 0.7741 |
| | 5-10 | 3.5929 | 0.6227 |
| | More than 10 | 3.8156 | 0.7090 |
| | Total | 3.5177 | 0.7634 |
| Teaching implementation | Less than 5 years | 3.0143 | .77802 |
| | 5-10 | 3.4451 | .71610 |
| | More than 10 | 3.6641 | .69915 |
| | Total | 3.3820 | .77106 |
| Teaching assessment | Less than 5 years | 2.5549 | .86673 |
| | 5-10 | 3.0333 | .89435 |
| | More than 10 | 3.2168 | .89119 |
| | Total | 2.9461 | .92146 |
| Total | Less than 5 years | 2.9199 | .75791 |
| | 5-10 | 3.3717 | .71476 |
| | More than 10 | 3.5822 | .71738 |
| | Total | 3.001 | .77172 |

Table (7) shows that there are differences in the arithmetic means in the teaching performance of teachers in all fields due to their different teaching experiences. These differences are always in favor of the more experienced teachers. To identify the statistical significance of these differences, One-way analysis of variance (One-way ANOVA) was used.

**Table 8**

*The Results of the One-Way Analysis of Variance in the Teachers' Performance According to the Professional Experience Variable*

| | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Teaching Planning | Between Groups | 26.201 | 2 | 13.101 | 25.681 | .000 |
| | Within Groups | 175.488 | 344 | .510 | | |
| | Total | 201.689 | 346 | | | |
| Teaching Implementation | Between Groups | 22.362 | 2 | 11.181 | 20.978 | .000 |
| | Within Groups | 183.347 | 344 | .533 | | |
| | Total | 205.710 | 346 | | | |
| Teaching Assessment | Between Groups | 24.108 | 2 | 12.054 | 15.376 | .000 |
| | Within Groups | 269.674 | 344 | .784 | | |
| | Total | 293.782 | 346 | | | |
| Total | Between Groups | 23.523 | 2 | 11.761 | 22.165 | .000 |
| | Within Groups | 182.537 | 344 | .531 | | |
| | Total | 206.060 | 346 | | | |

Table (8) shows that the differences among the arithmetic means of teachers' teaching performance according to their professional experience were always significant differences in the fields of teaching quality and in the grand total of teaching performance in favor of the more experienced teachers. The value of F = 22.156 with a statistical significance of (0.000). These results are consistent with the expectations of researchers and the results of most relevant studies (Krishan et al., 2020). The growth of professional experience increases the quality of the teaching performance of teachers because they acquire more experience and skills over time and increase their knowledge of the curriculum content knowledge (Hamid, Hassan & Ismail, 2012) and their ability to manage the classroom environment, implement teaching strategies, and assessment (Ghafer, 2004).

To identify the significance of the differences among the performance of teachers in the three categories of professional experience (less than 5 years, from 5 to 10, and more than 10 years), Scheffe test was used for post-comparisons in the performance of teachers according to the variable of professional experience.

**Table 9**

*Scheffe Test Results for Post-Comparisons in Teachers' Performance According to the Variable of Professional Experience*

| Variables | Experience (A) | Experience (B) | Mean Differences –A | Std. Error | Sig. |
|---|---|---|---|---|---|
| Teaching planning | Less than 5 years | From 5 to 10 | -.47646* | .09243 | .000 |
| | | More than 10 years | -.69917* | .10026 | .000 |
| | From 5 to 10 | Less than 5 years | .47646* | .09243 | .000 |
| | | More than 10 years | -.22271 | .09270 | .057 |
| | More than 5 years | Less than 5 years | .69917* | .10026 | .000 |
| | | From 5- to 10 | .22271 | .09270 | .057 |
| | Less than 5 years | From 5 to 10 | -.43082* | .09448 | .000 |
| | | More than 10 years | -.64911* | .10248 | .000 |
| Teaching implementation | From 5 to 10 | Less than 5 years | .43082* | .09448 | .000 |
| | | More than 10 years | -.21829 | .09475 | .072 |
| | More than 10 years | Less than 5 years | .64911* | .10248 | .000 |
| | | From 5 to 10 | .21829 | .09475 | .072 |
| | Less than 5 years | From 5 to 10 | -.47843 | .11458 | .000 |
| | | More than 10 years | -.66193* | .12429 | .000 |
| Teaching assessment | From 5 to 10 | Less than 5 years | .47843* | .11458 | .000 |
| | | More than 10 years | -.18350 | .11492 | .281 |
| | More than 10 years | Less than 5 years | .66193* | .12429 | .000 |
| | | From 5 to 10 | .18350 | .11492 | .281 |
| | Less than 5 years | From 5 to 10 | -.45185* | .09427 | .000 |
| | | More than 10 years | -.66233* | .10225 | .000 |
| Total | From 5 to 10 | Less than 5 years | .45185* | .09427 | .000 |
| | | More than 10 years | -.21048 | .09454 | .085 |
| | More than 10 years | Less than 5 years | .66233* | .10225 | .000 |
| | | From 5 to 10 | .21048 | .09454 | .085 |

Table (9) shows that the differences were significant among the arithmetic means of teachers' performance with less experience (less than 5 years) and the arithmetic means of teachers' performance in the rest of the categories of professional experience which are (5-10) years and (more than 10 years). The differences in the performance of these last two categories were not significant. This shows the direct relationship between the professional experience and the teaching performance of teachers which indicates the focus of efforts on qualifying and developing teachers in this period, in addition to not assigning them basic tasks in teaching in order not to negatively affect student learning. At the same time, the professional experience of more than ten years did not increase the development of teachers' performance. This means the stability of their performance level.

This can be explained by the fact that the growth of professional experience after the first five years does not include the acquisition of new skills and knowledge and the motivation of teachers to develop their performance declines with time (Al-Mousa, 2015).

This result differed from the study's (Al-Nashiri, 2014) which showed that social and national education teachers with experience of less than five years in KSA outperformed their peers with experience of over five years. It also differed from the study of Amawi (2018) and the study of Al-Mousa (2015) which found that there were no significant differences in the variable of experience among teachers.

D- Training

The Impact of training on teaching performance is one of the variables that the current study aims to investigate. Computational averages and standard deviations of teachers' performance in Ma'an District Directorate are calculated according to the training variable. This variable may be in three categories: (less than 5 courses) (5-10 courses) (more than 10 courses) and the results of the Impact of this variable are shown in table (10).

**Table 10**

*The Arithmetic Means and Standard Deviations of Teachers' Performance According to the Training Variable*

| Teaching Performance Quality Standards | Training/ Number of Courses | Arithmetic Mean | Standard Deviations |
|---|---|---|---|
| Planning for Teaching | Less Than 5 | 3.2803 | .78722 |
| | 5-10 | 3.7010 | .71980 |
| | More Than 10 | 3.8878 | .46087 |
| | Total | 3.5177 | .76349 |
| Teaching implementation | Less Than 5 | 3.1403 | .73098 |
| | 5-10 | 3.5753 | .78282 |
| | More Than 10 | 3.7421 | .58962 |
| | Total | 3.3820 | .77106 |
| Assessment of learning | Less Than 5 | 2.6549 | .84664 |
| | 5-10 | 3.1800 | .95250 |
| | More Than 10 | 3.3776 | .75506 |
| | Total | 2.9461 | .92146 |
| Total | Less Than 5 | 3.0470 | .72950 |
| | 5-10 | 3.5016 | .78164 |
| | More Than 10 | 3.6801 | .56885 |
| | Total | 3.3001 | .77172 |

Table (10) shows differences in teachers' average performance. These differences are always in favor of the most trained teachers in all areas of teaching performance as well as the overall total. The average performance of teachers who received less than 5 training courses (3.0470) was by standard deviation (0.72950). Teachers who received 5 to 10 courses received average performance (3.5016) with standard deviation (0.78164) and the average performance of teachers with more than 10 training courses (3.6801) and standard deviation (0.56885). To determine the materiality of these differences, the (One Way Anova test) has been used and its results are shown in table (11).

**Table 11**

*Results of the One-Way Analysis of Teachers' Performance According Training Variable.*

| | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Planning for Teaching | Between Groups | 20.656 | 2 | 10.328 | 19.626 | .000 |
| | Within Groups | 181.033 | 344 | .526 | | |
| | Total | 201.689 | 346 | | | |
| Teaching implementation | Between Groups | 21.130 | 2 | 10.565 | 19.690 | .000 |
| | Within Groups | 184.580 | 344 | .537 | | |
| | Total | 205.710 | 346 | | | |
| Assessment of learning | Between Groups | 30.629 | 2 | 15.314 | 20.019 | .000 |
| | Within Groups | 263.154 | 344 | .765 | | |
| | Total | 293.782 | 346 | | | |
| Total | Between Groups | 23.236 | 2 | 11.618 | 21.861 | .000 |
| | Within Groups | 182.824 | 344 | .531 | | |
| | Total | 206.060 | 346 | | | |

Table (11) shows that the differences between the arithmetic averages in the performance of teachers were in favor of the most trained teachers in all fields of teaching performance as well as the general total, where the value of F = 21.861 for the differences in the general total of teaching performance and a statistical significance of $\alpha$ = (0.000), which means Training has a positive impact on teaching performance, as training contributes to the development of teachers' teaching performance, and gives them many skills they need to succeed in their mission (Porter et al. 2000), and makes them overcome all the difficulties and obstacles they face during the teaching process (Maddin, 2006). The training also opens channels of communication between educational supervisors and teachers, thus providing an opportunity to present teachers' problems and seek appropriate solutions for them (Al-Mousa, 2015).

And after the impact of training on teaching performance was revealed, the researchers wanted to identify the differences in teaching performance in different categories of teachers according to the number of courses they received, Therefore, the (Scheffe test) was used for post-comparisons, the results of which are shown in Table (12)

**Table 12**

*The Results of (Scheffe test) to Post-Comparisons in the Performance of Teachers According to the Training Variable.*

| Variables | Training (A) | Training (B) | Differences in averages A-B | Std. Error | Sig |
|---|---|---|---|---|---|
| Planning for Teaching | Less than 5 | From 5 to 10 | -.42065* | .08516 | .000 |
| | | More than 10 | -.60741* | .11740 | .000 |
| | From 5 to 10 | Less than 5 | .42065* | .08516 | .000 |
| | | More than 10 | -.18676 | .12227 | .313 |
| | More than 10 | Less than 5 | .60741* | .11740 | .000 |
| | | From 5 to 10 | .18676 | .12227 | .313 |
| Teaching implementation | Less than 5 | From 5 to 10 | -.43497* | .08599 | .000 |
| | | More than 10 | -.60181* | .11854 | .000 |
| | From 5 to 10 | Less than 5 | .43497* | .08599 | .000 |
| | | More than 10 | -.16684 | .12346 | .402 |
| | More than 10 | Less than 5 | .60181* | .11854 | .000 |
| | | From 5 to 10 | .16684 | .12346 | .402 |
| Assessment of learning | Less than 5 | From 5 to 10 | -.52509* | .10267 | .000 |
| | | More than 10 | -.72264* | .14154 | .000 |
| | From 5 to 10 | Less than 5 | .52509* | .10267 | .000 |
| | | More than 10 | -.19755 | .14742 | .408 |
| | More than 10 | Less than 5 | .72264* | .14154 | .000 |
| | | From 5 to 10 | .19755 | .14742 | .408 |
| Total | Less than 5 | From 5 to 10 | -.45463* | .08558 | .000 |
| | | More than 10 | -.63314* | .11798 | .000 |
| | From 5 to 10 | Less than 5 | .45463* | .08558 | .000 |
| | | More than 10 | -.17850 | .12287 | .349 |
| | More than 10 | Less than 5 | .63314* | .11798 | .000 |
| | | From 5 to 10 | .17850 | .12287 | .349 |

The results showed that the differences in teaching performance were significant when comparing the average performance of teachers in the first category (less than 5) courses and the two groups (5-10) courses and more than (10) courses, while the differences between the last two groups were not significant differences. That is, the teachers whose number of training courses they received exceeded (5) courses had a better performance with statistically significant differences than the teachers who received less than (5) courses, although increasing the number of courses more than (5) courses may cause an improvement in the performance of teachers. However, there are not essential differences between the last two categories. The reason behind these results may be that training has a positive impact on teachers' performance in Maan district, and this is consistent with what is expected of teacher training and qualification. These results also indicate that the courses that teachers receive are related to the quality of classroom teaching, and the lack of a growing effect can be explained the number of training courses is about 10 courses on the performance of teachers. Essentially, the teachers receive basic courses in the first years of appointment, especially courses for new teachers, and their significant impact appears on the performance of teachers in the years following the first five years of service.

E - Teaching Stage

To identify the variation in the performance of teachers in Maan district according to the educational stage they study, the arithmetic means, and standard deviations of teachers' performance were calculated and monitored in Table No. 13.

**Table 13**

*The Arithmetic Means and Standard Deviations of Teachers' Performance According to the Stage Variable.*

| Teaching performance quality standards | Stage | Arithmetic Means | Standard Deviations |
|---|---|---|---|
| Planning for Teaching | The first three Stage | 3.1786 | .79088 |
| | The Fourth and tenth Stage | 3.5286 | .75265 |
| | secondary school Stage | 3.7966 | .66140 |
| | Total | 3.5177 | .76349 |
| Teaching implementation | The first three Stage | 2.8312 | .85898 |
| | The Fourth and tenth Stage | 3.4634 | .71643 |
| | secondary school Stage | 3.5847 | .66448 |
| | Total | 3.3820 | .77106 |
| Assessment of learning | The first three Stage | 2.3536 | .81172 |
| | The Fourth and tenth Stage | 3.0181 | .92527 |
| | secondary school Stage | 3.2254 | .76914 |
| | Total | 2.9461 | .92146 |
| Total | The first three Stage | 2.7813 | .80810 |
| | The Fourth and tenth Stage | 3.3651 | .73819 |
| | secondary school Stage | 3.5373 | .65511 |
| | Total | 3.3001 | .77172 |

Table (13) shows that the average performance of Ma'an Directorate teachers who teach students in the first three grades was low compared to those who teach the students in intermediate and secondary education stages. While the performance of the teachers who teach the secondary stage was the best, and the performance of the teachers who teach

the stage of the fourth to the tenth or intermediate grades students ranked second, in the general total, the average performance of first three grades teachers (2.78), and the average performance of the middle stage teachers (3.36), While the average performance of secondary school teachers was (3.53), and to identify the significance For these differences, one-way analysis of variance was used, and its results are shown in Table (14).

Table (14) shows that the differences between the performance averages of the teachers of Ma'an Directorate based on the difference in the teaching stage are substantial and statistically significant in all dimensions and fields of teaching as well as the general total, where the value of F = (17.85) with a statistical significance of (0.00), and to compare the significance of the differences Among the teachers' performance averages in the three stages used the (Scheffe test), and its results are shown in Table (15).

**Table 14**

*Results of the One-Way Analysis of Teachers' Performance According to the Stage Variable*

| | | Sum of Squares | *df* | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|---|
| Planning for Teaching | Between Groups | 11.057 | 2 | 5.529 | 9.977 | .000 |
| | Within Groups | 190.631 | 344 | .554 | | |
| | Total | 201.689 | 346 | | | |
| Teaching implementation | Between Groups | 20.952 | 2 | 10.476 | 19.506 | .000 |
| | Within Groups | 184.757 | 344 | .537 | | |
| | Total | 205.710 | 346 | | | |
| Assessment of learning | Between Groups | 25.467 | 2 | 12.734 | 16.325 | .000 |
| | Within Groups | 268.315 | 344 | .780 | | |
| | Total | 293.782 | 346 | | | |
| Total | Between Groups | 19.375 | 2 | 9.687 | 17.850 | .000 |
| | Within Groups | 186.685 | 344 | .543 | | |
| | Total | 206.060 | 346 | | | |

**Table 15**

*The Results of (Scheffe test) Post-Comparisons in the Performance of Teachers According to the Stage Variable.*

| Variables | Stage (A) | Stage (B) | Differences in averages A-B | Std. Error | Sig |
|---|---|---|---|---|---|
| Planning for Teaching | first three stages | fourth and fifth stages | -.34998* | .11083 | .007 |
| | | secondary school stages | -.61804* | .13888 | .000 |
| | fourth and fifth stages | first three stages | .34998* | .11083 | .007 |
| | | secondary school stages | -.26805* | .10854 | .049 |
| | secondary school stages | first three stages | .61804* | .13888 | .000 |
| | | fourth and fifth stages | .26805* | .10854 | .049 |
| Teaching implementation | first three stages | fourth and fifth stages | -.63219* | .10911 | .000 |
| | | secondary school stages | -.75358* | .13673 | .000 |
| | fourth and fifth stages | first three stages | .63219* | .10911 | .000 |
| | | secondary school stages | -.12138 | .10686 | .525 |
| | secondary school stages | first three stages | .75358* | .13673 | .000 |
| | | fourth and fifth stages | .12138 | .10686 | .525 |
| Assessment of learning | first three stages | fourth and fifth stages | -.66453* | .13149 | .000 |
| | | secondary school stages | -.87185* | .16477 | .000 |
| | fourth and fifth stages | first three stages | .66453* | .13149 | .000 |
| | | secondary school stages | -.20732 | .12877 | .275 |
| | secondary school stages | first three stages | .87185* | .16477 | .000 |
| | | fourth and fifth stages | .20732 | .12877 | .275 |
| Total | first three stages | fourth and fifth stages | -.58384* | .10968 | .000 |
| | | secondary school stages | -.75604* | .13744 | .000 |
| | fourth and fifth stages | first three stages | .58384* | .10968 | .000 |
| | | secondary school stages | -.17220 | .10741 | .278 |
| | secondary school stages | first three stages | .75604* | .13744 | .000 |
| | | fourth and fifth stages | .17220 | .10741 | .278 |

The statistical analysis of the (Scheffe test) shows that the differences between the average performance of the teachers of the first three grades and the average performance of the teachers in the next two grades were significant differences with statistical significance at the level of significance (0.00), while the differences in the performance of the teachers of the intermediate and secondary grades were not significant as the statistical significance was (0.278).

The poor performance of teachers in the first three grades compared to the rest of the stages may be due to the fact that teaching children in this stage requires great efforts and special skills (Grant and Gillette, 2006; Paul and Forzani, 2009). This stage is taught by teachers who are graduates of the educational colleges, and they receive superficial knowledge in most academic subjects (Al-Nashiri, 2014). Teachers at this stage incur great burdens, and this reduces their rest periods and the periods in which they plan and prepare the teaching plans.

**Conclusions**

The results of the study indicated the superiority performance of female teachers versus that of male teachers in the Ma'an region. This is consistent with similar results in the rest of Jordan, and we conclude from that teaching is a more relevant task for female teachers than male teachers. The results also showed the impact of training and professional experience on the teaching performance of male and female teachers. Despite the benefit of training for teachers, training courses after a period of more than 10 years of their service did not improve their performance level, which indicates a lack of development in the quality of training. From this, we conclude that teachers' motivations are stable and static over time, and that the level and ability of students who go to study scientific disciplines at universities is higher than those who go to study human disciplines, which is reflected in their performance when they become teachers, female teachers who are enrolled in the first grades of education are also the most vulnerable and qualified among university students, they are certainly the weakest among teachers after their appointment. This prompts educators in the Ma'an region and the rest of Jordan to take care of the choosing of teachers for the first three grades.

In light of the results, the study recommended investigating the reasons for the weak teaching performance of male teachers compared to the performance of female teachers, as well as allocating specific training programs for teachers in the humanities specializations, focusing specific training in the first periods of teachers' work, and paying attention to pre-service teacher training programs. Therefore, the study directed the Ministry of Education to review and improve training programs for teachers of the first three grades.

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# Examining the Relationship between Humor Styles and Self-Perceptions in Turkish Children: A Validation of the HSQ-Y

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## Abstract

Self concept is an experiential formation gained as a result of certain experiences. The concept of self-concept has an interesting intersection with the psychological field of humour. The aim of the study is to examine the relationship between the humor styles and self-perceptions of primary school 4th grade students and to conduct the validity-reliability study of the humor styles measurement tool. The study group of the research was carried out with 525 students attending the 4th grade of primary school. "Humor Styles Questionnaire for Young Children" (HSQ-Y) and "Self-Perception Profile for Children" (CIBAP) were used as data collection tools. In the analysis of the research, first of all, the validity-reliability study of the humor styles questionnaire was conducted and the correlational scanning method of the general scanning model was used to examine the relationship between humor styles and self-perceptions of primary school students. In the results of the research; The humor styles questionnaire was found to be valid and reliable. In the relationship between; The sub-dimension of the humor styles questionnaire reveals the positive and significant relationship of the "participatory humor style" with all the sub-dimensions of the self-perception profile for children, and the "self-enhancing humor style" with the sub-dimension of "social acceptance". In the study, it was also observed that "aggressive humor style" was negatively related to "educational competence", "behavioral management", "social acceptance" "general self-worth" sub-dimensions, and "self-destructive humor style" was negatively related to "athletic competence" sub-dimensions.

**Keywords:**

Humor, Humor Styles, Self, Self-Perception, Late Childhood



## Introduction

Humans are multifaceted beings, encapsulating an intricate tapestry of emotions, cognitions, behaviors, and physiological attributes that are in a constant state of flux from the cradle to the grave. Emerging at birth, an individual undergoes a plethora of transformations across

these domains as they navigate and acclimate to their ever-changing milieu (Perrotta, 2020). This fascinating journey of adaptation isn't just a standalone process; it's deeply entwined with an individual's personality architecture (Smith et al., 2019).

Personality isn't merely a static set of traits carved in stone. Rather, it constitutes a dynamic, fluid structure that serves as the sum total of distinct attributes that not only set each person apart from the next but also adapt and metamorphose in response to situational demands (Schultz & Schultz, 2015). Nestled within the complexity of these traits is an entity known as the 'self' (Cornellà-Font et al., 2020).

The 'self' is more than a buzzword in psychology; it is a multidimensional construct that arises at the crossroads of intrinsic characteristics and environmental interactions (Dolejš et al., 2022). Encompassing a subjective lens, it shapes and is shaped by how individuals conceptualize their own personalities (Chu & Lowery, 2023; Xiang et al., 2022). The self-concept isn't an isolated monolith; rather, it is a dynamic, organized, and hierarchically structured conceptual framework that embraces a broad spectrum of experiential realms—including but not limited to—the spiritual, social, and physical dimensions of one's existence (Epstein 1973; Paramanik et al., 2014). This self-concept is more than just an internal mirror reflecting our perceptions; it also acts as a two-way conduit, reciprocally influencing and being influenced by learning processes (Sewasew & Ulrich, 2019; Shavelson & Bolus 1982). It serves as the cognitive scaffolding for the mental blueprints individuals create, helping them make sense of and imbue meaning to the diverse situations they encounter throughout the various stages of life (Snyder 1989). Crucially, this cognitive schema can adapt and reshape depending on the specific life events and interactions one experiences.

The import of nurturing a positive self-concept is corroborated by numerous studies. It has been found to be instrumental not just for academic successes but also for broader social-emotional well-being (Chen et al., 2013; Nasir & Lin, 2012), academic achievement (Marsh & Martin, 2011; Salami & Ogundokun, 2009), and even engagement in prosocial activities (Schwarzer & Fuchs, 2009). Not to mention, a positive self-concept has been linked to enhanced levels of happiness and contentment (Hunagund & Hangal, 2014). Interestingly, this notion of self-concept has an intriguing intersection with the psychological domain of humor. Humor, characterized as the outward expression of playfulness often accompanied by emotional cues such as laughter or smiles (Chen & Martin, 2007), is an omnipresent social construct that transcends cultural boundaries (Jiang et al., 2019). Its relevance isn't confined to a particular set of circumstances but radiates through diverse social ecosystems. Furthermore, humor takes on unique hues depending on the cultural backdrop, impacting both its execution and reception (Martin & Ford, 2018).

Building upon Eysenck's pioneering framework, humor can be dissected into different facets: the conformist, quantitative, and generative dimensions (Eysenck 1972). These facets were later refined and extended by Hell and Ruch, who presented a more nuanced understanding, including an individual's cognitive and emotional responses to humor, and their capability to not just appreciate but also generate humor across varied contexts (Hell & Ruch 1985). In this respect, it is understood that humor is the ability to understand and express. In this regard, Guo, Zhang, Wang and Xeromeritou (2017) found that there was a positive relationship between Chinese and Greek preschool children's recognition of humor and their cognitive development.

In the realm of psychological inquiry, humor styles have emerged as a pivotal facet in understanding interpersonal dynamics and self-concept. Martin et al. (2003) have identified four distinct humor styles, each playing a unique role in shaping interpersonal relationships and individual self-perception. Affiliative Humor is characterized as a benign, non-hostile use of humor to facilitate interpersonal relationships, enhance interactions, and alleviate tensions. This style of humor is harmonious and tolerant, serving as a social lubricant in group settings. Aggressive Humor, in contrast, involves the use of humor in a hostile, sarcastic, and demeaning manner, often disregarding the impact on others. It's associated with the assertion of superiority and personal gratification at the expense of others, leading to socially adverse outcomes. Self-defeating Humor entails the individual engaging in self-deprecating humor, often at the cost of self-respect, to entertain others and strengthen relationships. This style can be harmful as it involves consistently belittling oneself. Lastly, Self-enhancing Humor represents a healthy coping mechanism, where an individual maintains a humorous perspective even in the face of stress and adversities, without losing touch with reality. This style reflects a balanced and considerate approach to humor, acknowledging both the self and others in the process. These humor styles not only reflect individual differences in the expression and perception of humor but also suggest significant implications for the development and manifestation of an individual's self-concept (Martin et all, 2003). Emerging as early as childhood, humor plays a pivotal role in shaping a child's self-concept and even their academic engagement (Iivari et al., 2020; Søbstad & Lillemyr, 2010). Beyond academic contexts, humor also fosters cooperative and social behaviors (Kim & Ho, 2018). Since the self is both a social construct and a shaping force, it can serve as a gauge to assess one's own strengths and weaknesses. Interestingly,

a positive self-concept can reciprocally boost the development and appreciation of humor (Søbstad & Lillemyr, 2010). Humor has been linked to enhanced cognitive abilities (McGhee, 2002) and even to greater acceptance among peers (Sletta et al., 1995), offering another layer to its positive impact on self-concept.

Humour involves a conciliatory and adaptive behaviour pattern and is effective in improving interpersonal relationships. It is also a sociopsychological tool and is used to prevent conflicts (Hofmann et al., 2020; Nguyen et al., 2022). When the humour level is high, the construction of a positive self-concept takes place. The individual perceives himself/herself as respected, accepted and valuable. Therefore, it is valuable to examine the correlation between humour and self concept (Orth & Robins, 2022; Steiner et al., 2022). Given this intricate web of connections, the present research is designed to delve into the linkages between humor styles and self-perception, focusing specifically on fourth-grade elementary school students. This study embarks with a comprehensive validation process for the 'Humor Styles Questionnaire for Younger Children – HSQ-Y' and subsequently maps the interactions between humor styles and self-perceptions among this age group. Therefore, our hypothesis in this study is; Children with positive humor styles have high self-perceptions, while children with negative humor styles have low self-perceptions. This investigation is motivated by the following key research questions:

1. Does the HSQ-Y exhibit reliability and validity when applied to fourth-grade elementary school students?

2. Is there a discernible connection between the self-perceptions of fourth-grade elementary school students and various humor style sub-dimensions such as "Affiliative Humor," "Aggressive Humor," "Self-enhancing Humor," and "Self-defeating Humor"?

## Method

### *Research Model*

This inquiry employed a correlational research design within the broader framework. Correlational methodologies seek to define and quantify the interrelationships among variables or scores within groups through the application of correlational statistics, a technique delineated by Creswell (2005). The study specifically utilized this correlational paradigm to scrutinize the interplay between distinct styles of humor and self-conceptions within a population of fourth-grade students attending elementary schools.

### *Sampling and Demographics*

The target population of this investigation consisted of fourth-grade students attending schools in the Central District of Afyonkarahisar Province. Stratified random sampling was employed to determine the study sample, with the primary selection criterion being enrollment in the fourth grade of elementary school. To establish consistency in the sample, socioeconomic and sociocultural backgrounds were considered foundational criteria. A comprehensive list of schools under the jurisdiction of the Afyonkarahisar Directorate of National Education was procured from the Afyonkarahisar Provincial Directorate of National Education. After meticulous analysis, eight schools representing a cross-section of economic strata were selected for inclusion in this study. Participation was voluntary, and the final sample constituted 525 fourth-grade students with normal development trajectories.

The study group consists of 10-year-old children. The study group was selected from Afyonkarahisar province located in the inner Aegean part of Turkey. Ethics committee approval was obtained from Afyon Kocatepe University before the study was started. Afterwards, research permission was obtained from Afyonkarahisar Provincial Directorate of National Education. After obtaining consent from the school principals and the parents of the children, the study was conducted.

An array of key variables was examined to provide a comprehensive demographic snapshot of the sample. Gender distribution comprised 268 females (51.0%) and 257 males (49.0%). In terms of birth order, 43.6% were eldest children ($n$ = 229), 26.3% were middle children or one among them ($n$ = 138), and 30.1% were youngest ($n$ = 159). Family size was also considered, with 9.1% being single children ($n$ = 48) and 90.9% hailing from families with multiple children ($n$ = 477).

### *Data Collection Instruments*

For this investigation, three primary instruments were employed: the General Information Form, the Humor Styles Questionnaire for Younger Children (HSQ-Y), and the Self-Perception Profile for Children (SPPC).

### *General Information Form*

This form encompassed questions related to the child's demographic characteristics, including gender, birth order, family size, parents' age brackets, educational attainment, occupational status, and household income levels. Data were collected through interviews conducted by the researcher with the parents of the participants.

*Self-Perception Profile for Children (SPPC)*

Originally developed by Harter (1985) and later adapted for Turkish populations by Şekercioğlu (2009), the SPPC was utilized to gauge the children's self-perceptions across six distinct sub-dimensions. These include Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioral Conduct, and Global Self-Worth. A 4-point Likert scale was applied for scoring, where a rating of 1 signified inadequate self-judgment, while a score of 4 indicated a more competent self-evaluation. The instrument demonstrated satisfactory reliability coefficients, ranging from .71 to .77 for the various sub-dimensions, and an overall internal consistency of .73 for the study's sample size of 525 participants.

Humor Styles Questionnaire for Younger Children (HSQ-Y): Instrumentation and Scoring Methodology

The Humor Styles Questionnaire for Younger Children (HSQ-Y), conceptualized and developed by James and Fox (2016), is an instrument specifically crafted to assess the humor styles of younger populations. It focuses on four principal dimensions of humor: Affiliative Humor, Aggressive Humor, Self-defeating Humor, and Self-enhancing Humor. The HSQ-Y engages a 4-point Likert scale for participant responses, where 1 signifies "not at all suitable for me" and 4 represents "very suitable for me". This scale enables a nuanced assessment of each child's humor orientation.

In terms of reliability, James and Fox (2016) report that the HSQ-Y demonstrates robust alpha reliability coefficients, which range from .62 to .88 across its various sub-dimensions, indicating a satisfactory level of internal consistency. Furthermore, test-retest reliability coefficients were observed to vary between .68 and .81, suggesting a reasonable degree of stability in the responses over time.

For scoring, each item on the HSQ-Y is linked to one of the four humor styles. The total score for each style is calculated by summing the responses to the items corresponding to that style. Attention is given to reverse-scoring negatively worded items to ensure consistency in the direction of the responses. Higher scores in a specific humor style indicate a greater propensity for that style. The interpretation of these scores is contextualized within normative data or comparative groups to glean insights into the humor tendencies of the population under study.

**Data Collection and Analysis**

Data collection was executed post the approval of the ethics committee from 08/ 11.12.2019 Afyon Kocatepe University and obtaining the formal permissions from the Directorate of National Education. The participation was voluntary, and confidentiality was assured. Prior to the application of the measurement instruments, ethical approval was obtained from the relevant ethical committee, and permission was granted by the Afyonkarahisar Provincial Directorate of National Education. In order to administer the measurement tools to the children, discussions were held with school principals and classroom teachers. The children present in the class during the teachers' available hours were informed about how to complete the measurement instruments, and the tools were then administered to those who volunteered to participate. The entire dataset was subjected to rigorous statistical analyses. Descriptive statistics were employed to analyze the demographic data.

For the analysis of the scores obtained from the SPSC and HSQ-Y, the normality was initially assessed using the Kolmogorov-Smirnov (K-S) test. A p-value less than 0.05 indicated non-normal distribution (Bütüner, 2008). Subsequently, Spearman's Rank Correlation Coefficient was employed to assess the relationship between non-normally distributed data points (Alpar, 2012). This exhaustive multistage analysis affirms the HSQ-Y's validity and reliability, supporting its application in future research initiatives.

**Findings**

In this section, the study focuses on the reliability and validity analyses of the HSQ-Y and the relationship between different humour styles measured by the HSQ-Y and various sub-dimensions of the SPPC.

*Validity Assessment of the HSQ-Y): A Multi-Stage Inquiry*

Stage One: Translation and Linguistic Adaptation

The initial phase of this research focused on the linguistic adaptation of the HSQ-Y into the Turkish language. This procedure employed a dual translation-back translation technique involving two experts proficient in English. Subsequent back translations into English were executed independently by bilingual individuals. To ascertain semantic equivalency between the original and translated questionnaires, another linguistic expert, well-versed in both languages, conducted a thorough review. Lastly, a linguistics specialist in Turkish performed a meticulous analysis, culminating in minor adjustments made by the researcher in accordance with this final expert consultation.

Stage Two: Assessment of Content Validity

Content validity, defined as a measure of a questionnaire's comprehensive coverage of the relevant topic and the behavior under scrutiny, was the focus of the second stage (Alpar, 2012; Büyüköztürk, 2014). For this, expert opinions were actively sought to

evaluate the scale's comprehensive representation of the domain. A panel of academicians, specializing in Elementary Teaching, Child Development, Education, and Educational Sciences, as well as practicing fourth-grade educators, was consulted. Both the original English and the Turkish versions of the HSQ-Y were presented to them for evaluation.

To quantify the content validity, Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated post-expert consultation (Veneziona & Hooper, 1997; Yurdugül, 2005). A content validity ratio of 0.91 was achieved, confirming the inclusion of all necessary items in the questionnaire and thereby establishing its content validity.

Stage Three: Construct Validity and Reliability Assessment

The construct validity was examined through item-total correlations and Cronbach's alpha coefficients, as elucidated in Table 1. A school comprising fourth-grade students in the Central District of Afyonkarahisar Province was selected at random for a pre-application of HSQ-Y to a subset of 60 students. Following the administration, item-total correlations were scrutinized.

Upon review of Table 1, the item-total correlations ranged from .20 to .60, as per the guidelines of Büyüköztürk (2014). Given the scale's high reliability coefficient of α=0.822, it was determined that the questionnaire should be retained in its entirety. Thus, the outcomes from this pre-application stage were incorporated into the broader study.

Stage Four: Final Validation and Reliability Study

For the ultimate phase, the overarching objectives were communicated to elementary school administrative personnel to secure the necessary permissions. The study included a total of 525 voluntarily participating fourth-grade students, chosen via stratified sampling from schools under the Directorate of National Education in the city center of Afyonkarahisar during the 2019-2020 academic year. The instrument was directly administered by the research team.

*Reliability Examination of the HSQ-Y*

The reliability was assessed using Cronbach's alpha coefficients, test-retest reliability, and item-total correlations, and the findings are delineated below.

**Table 1**

*Item Total Correlation and Cronbach's Alpha Analysis Results of the HSQ-Y (n=60)*

| Item No. | Scale Mean when the item is deleted | Variance of the Scale when the Item is Deleted | Item Total Correlations | Cronbach's Alpha Coefficient when the item is deleted |
|---|---|---|---|---|
| 1 | 58.8167 | 94.966 | .424 | .814 |
| 2 | 59.8167 | 93.034 | .378 | .815 |
| 3 | 59.1500 | 94.231 | .356 | .816 |
| 4 | 59.9000 | 95.142 | .295 | .818 |
| 5 | 59.1500 | 93.079 | .457 | .812 |
| 6 | 60.3500 | 95.316 | .239 | .822 |
| 7 | 59.8333 | 95.734 | .216 | .823 |
| 8 | 60.0667 | 88.707 | .611 | .804 |
| 9 | 59.3833 | 92.817 | .378 | .815 |
| 10 | 60.7333 | 95.318 | .348 | .816 |
| 11 | 59.4333 | 96.724 | .251 | .820 |
| 12 | 59.5500 | 90.014 | .564 | .806 |
| 13 | 59.1333 | 92.626 | .481 | .811 |
| 14 | 60.8500 | 97.384 | .250 | .820 |
| 15 | 59.5167 | 94.559 | .309 | .818 |
| 16 | 60.1000 | 93.142 | .353 | .816 |
| 17 | 59.4167 | 94.145 | .375 | .815 |
| 18 | 60.4500 | 96.014 | .259 | .820 |
| 19 | 59.2833 | 93.834 | .339 | .817 |
| 20 | 60.1000 | 91.176 | .501 | .809 |
| 21 | 59.3333 | 94.633 | .339 | .817 |
| 22 | 59.8500 | 96.028 | .227 | .822 |
| 23 | 59.2500 | 95.242 | .254 | .821 |
| 24 | 59.8167 | 90.118 | .594 | .805 |

**Table 2**

*Item-Total Correlation and Cronbach's Alpha Analysis Results of the HSQ-Y (n=525)*

| Item No. | Scale Mean when the item is deleted | Variance of the Scale when the Item is Deleted | Item Total Correlations | Cronbach's Alpha Coefficient when the item is deleted |
|---|---|---|---|---|
| 1 | 59.1238 | 108.521 | .407 | .833 |
| 2 | 59.9810 | 107.324 | .302 | .837 |
| 3 | 59.5524 | 106.538 | .378 | .834 |
| 4 | 60.0971 | 107.023 | .331 | .836 |
| 5 | 59.4762 | 104.967 | .508 | .829 |
| 6 | 60.8590 | 108.388 | .273 | .838 |
| 7 | 60.1162 | 105.336 | .373 | .834 |
| 8 | 60.2190 | 104.034 | .453 | .831 |
| 9 | 59.6019 | 104.606 | .504 | .829 |
| 10 | 61.0743 | 110.065 | .241 | .838 |
| 11 | 59.6076 | 105.796 | .451 | .831 |
| 12 | 59.9676 | 102.058 | .552 | .826 |
| 13 | 59.4343 | 105.051 | .515 | .829 |
| 14 | 61.1810 | 112.744 | .112 | .842 |
| 15 | 59.7733 | 105.462 | .416 | .832 |
| 16 | 60.4590 | 112.359 | .173 | .846 |
| 17 | 59.6457 | 105.290 | .494 | .830 |
| 18 | 60.6933 | 108.637 | .261 | .838 |
| 19 | 59.6400 | 105.998 | .416 | .832 |
| 20 | 60.2095 | 104.887 | .450 | .831 |
| 21 | 59.6343 | 104.309 | .518 | .828 |
| 22 | 60.1048 | 105.388 | .413 | .832 |
| 23 | 59.5981 | 105.558 | .435 | .832 |
| 24 | 60.3638 | 104.827 | .458 | .831 |

Inspection of Table 2 revealed that the majority of item-total correlations were within the range of .20 to .60. Cronbach's alpha for the complete scale stood at .84. The reliability coefficients for the sub-dimensions of the questionnaire were determined as follows: Affiliative Humor exhibited a reliability coefficient of .83, Aggressive Humor yielded a coefficient of .64, Self-enhancing Humor demonstrated a reliability coefficient of .73, and Self-defeating Humor also recorded a reliability coefficient of .73. It was observed that specific items, particularly items 14 and 16, showed item-total correlations that fell below the optimal range. However, their removal would have a negligible impact on the Cronbach's alpha, which was ultimately determined to be .83, justifying the retention of the original scale.

The test-retest reliability was evaluated in the second phase, employing a time interval of four weeks between applications, as suggested by Büyüköztürk (2014).

**Table 3**

*Test-Retest Reliability Coefficients of the HSQ-Y (n=60) Analysis Results*

| | | HSQ-Y Score Retest |
|---|---|---|
| HSQ-Y Pre-Test | r | .992 |
| | p | .000 |
| | n | 60 |

p<.01

The high test-retest coefficients indicated the HSQ-Y's robust reliability over time as can be seen in Table 3, thus reinforcing its validity and reliability as a measurement tool.

In light of the findings obtained, the measurement instrument encompasses four sub-dimensions: Affiliative Humor, Aggressive Humor, Self-defeating Humor, and Self-enhancing Humor. The scale comprises six items for each sub-dimension, culminating in a total of 24 items. These sub-dimensions are analyzed through the calculation of total scores for each. The potential score range for each sub-dimension spans from a minimum of 4 to a maximum of 24 points. For instance, attaining a score of 24 in the Affiliative Humor sub-dimension is indicative of a high propensity for this positive style of humor.

**Table 4**

*Spearman Correlation Analysis Results Regarding the Affiliative humor Sub-Dimensions of the HSQ-Y and the SPPC Sub-Dimensions*

| HSQ-Y Sub-dimension | SPCC Sub-dimensions | R | P |
|---|---|---|---|
| Affiliative humor | Scholastic Competence | .250 | .000* |
| | Physical Appearance | .130 | .003* |
| | Athletic Competence | .315 | .000* |
| | Behavioral Conduct | .110 | .012* |
| | Social Acceptance | .207 | .000* |
| | Global Self-worth | .149 | .001* |

A thorough examination of Table 4 reveals statistically significant positive correlations between the Affiliative Humor sub-dimension and multiple sub-dimensions of the SPPC. Notably, significant positive correlations were observed between Affiliative Humor and the following sub-dimensions: Scholastic Competence ($r$ = 0.250, $p$ < 0.001), Physical Appearance ($r$ = 0.130, $p$ = 0.003), Athletic Competence ($r$ = 0.315, $p$ < 0.001), Behavioral Conduct ($r$ = 0.110, $p$ = 0.012), Social Acceptance ($r$ = 0.207, $p$ < 0.001), and Global Self-worth ($r$ = 0.149, $p$ = 0.001), all at a statistical significance level of $p$ < 0.05.

In light of these findings, it can be inferred that an increase in children's scores on the Affiliative Humor sub-dimension correlates with higher self-perception scores across various sub-dimensions, such as Scholastic Competence, Physical Appearance, Athletic Competence, Behavioral Conduct, Social Acceptance, and Global Self-worth. This implies that children who are more predisposed to affiliative humor are likely to exhibit elevated self-perception scores in these specific areas.

**Table 5**

*Spearman Correlation Analysis Results Regarding the Aggressive Humor Sub-dimension of the HSQ-Y and the SPPC Sub-Dimensions*

| HSQ-Y Sub-dimension | SPPC Sub-dimensions | r | P |
|---|---|---|---|
| Aggressive Humor | Scholastic Competence | -.143 | .001* |
| | Physical Appearance | -.020 | .653 |
| | Athletic Competence | -.059 | .178 |
| | Behavioral Conduct | -.197 | .000* |
| | Social Acceptance | -.089 | .042* |
| | Global Self-worth | -.132 | .003* |

*p<.05

Upon rigorous analysis of Table 5, significant negative correlations emerge between the Aggressive Humor sub-dimension and several sub-dimensions of the SPPC. Specifically, negative correlations were detected between Aggressive Humor and the sub-

dimensions of Scholastic Competence ($r$ = −0.143, $p$ = 0.001), Behavioral Conduct ($r$ = −0.197, $p$ < 0.001), Social Acceptance ($r$ = −0.089, $p$ = 0.042), and Global Self-worth ($r$ = −0.132, $p$ = 0.003), all with a statistical significance of $p$ < 0.05. Conversely, no statistically meaningful relationships were observed between Aggressive Humor and the sub-dimensions of Physical Appearance and Athletic Competence.

From these observations, one can conclude that as the scores for Aggressive Humor increase among children, there tends to be a corresponding decrease in their self-perception scores in areas such as Scholastic Competence, Behavioral Conduct, Social Acceptance, and Global Self-worth. This suggests that a proclivity for aggressive humor, characterized by actions that may be harmful to others, is associated with diminished levels of self-perception across multiple domains.

**Table 6**

*Spearman Correlation Analysis Results Regarding the Self-Developing HSQ-Y and the SPPC Sub- Dimensions*

| HSQ-Y Sub-dimension | SPPC Sub-dimensions | R | P |
|---|---|---|---|
| Self-Enhancing Humor | Scholastic Competence | .172 | .000* |
| | Physical Appearance | .089 | .041* |
| | Athletic Competence | .229 | .000* |
| | Behavioral Conduct | .133 | .002* |
| | Social Acceptance | .076 | .084 |
| | Global Self-worth | .107 | .014* |

*p<.05

In scrutinizing Table 6, significant positive correlations were discovered between the Self-enhancing Humor sub-dimension and various sub-dimensions of the SPPC. Particularly, positive correlations were observed between Self-enhancing Humor and the sub-dimensions of Scholastic Competence ($r$ = 0.172, $p$ < 0.001), Physical Appearance ($r$ = 0.089, $p$ = 0.041), Athletic Competence ($r$ = 0.229, $p$ < 0.001), Behavioral Conduct ($r$ = 0.133, $p$ = 0.002), and Global Self-worth ($r$ = 0.107, $p$ = 0.014), all at a significance level of p<0.05. However, no significant correlation was found between Self-enhancing Humor and the Social Acceptance sub-dimension.

These findings indicate that higher scores in the Self-enhancing Humor sub-dimension are associated with elevated self-perception scores in areas such as Scholastic Competence, Physical Appearance, Athletic Competence, Behavioral Conduct, and Global Self-worth. This correlation suggests that individuals who frequently engage in self-enhancing humor are inclined to perceive themselves more favorably across multiple domains.

**Table 7**

*Spearman Correlation Analysis Results Regarding the Self-defeating Humor Sub-dimension of the SHQ-Y and the SPPC Sub-Dimensions*

| HSQ-Y Sub-dimension | SPPC Sub-dimensions | n | r | P |
|---|---|---|---|---|
| Self-destructive Humor | Scholastic Competence | 525 | .000 | .998 |
| | Physical Appearance | 525 | .057 | .191 |
| | Athletic Competence | 525 | .088 | .044* |
| | Behavioral Conduct | 525 | -.068 | .119 |
| | Social Acceptance | 525 | -.001 | .981 |
| | Global Self-worth | 525 | -.039 | .367 |

*p<.05

Upon close examination of Table 7, a statistically significant positive correlation was found between the Self-destructive Humor sub-dimension and the Athletic Competence sub-dimension of the SPPC ($r$ = 0.088, $p$ = 0.044), at a significance level of p<0.05. However, the study did not find any statistically significant relationships between Self-destructive Humor and the remaining sub-dimensions—namely, Scholastic Competence, Physical Appearance, Behavioral Conduct, Social Acceptance, and Global Self-worth.

Consequently, it may be concluded that increases in the Self-destructive Humor sub-dimension scores are positively related to increases in self-perception scores within the domain of Athletic Competence. This pattern suggests that individuals employing Self-destructive Humor may attempt to channel their self-deprecating tendencies into the athletic arena, thereby enhancing their self-perception of athletic prowess. Nevertheless, it is important to note that no significant correlations were found between Self-destructive Humor and other sub-dimensions like Scholastic Competence, Physical Appearance, Behavioral Conduct, Social Acceptance, and Global Self-worth, thereby suggesting that these particular domains remain unaffected by Self-destructive Humor according to the data in this study.

## Discussion and Conclusion

A content validity index was calculated for the validity study of the HSQ-Y. As a result of calculating the content validity index values, the content validity ratio of the questions was determined to be 0.91. The CVI and CGI values indicate that all items in the questionnaire are necessary and that content validity is ensured. For reliability, the Cronbach alpha reliability coefficient was calculated. The Cronbach's alpha value for the whole HSQ-Y is 0.84. The reliability coefficient of

the sub-dimensions of the questionnaire that are participatory humour is .83, the reliability coefficient of aggressive humour is .64, the reliability coefficient of self-enhancing humour is .73 and the reliability coefficient of self-destructive humour is .73. The test-retest results showed that the relationship between the two tests was positive, high and significant. Accordingly, it can be said that the HSQ-Y has a stable structure over time. As a result of all these analyses it was accepted that the HSQ-Y is a valid and reliable instrument. These values are consistent with the results obtained by James and Fox (2016), who developed the HSQ-Y. When analysing the research, several studies were found in which the HSQ-Y was used. Venkatesan (2022) stated in his study that the HSQ-Y provides a healthy indication of the development of humour in children. Halfpenny and James (2020) found that the reliability values of the sub-dimensions of the HSQ-Y were above .70 and Kimura, Tsugawa and Oka (2008) found that they were above .60. These results are similar to the reliability values obtained in the current study.

The empirical evidence garnered from this investigation establishes a substantial and affirmatively correlated relationship between the Affiliative humor style sub-dimension and an array of self-perception factors, namely Scholastic Competence, Physical Appearance, Athletic Competence, Behavioral Conduct, Social Acceptance, and Global Self-worth. Affiliative humor encapsulates the strategic utilization of humor in a manner that is accommodating and adaptive, thereby serving as a catalyst in fostering effective interpersonal relationships (Nguyen et al., 2022; Martin et al., 2003). It can be postulated that individuals who demonstrate a predilection for affiliative humor employ this style as a socio-psychological tool to enhance the quality of their interpersonal relationships and as a preventive measure against potential social conflicts (Hofmann et al., 2020).

A plethora of scholarly literature posits that individuals with high levels of perceived competence in the domains of education, physicality, athleticism, and behavior tend to manifest a positively oriented self-concept (Dolejš et al., 2022; Sewasew and Schroeders, 2019). Affiliative humor is particularly potent in inducing affective states characterized by heightened levels of extraversion, cheerfulness, and self-esteem (Steiner et al., 2022). The architecture of a favorable self-concept necessitates the individual's capacity to perceive oneself as esteemed, accepted, and inherently valuable (Orth et al., 2016; Orth & Robins, 2022). Therefore, a logical corollary would be that as the magnitude of individuals' self-perception positivity escalates, so does their inclination to adopt an affiliative humor style.

The current inquiry fortuitously dovetails with existing research trajectories that emphasize the interconnectedness between humor styles and self-perception (Delaney, 2019; Dudones, 2022; Çakmak et al., 2015), as well as the specific linkage between affiliative humor and self-esteem (McCosker & Moran, 2012; Overholser, 1992; Traş, Aslan & Taş, 2011; Shaikh & Vyas, 2022; Stieger et al., 2011; Zeigler-Hill & Besser, 2011). Additional scholarly contributions indicate that individuals with elevated self-perception metrics experience higher instances of joyousness and light-hearted moods (Brown, 2019). Furthermore, the concept of affiliative humor has been noted to share a positive relationship with dimensions such as emotional labor among educators (Liao et al., 2020) and empathic capabilities among student demographics (Halfpenny & James, 2020). Given the inherent nature of affiliative humor as a socially harmonious form of humor, it is hypothesized to exhibit greater efficaciousness in the realm of positive interpersonal communication, in contrast to its maladaptive counterparts.

Intriguingly, the data also highlighted a markedly negative correlation between the Aggressive humor sub-dimensions and several facets of self-perception, particularly Scholastic Competence, Behavioral Conduct, Social Acceptance, and Global Self-worth. Nevertheless, the sub-dimensions concerning Physical Appearance and Athletic Competence did not manifest statistically significant relationships. Aggressive humor is characterized by its use in a confrontational and demeaning manner, typically manifesting through behaviors such as ridicule and sarcasm with the explicit intent of deriding or manipulating others (Mesmer-Magnus et al., 2018; Zeigler-Hill & Besser, 2011). This particular style of humor has been found to be positively correlated with traits such as hostility and aggression, while being inversely related to traits like responsibility and sensitivity (Shaikh & Vyas, 2022).

In light of these findings, it can be reasonably inferred that a student's proclivity for an aggressive humor style remains tangentially unrelated to their self-perception vis-à-vis Physical Appearance and Athletic Competence. Conversely, as students' scores in the aggressive humor style ascend, there is a concomitant diminution in their self-perception relating to Scholastic Competence, Behavioral Conduct, Social Acceptance, and Global Self-worth. This delineates that students who exhibit a preference for an aggressive humor style are potentially undermining their self-concept, possibly leading them to seek social approval and acceptance through less constructive avenues.

Moreover, a considerable body of existing literature corroborates the notion that aggressive humor is implicated in maladaptive behaviors during

interpersonal exchanges, such as sarcasm and mockery (Hampes, 2010; Ho, 2016). The proclivity for aggressive humor has also been linked to negative emotional states, including hostility and aggression, while demonstrating a negative correlation with positive personality traits like mildness and empathy (Martin et al., 2003; Rnic et al., 2016; Yue et al., 2014).

Furthermore, the empirical data indicated a positive correlation between the Self-enhancing Humor sub-dimension and several aspects of self-perception, including Scholastic Competence, Physical Appearance, Athletic Competence, Behavioral Conduct, and Global Self-worth. However, there was no statistical significance identified in the relationship with the Social Acceptance sub-dimension. The self-enhancing humor style encompasses the ability to find levity in challenging circumstances and to employ humor as an emotional regulation mechanism (Chen & Martin, 2007; Ford et al., 2017; Tsai et al., 2021).

In synthesizing these observations, it can be deduced that students who adopt a self-enhancing humor style do not express significant concern regarding their peer acceptance or social popularity. Additionally, as the score of students' self-enhancing humor style escalates, it is accompanied by an increase in their self-perception across the domains of Scholastic Competence, Athletic Competence, Physical Appearance, and Behavioral Conduct. This buttresses the notion that students who engage in self-enhancing humor are less likely to perceive adverse situations as personal failures but rather utilize them as motivational catalysts.

Previous research has firmly established a significant positive relationship between self-enhancing humor style and self-esteem (Jolly & Lokesh, 2022; Leist & Müller, 2013). Several studies have also indicated that the propensity for self-enhancing humor is a significant predictor of heightened self-esteem (Schermer et al., 2021; Cheliuslina, 2021). Given these multiple lines of evidence, it is reasonable to conclude that self-enhancing humor serves as a positive influence on individuals' self-conception, possibly contributing to an overall elevation in self-esteem levels.

The analysis also brought to light a significant and positive correlation between the Self-destructive Humor sub-dimension and the Athletic Competence sub-dimension. However, no statistically noteworthy relationship was identified in connection with Scholastic Competence, Physical Appearance, Behavioral Conduct, Social Acceptance, and Global Self-worth. The Self-destructive Humor style encompasses the act of engaging in self-directed humor as a means of gaining social acceptance and approval from peers (Jolly & Lokesh, 2022; Cheliuslina, 2021). Consequently, it can be inferred that the Self-destructive Humor style does not hold any significant association with the global self-worth or the broader components of self-perception. This is likely because the self-defeating humor style is frequently used in a self-deprecating manner and may not foster long-term benefits for self-esteem.

Considering particularly primary school children and their developmental characteristics, it is recognized that personality development is ongoing and the formation of positive self-perceptions can be significantly influenced by individuals in their environment. During this period, children desire to be in the spotlight and seek affirmation of being loved. If these needs and desires are not met, and if negative self-perceptions are in the process of developing, they may resort to various methods and approaches to gain acceptance. Specifically, the use of self-defeating humor can be influenced by negative experiences. Yelikaya (2007) noted that when individuals cannot cope with negative experiences, they tend to employ unhealthy coping mechanisms. Aktepe (2019) further highlighted that self-defeating humor, which involves behaviors such as self-derogation and belittlement for the sake of interpersonal relations, can create issues in self-perception and potentially lead to negative effects on the individual. For example, a person adopting a self-defeating humor style might use humor without considering their own needs. Displaying a facade of happiness while denying true feelings of sadness is also indicative of this humor style (Yerlikaya, 2009; Çalışandemir & Tagay, 2015).

**Limitations and Future Research**

The present study, while substantial in its findings, is not without its methodological limitations. As the study relied on cross-sectional data, it does not offer insights into the longitudinal trajectories of humor styles and self-perception dynamics. In addition, the sample population comprised primarily of primary students, thus rendering the generalizability of the findings to broader demographics somewhat circumscribed. Future avenues for research could include the design of interventions targeted at promoting adaptive humor styles among younger populations, potentially through pedagogical strategies or educational programs. Additionally, it may be constructive to investigate the influence of familial upbringing and educators' perspectives in understanding the dynamics of students' self-perception and humor styles. A more holistic purview that considers these factors may offer a more nuanced understanding of the nexus between humor styles and self-perception.

In sum, this research significantly contributes to the expanding corpus of empirical studies exploring the relationship between humor styles and self-perception. The current findings not only substantiate but extend our understanding of the complex interplay between these constructs, thereby elucidating their

respective contributions to the psychological well-being of individuals.

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# The Experiences of Non-Physical Education Generalist Teachers in Implementing PE in the Primary Grades: Implications for Capability Development Initiatives

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## Abstract

This research aims to explore the experiences of non-physical education teachers in implementing physical education in the primary grades as a basis for creating feasible capability-building initiatives. Employing a qualitative-descriptive research design, in-depth interviews were conducted with twenty non-physical education generalist teachers using a guided interview questionnaire validated by experts. Through the triangulation of results, this study uncovers the creativity and resourcefulness exhibited by generalist teachers in lesson preparation. However, several challenges impede their successful implementation of physical education, including the risk of injuries, inadequate equipment, a lack of training or seminars, insufficient teaching strategies, and personal health issues. The findings inform the development of conclusions and recommendations to enhance the effectiveness of generalist teachers in teaching physical education in primary grades.

**Keywords:**

Non-PE Teachers' Problems; PE in the Primary Grades; Teachers' Experiences

## Introduction

Physical education is an essential subject that fosters improvements in the social, spiritual, mental, and physical aspects of learners' lives across all educational levels (Pangrazi & Beighle, 2019). Recognizing the numerous advantages, such as improved physical fitness and activity, it is clear that well-trained physical education teachers play a critical role in maximizing these advantages (McKenzie & Lounsbery, 2013).

In the Philippines' elementary education context, educators, commonly called "generalist teachers," instruct learners in the primary grades. They are often called generalist teachers because they teach their primary school learners various subjects. Unlike specialized teachers who focus on a single subject or discipline, such as mathematics or science, elementary school generalist teachers cover many subjects, including language arts, mathematics, social studies,

science, physical education, and health. They provide a foundational education across multiple disciplines in the early stages of a learner's learning journey, fostering well-rounded academic development (Sumalinog, 2018).

Despite their knowledge of core academic subjects, generalist teachers face challenges, such as a lack of specialized training, understanding of required skills, and a noticeable lack of confidence in teaching subjects they are not experts (Truelove et al., 2021). This lack of training and unfamiliarity with some curricula are significant barriers to effective teaching, making it especially difficult to achieve intended learning outcomes in elementary curriculum, such as acquiring common life skills (Lu & Lorusso, 2016). The lack of targeted training limits teachers' ability to navigate the complexities of core subjects and their ability to instill essential life skills in learners.

Further, elementary teachers face difficulties due to insufficient funding and resource allocation to deliver their subjects efficiently. This deficiency frequently manifests as a scarcity of essential equipment and materials to be used in the classroom. Teachers struggle with limited access to equipment, tools, and appropriate spaces, significantly limiting their ability to incorporate diverse activities, especially in physical education (Pangrazi & Beighle, 2019).

Neutzling et al. (2019) also highlighted that the congested curriculum and limited time allotted to each subject add to teachers' challenges. The demanding curriculum limits the time for learning activities, making it difficult for teachers to provide adequate and well-rounded primary instruction. This limitation not only determines the variety of activities available but also jeopardizes the overall quality of learning experiences, affecting the holistic development of learners.

Furthermore, the consequences extend to the learners, compromising focus and performance. Spittle (2015) revealed that generalist teachers' difficulties teaching core subjects directly impact students' engagement and academic achievement. Despite these challenges, generalist teachers in primary grades demonstrate commendable dedication and motivation to impart knowledge in their assigned subjects (Metzler, 2017).

While previous research has delved into generalist teachers' experiences in teaching core subjects, a significant research gap remains in exploring the experiences encountered by generalist teachers responsible for teaching physical education in the primary grades. The current literature has primarily focused on the challenges and strategies associated with core academic subjects, leaving a significant gap in understanding the unique dynamics, obstacles, and potential solutions for physical education instruction. This study aims to address and bridge this gap by thoroughly investigating generalist teachers' challenges when teaching physical education at the primary level. This research aims to provide valuable insights that contribute to enhancing their capabilities and competencies in this critical aspect of primary education by delving into their experiences and soliciting their recommendations.

Moreover, this study not only contributes to the academic literature by filling a gap, but it also has the potential to inform policy, shape professional development initiatives, and improve the overall quality of physical education instruction in primary grades. This research's findings can serve as a fundamental building block for school action planning and contribute to academic discourse. The study provides a roadmap for schools to improve the effectiveness of their physical education programs by offering practical strategies for overcoming challenges encountered in teaching physical education to primary grades. This valuable advice is critical for schools looking to foster a positive and thriving environment for teachers and students in physical education.

In addition, the study adds significant value to the physical education community as it opens avenues for further exploration and research in this critical area by serving as a reference point for future scholars. The insights gained from generalist teachers' experiences and challenges become a valuable resource for researchers looking to delve deeper into the complexities of physical education instruction in primary grades. This research lays the groundwork for developing feasible recommendations that address the specific challenges faced by generalist teachers. This research adds to the field's current understanding and actively informs practical strategies and future scholarly endeavors, emphasizing its broad and enduring significance.

## Methodology

### *Research Design*

This study employs a qualitative-descriptive research design to comprehensively describe the experiences of generalist teachers teaching physical education in primary grades. This approach is well-suited to illuminating the interrelated nature of teaching physical education by emphasizing subjective meanings, social interactions, and contextual factors that shape teaching and learning experiences in this domain (Grossoehme, 2014). Hennink et al. (2020) outlined that qualitative research design is a powerful tool for exploring subjective meanings and social interactions inherent in physical education's teaching and learning process. It is especially well-suited for capturing the contextual factors that influence

generalist teachers' experiences, shedding light on the complexities of their pedagogical approaches. Using qualitative methods such as interviews, observations, and focus groups reflects a deliberate effort to employ various strategies that can reveal the breadth and depth of the experiences under investigation.

The researchers use qualitative methods to delve into the intricate details of generalist teachers' experiences as this design enables them to capture the richness of their perspectives and practices, contributing to a comprehensive depiction of the teaching and learning dynamics in primary-grade physical education.

*Research Participants and Materials*

Purposeful sampling was used in this study to carefully select participants who could provide in-depth insights into the experiences of generalist teachers teaching physical education in primary grades. This method was chosen carefully to ensure the participants' diverse backgrounds and perspectives would enrich the study's exploration. Twenty (20) generalist teachers were chosen from selected elementary schools in Cotabato, Philippines. According to the inclusion criteria, participants had to be generalist teachers actively involved in physical education in the primary grades and have a non-physical education educational background—this deliberate selection aimed to capture a diverse range of experiences and perspectives within the targeted context.

A guided interview questionnaire was used to collect data. The open-ended questions in this questionnaire were thoughtfully designed to encourage participants to delve into the complexities of their experiences, providing detailed responses and additional insights. "Can you describe a specific challenge you faced while teaching physical education to primary grade learners and how you addressed it?" is an example of such a question.

During the interview sessions, the researchers used an electronic voice recorder to ensure the fidelity and comprehensiveness of data collection. This method allowed for accurate documentation and thorough capturing of the participants' diverse insights and perspectives. The audio recordings were invaluable for accurately representing and analyzing the richness of the participants' responses.

*Data Collection*

Approval letters were obtained from the heads of selected elementary schools in the Cotabato Province in the Philippines to facilitate this study. Following the acquisition of permissions, informed consent forms were secured, followed by the scheduling of interviews at mutually convenient times and locations. The researchers made a preliminary visit to familiarize participants with the interview process, fostering a comfortable environment for future engagements. According to Guest (2013), in-depth interviews are a classic qualitative data collection method that involves a skilled interviewer engaging in profound conversations with knowledgeable interviewees. A carefully crafted set of questions was shared in advance with research participants, serving as the primary tool for data collection.

During the interviews, participants were given ample time to provide detailed responses to the questions. These sessions were audio-recorded and transcribed verbatim to preserve the richness and authenticity of the participants' narratives. A member check validation and triangulation strategies were implemented to ensure the validity of the research findings. This entailed comparing data collected from multiple individuals, improving the study's credibility and reliability.

*Data Analysis*

Thematic analysis, as defined by Braun and Clarke (2006), serves as the analytical foundation of this qualitative research study. This methodical three-step coding system, used in qualitative research (Maguire & Delahunt, 2017), includes (1) data reduction, which involves transforming participant responses into figures, tables, and discussions; (2) data display, which involves presenting organized data; and (3) conclusion, drawing, and verification, which involves summarizing primary inputs and examining data to reinforce the conclusion. Braun and Clarke's thematic analysis ensures a systematic and thorough exploration of the qualitative data, allowing for the identification and interpretation of recurring patterns and themes. This method perfectly aligns with the study's objectives, allowing for a more nuanced understanding of generalist teachers' experiences teaching physical education in primary grades.

*Ethical Consideration*

Throughout this research endeavor, ethical considerations were important, with a commitment to upholding the highest standards. The teachers participating in the study were treated with the utmost respect, and their participation was entirely voluntary. To protect their privacy and confidentiality, strict measures were put in place, including obtaining informed consent outlining the nature and purpose of the study. The interview questions were carefully crafted to ensure a respectful and empathetic dialogue.

Further, to promote transparency and equal opportunity, thorough orientation were conducted to provide teachers with clear insights into the study's objectives, procedures, and potential outcomes,

allowing them to make informed decisions about their participation. This dedication to ethical practices demonstrates the researchers' commitment to conducting a study that prioritizes the participants' well-being and rights while also contributing valuable insights to the field of education.

**Results and Discussion**

High Risk for Injuries. Physical education provides a valuable opportunity for learners to cultivate and refine their skills and talents through various activities such as sports, dance, and exercise. This theme, however, highlights a concerning aspect of the increased risk of injury associated with learner engagement, particularly during outdoor activities. According to the research participants, accidents occurred when learners actively participated in outdoor activities. This noteworthy observation highlights a pervasive challenge in ensuring learners' safety during physical education classes. In response to this concern, the participants took a precautionary approach, limiting the inclusion of outdoor activities in their lesson plans. This intentional avoidance of outdoor activities was viewed as a strategic measure aimed at reducing the frequency of accidents and ensuring the learners' well-being; however, it sacrifices maximum physical education experience of learners. According to research participant 6:

> *"...once, I felt fearful due to frequent accidents during PE classes, as I could be held responsible. Consequently, I began avoiding PE lessons to mitigate the risk, such as when a student broke their arm." - RQ2P6*

Teaching physical education is sometimes dangerous because learners are at risk, primarily when the physical education teacher conducts an outdoor activity. Before doing so, the area and materials that will be used must be checked first to see if they are safe for the learners. Sometimes, accidents during physical education classes are unexpected events due to various reasons, such as the mistake of the physical education teacher not checking first all the materials and areas that will be used by the learners or even the behavior of the learners where the learners are stubborn, did not listen to the teacher's instruction, and were naughty during activities.

To lessen this kind of case, a physical education teacher must check the area, weather, or even all the equipment that will be used before doing the activity to see if it is safe to use or not (McCoy et al., 2017). According to Kovač et al. (2013), injuries in physical education classes often occur in the lower limbs due to oversight by the teacher in checking equipment. Teachers should take preventive measures, plan effectively, and prioritize student safety to ensure productive and safe outdoor activities.

Inadequate School Physical Education Equipment Hinders Quality Experience for Learners. This theme emphasizes the significant challenge posed by resource constraints in physical education teaching. The lack of necessary equipment or materials affects effective lesson delivery, potentially leading to learners' dissatisfaction. Essential topics in physical education frequently necessitate hands-on experience with equipment or materials, making it difficult to pass on knowledge when these resources are unavailable. Teachers strategize this by using alternatives as substitutes for specialized equipment.

For example, in the absence of standard sports equipment, schools have creatively used household

**Table 1.**

*Challenges that Generalist Teachers Encounter in Implementing Physical Education in the Primary Grades.*

| Essential Themes | Categories | Core Ideas |
|---|---|---|
| High Risk for Injuries | Physical Education Brings the Learners in a Harmful Situation and Leads to Accidents. | Frequent accidents happen during physical education classes, especially when conducting physical activities.<br>Teachers minimize physical activities to prevent learners from being in a harmful situation. |
| Inadequate Physical Education Equipment Hinders Quality Experiences for Learners | Lack of Equipment that is Needed for Physical Education Class. | No proper area that is spacious and safe for physical activities.<br>Teachers do not have complete equipment and materials for physical education classes. |
| Lack of Pedagogical Strategies in Handling Learners' Diverse Behaviors in Physical Education | Learners' Different Behaviors is One of The Hindrances of Their Learning | Teachers have learners who are slow learners.<br>Teachers have learners that have different attitudes or behaviors.<br>Teachers are encouraging their learners to learn despite the personalities that they have shown. |
| Teachers' Health Problems Limit them to Teach Other Areas in Physical Education | Teachers' Personal Health Problem Cannot Make them Teach the Lessons Properly | Teachers cannot teach and perform the exercises correctly.<br>Teachers limit their actions when teaching physical education since they have personal health problems. |

items such as plastic bottles, rolled-up socks, or chalk markings on the ground to facilitate learning experiences. Participants in the study emphasized the dynamic nature of their teaching approach, adjusting lessons based on the availability of equipment or materials. This adaptability is consistent with the resilience demonstrated by schools in resource-constrained environments. Educators can ensure that learners receive meaningful instruction even when resources are limited by incorporating these practical, low-cost alternatives. To wit:

> *"... most of the time, lessons require a spacious area, which should be a safe area for the children. Sometimes, we don't have enough equipment, so we just make do with what is available." – RQ2P10*

Lack of equipment when teaching physical education classes is a big problem because physical education teachers cannot deliver the lessons properly to the learners, considering that there are lessons that need to be taught that require an actual demonstration, especially in sports, dance, or even exercise. Learners only engage in a limited amount of physical education activity because sometimes there is no available equipment for a specific lesson that is being discussed (Hasan et al., 2020). Furthermore, a lack of knowledge of particular equipment creates concerns that learners may be at high risk for injuries if they use the equipment during a new activity. If they don't know how to use it, there is a possibility that they will get injured or hurt.

Walter (2014) suggests that inadequate resources hinder learners' skill development in physical education. To address this, teachers can innovate, like introducing low-cost activities such as "larong pinoy" to promote sportsmanship, humility, obedience, trust, and unity. These innovations enhance communication, thinking, and social skills, ensuring the effectiveness of physical education.

Lack of Pedagogical Strategies in Handling Learners' Diverse Behaviors in Physical Education. This theme discusses that research participants are experiencing diverse attitudes from their learners, which creates distraction and affects their teaching practices. The strategies the research participants applied during their discussion were insufficient, considering that their learners did not even listen to them as they delivered their lessons. In this way, it also affects the performance of the research participants, as they cannot attain the lesson objectives that they will provide, knowing that it distracts from their plan and strategies because of the diverse attitudes of their learners. Further, as the research participants teach their learners with various attitudes, it creates a hostile environment where the lessons will not be appropriately delivered. It makes the performance of the research participants worse. As stated by research participants 5 and 11:

> *"Games are readily available for outdoor activities, including those aimed at improving children's behavior and attitude. However, maintaining their interest requires effective engagement." - RQ2P5*

> *"Discipline with children often entails monitoring their outdoor activities, akin to watching over horses released from their pens, ensuring safety as some play while others focus." - RQ2P11*

This theme denotes a lack of strategies used by the research participants in terms of delivering their lessons to their learners. This challenge that research participants are experiencing is ineffective in the sense that their learners are not able to listen to them or pay attention to them, considering that the strategies used by research participants are not enough. This leads to poor outcomes for the research participants, as they cannot perform well in such a way that they cannot properly teach the lesson to their learners. Further, the research participants continue to teach their lessons to their learners despite the challenge they experience, which is the diverse behaviors of the learners, because they want to make sure that their learners will gain some knowledge. According to research participants 4 and 8:

> *"Some children may be less participative due to their unique preferences. As a teacher, I still encourage their involvement, even if they are less enthusiastic." - RQ2P8*

According to Bennie et al. (2017), using different teaching strategies develops the teachers' knowledge and skills in teaching physical education lessons. Also, when physical education teachers teach lessons by not sticking to only one strategy, they can make their learners have good behavior and be able to handle them. The help of different teaching strategies used by the teachers will enhance their enjoyment, motivation, and teaching process. With this, teachers are effective as they teach their learners lessons in physical education classes.

Teachers' diverse teaching strategies, as per Hand (2014), reflect their confidence and teaching efficacy. This benefits learners and teachers, leading to successful physical education classes and a positive environment.

Teachers' Health Problems Limit them to Teach Other Areas in Physical Education. This theme delves into the significant impact of personal health challenges faced by research participants, which is an important consideration. Despite dealing with health issues such as hypertension, obesity, and immobility, the research participants continue to teach physical education to learners. However, the limitations imposed by their medical conditions limit their actions and movements while teaching. To address these issues, a conducive teaching environment that accommodates educators' health needs becomes critical. This could

include arranging ergonomic teaching aids, ensuring comfortable seating during theory sessions, and facilitating a teaching schedule with adequate rest intervals.

Furthermore, a collaborative approach within the school community can be highly beneficial. Creating a support network where colleagues can assist in tasks that may aggravate affected teachers' health problems can significantly reduce their burdens. This collaborative effort could include splitting up teaching duties or incorporating peer assistance during physically demanding lessons. According to participant 6 in the study:

> *"I face challenges in teaching activities like dancing or exercise due to my high blood pressure, which limits my movements. Health issues like mine can hinder the proper execution of lessons." - RQ2P6*

According to Tahir and Ahmad (2020), teachers experiencing health problems could experience lapses. In contrast, these teachers cannot teach effectively or support the learners, especially in physical education. Further, these teachers will have limited movement as they cannot fully execute their duties properly because of their conditions. To solve this kind of problem, supporting teachers experiencing health problems can improve their teaching performance and the learners' learning outcomes.

Teachers with health issues are in a dangerous situation that could result in learners not understanding them clearly or being unable to teach the lesson on a particular day. When teachers miss class due to health issues, learners may not participate in the day's most crucial lessons and activities, which has a negative impact on their growth (Genc & Dogan, 2019). Teachers should get regular check-ups to be healthy and able to teach the lesson to the learners and help the learners continue to learn and improve their skills.

Technology Integration in Primary Physical Education. This theme discusses the suggestion of research participants that putting technology in physical education classes is needed because it makes the learners more attentive to the discussion. If the learners are focused, integrating technology is effective, whereas learners can participate in every activity during physical education class. Since research participants observed that learners would feel some excitement when technology is involved during the lesson delivery, technology seems to bring light or benefits to learning, such as good performance. Further, research participants prefer to use or integrate technology when they teach physical education subjects rather than do it traditionally. As stated by research participant 2:

> *"... we should also keep up with our technology since before, everything was traditional. Now, we need to keep up with the trend. My learners even requested a projector during class. It can be boring if we just keep on talking without any visuals." – RQ3P2*

**Table 2.**

*Practical Suggestions of Generalist Teachers to Improve their Capability and Competence in Teaching Physical Education in the Primary Grades*

| Essential Themes | Categories | Core Ideas |
|---|---|---|
| Technology Integration in Primary Physical Education | Technology Can Get the Attention of the Children | Teachers go with the trend, which is the use of technology in physical education classes.<br>Learners feel less bored if teachers use a projector or DLP to present their lessons. |
| Greater Empathy for Learners and Burning Passion For the Teaching Profession | Accepting the differences between the children | Teachers should show their love and care for their learners.<br>Teachers should not hurt their learners.<br>Teachers should not be short-tempered when teaching physical education classes. |
| Participation in Relevant Physical Education Pedagogy Training | Teachers should attend training or seminars about physical education subjects. | Teachers should participate in any training or seminars on physical education so they do not feel any difficulty when teaching the subject.<br>Attending training or seminars helps improve the teachers and gives them additional knowledge about physical education. |
| Prioritize Purchasing the Needed Equipment for Physical Education Classes | Complete Materials Related to Physical Education Able to Present All the Topics | Schools should provide equipment and materials that is for physical education classes.<br>Teachers were able to teach and demonstrate all the lessons in physical education with authenticity. |
| Exchange of Ideas and References with Colleagues | Ask for Advice From Colleagues to Have a Guide in Delivering the Lessons in Physical Education. | Teachers should not be afraid of asking for help from colleagues, especially related to the lessons in physical education.<br>Asking for ideas from colleagues can help teachers improve their teaching strategies. |

Learners prefer technology in physical education classes because it grabs their attention and enhances focus. Marttinen et al. (2019) found that integrating technology, like instructional videos, increases student engagement and motivation. This dynamic approach improves motor skills and allows access to information, fostering communication among learners and teachers (Das, 2019).

Greater Empathy for Learners and Burning Passion For the Teaching Profession. This theme discusses how the research participants suggest having greater empathy for their learners, which includes showing love and care for them. Showing this behavior makes the learners feel that the research participants give them some importance and value. Research participants loved their works and also the learners because they wanted to make their learners feel comfortable interacting with them. Further, showing pure intentions to the learners is believed to create a good relationship and produce positive outcomes. According to research participants 13 and 17:

> *"... the most important thing is to love your job and not to take teaching for granted. Also, love your learners." – RQ3P13*

> *"... I think showing your learners that you love them is important. It doesn't have to be every day, but it's important to show that you care about them consistently."– RQ3P17*

This theme implies that showing love to work and to the learners makes them achieve their goals and succeed in learning a particular lesson delivered by the teachers. Also, teachers will have a comfortable environment where they can simply present their lessons to their learners without showing awkwardness. Aside from these values, increasing patience can have good learning effects for teachers and learners. Further, it decreases the suffering of the learners in learning the lessons in physical education if the teacher also shows a lot of patience towards teaching the learners. As stated by research participants 7 and 16:

> *"... teachers should be patient and find ways to encourage learners because if they are not taught properly, they will suffer in higher levels of education." – RQ3P7*

Showing love and positive behavior towards learners in physical education classes encourages their enthusiasm for learning. As noted by Jung and Choi (2016) and Behzadnia (2021), this approach fosters a strong bond between teachers and learners, leading to a successful and enjoyable learning experience. It empowers learners to apply their knowledge in real life, and when teachers show genuine interest in learners, they feel valued. They can actively engage in class activities, ultimately changing their perception of teachers in a positive light.

Participation in Relevant Physical Education Pedagogy Training. This theme discusses that the research participants suggest that if a teacher is trained when teaching physical education, it will be more effective because the lessons introduced to the learners are appropriate and have relevant information. Training or seminars positively impact the research participants, considering that they gain knowledge and improve their skills and talents, which can be applied when teaching the learners. The learners can get additional accurate knowledge from them. Further, research participants recommend that teachers who teach a physical education subject but are not physical education graduates attend training or seminars related to physical education because it helps them teach the lessons appropriately and be able to teach the learners without hesitation. As stated by research participants 4 and 6:

> *"... perhaps we should conduct more seminars and training, particularly in physical education, so that when there are difficulties in teaching, we know the proper training methods. It would be helpful to have intended seminars focused on physical education." – RQ3P4*

When teaching physical education, teachers must have training to help them teach the lessons without any confusion. Physical education teachers must be trained appropriately or must attend trainings or seminars related to physical education because it has benefits where they can improve their confidence and equip themselves with better values (Koh et al., 2016). Training or seminars also help physical education teachers acquire pedagogical strategies and develop motivation in teaching, and with this, it is much easier for them to present their lessons to the learners during physical education classes. Hence, training or seminars improve the skills of physical education teachers, which will also make them effective because the learners will understand them easily, achieve the goal, and enhance their learning.

As stated by Gil-Espinosa (2021), training or seminars related to physical education make teachers more aware of what they will do to teach the lessons on physical education to the learners, especially when learning sports, dance, or exercise. They're going to be more knowledgeable, have improved teaching practices, have enhanced skills, and be able to properly execute all the movements related to the topic that will be taught to the learners, including in sports, dance, and exercise. Further, training or seminars can lead to them creating innovative teaching practices during physical education classes, which helps the physical education teachers meet the needs of their learners and have positive outcomes such as good performance and high scores in every assessment.

Prioritize Purchasing the Needed Equipment for Physical Education Classes. This theme discusses the resources or materials that should be available when teaching physical education lessons because every topic in a lesson is different and needs equipment to be appropriately presented, especially in sports, dance, and exercise. Having complete materials necessary for physical education lessons makes the learners, teachers, and the physical education subject effective, considering that it is delivered appropriately with relevant information, presented properly, and makes proper use of equipment or materials. Further, research participants observed that physical education classes and their lessons would be more accessible to the learners if complete resources or materials were needed. As stated by research participant 10:

> *"... first and foremost, what I would like to request from DepEd is to provide us complete materials, activity sheets, and especially the necessary equipment because it is one of the hindrances that make teaching difficult for us. So, especially now that social media and television are important, it would be great if the materials and activities shown there are practical and applicable to the daily lives of the learners." – RQ3P10*

Resources when teaching the physical education subject to the learners must be complete so that the teaching process of the physical education teachers is adequate. Incomplete resources affect the performance of the learners. In contrast, the learners cannot perform the activity because insufficient materials or equipment are needed for physical education classes. Providing efficient resources can lead to a better outcome during physical education classes, considering that physical education teachers can teach lessons with the proper use of equipment and learners can perform with the help of the appropriate equipment. With complete resources, it will meet the needs of the learners when performing physical education classes (Rosete et al., 2022).

Having a greater availability of resources gives learners more opportunities to engage in different physical activities, making them more active and participative. According to Carlson et al. (2015), encouraging learners to engage in various physical activities with complete resources promotes a high-quality physical education subject. The presence of equipment or materials increases the excitement of the learners, and they are more eager to learn how to use the equipment or materials, especially when they are learning sports, dance, and exercise. Further, having complete resources when teaching physical education brings positivity and benefits for both teachers and learners, which can improve learning and teaching experiences.

Exchange of Ideas and References with Colleagues. This theme talks about how asking for help from colleagues or co-workers regarding physical education classes is not a problem because it is one of the stepping stones to surpassing the challenges that every teacher faces, which helped them overcome by having advice or ideas from colleagues. In addition, the advice from colleagues serves as a guide in teaching lessons in physical education in the primary grades, especially if a teacher is a novice and the ideas they will get applied to them in teaching the lesson correctly. The opinions and references of colleagues are sometimes not applicable, but it is up to the teacher if they will follow them; they will just analyze them to see if they are good and can help them. Further, research participants expressed that this suggestion makes teaching lessons in physical education easier and is one of the ways to help overcome the challenges that teachers experience. As stated by research participants 12 and 15:

> *"... so, we can approach any teacher, regardless of the grade level, if they have a specialty in a certain subject, especially in PE. We can approach them and not be afraid to ask for their help." – RQ3P12*

> *"... the first thing to do as a beginner is to ask questions. It's better to ask more experienced teachers for advice. Second, you need to plan and develop strategies. Do research and engage in self-study so that when you enter the field or the classroom, you can teach effectively and execute your plans properly." – RQ3P15*

The physical education teacher can gain more knowledge by getting assistance from other physical education teachers. More resources and peer help will enhance a physical education teacher's career as a teacher, and ideas from peers are intended to help a physical education teacher teach a subject (Mäkelä et al., 2014). It is acceptable to ask coworkers for help, making your classes more exciting and productive. Therefore, since it lessens their workload and enhances student achievements, asking for assistance from colleagues is an intelligent idea for physical education teachers.

According to the study of Eirín-Nemiña et al. (2022), the satisfaction of physical education teachers improves when they ask for help and get full support and favorable treatment from colleagues. If physical education teachers ask for help from colleagues, it leads to better lesson planning, sharing resources and expertise, and improved classroom management. Therefore, it is not a problem to ask for help from colleagues. Still, it can help physical education teachers better understand what to do during physical education classes.

## Conclusion

This study concludes that generalist teachers face various challenges when teaching physical education, including the risk of student injury, inadequate

equipment, limited pedagogical strategies, and personal health issues. Proactive measures are required to effectively address these challenges, such as instituting safety and first-aid training to ensure teachers' competence in dealing with potential risks and injuries during physical activities, prioritizing investments in the availability and maintenance of necessary equipment to facilitate effective and comprehensive physical education instruction, continuous professional development that includes pedagogical strategies and ICT integration for improving teaching practices and providing engaging learning experiences, and prioritizing teachers' well-being, such as health screenings and regular physical activities to foster a positive and supportive environment.

As a result, drawing on the recommendations of generalist teachers, this study suggests a varied approach to improving physical education teaching in primary grades, such as integrating technology into lesson preparation and delivery, along with compassionate support for learners, to serve as the foundation for developing dynamic and inclusive learning environments. This research also emphasizes the significance of seeking advice from colleagues, encouraging collaboration, and facilitating the exchange of instructional materials to improve the overall professional community and share expertise.

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# Developing Phoneme-Grapheme Recognition for English as a Foreign Language: A Longitudinal Study at Japanese Primary School

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## Abstract

Foreign language was recently added to Japan's national primary school curriculum. Phoneme-Grapheme Recognition (PGR) skills are a critical step in both L1 and L2 development. Due to its simplistic approach and the lack of new investment in teacher training, research regarding the impact on PGR skills are important. This study tested the relative differences and growth of primary school students' (grades 3, 4, 5, 6) PGR skills across two semesters. Semester-1 (July) and Semester-3 (March) students ($n$ = 256, female $n$ = 130) completed the same PGR test during regular class time. ANOVA and follow-up pairwise tests assessed achievement differences between grades and across the two-semester gap. Difference testing between grades indicated substantial ($R^2$ = .32 & .19) and statistically significant ($p$ < .001) differences at both time points. Pairwise follow-up tests pointed to two steps in statistically different ability (grades 3-4/5-6). Longitudinal tests suggested that the current Japanese national elementary school curriculum supports phoneme-grapheme skill development; However, the two-step ability grouping indicated that the current national curriculum is not sufficiently detailed and/or rigorous to ensure annual student improvement in PGR skills.

**Keywords:**

Phoneme-Grapheme Recognition; Elementary School; Foreign Language Education; Longitudinal

## Introduction

Research on the foundations of learning to read has important theoretical and practical implications for elementary school education. Substantial research during the last three decades has indicated that efficient word reading is a necessary but not sufficient condition for the development of reading comprehension (Melby-Lervåg et al., 2012; Castles et al., 2018). Past studies have demonstrated that the development of phonological recognition (phonological awareness) is a prerequisite for the acquisition of literacy in alphabetic languages (Ehri et al., 2001); in fact, the importance of early phonemic awareness may extend well beyond its influence on early reading and spelling skills (Hulme et al., 2020) to broader language development.

Learning to read in a foreign language also requires some degree of mastery of the phonology of the new language (Melby-Lervåg & Lervåg, 2014). This need for phonological mastery is complicated by children's first language literacy skills, which can interfere with their acquisition of a new language (Caravolas et al., 2019). Children who fail to acquire awareness of the system of phonemes and the letter sound connections, can continuously struggle with literacy (Moll et al., 2014). As a result, early reading instruction in an alphabetic language — be the language foreign or native — needs to first focus on teaching letter to sound correspondences (Kahn-Horwitz, 2020). Phoneme-Grapheme Recognition is a critical element of foreign language acquisition for English and other alphabetic languages, despite it often not receiving the attention it deserves in many cases (Temur & Sezer, 2023). As a result, young learners of English and other alphabetic languages require standards and developmental benchmarks to establish goals for and signal improving sound-letter (phoneme-grapheme) recognition in the new language learning.

Such standards and developmental benchmarks must not only be set, but also be practical for elementary school classrooms. The present study addresses this issue of making these benchmarks practical through the longitudinal trial of a classroom test of phoneme-grapheme recognition (PGR) with Japanese elementary school students (grades 3-6). The current research assessed elements of Japanese students' phoneme-grapheme recognition for English across three semesters of curricula to create basic benchmarks for the development of sound-letter correspondences.

## Literature Review

### *General Phonological Awareness, Phoneme-Grapheme Recognition, and Language Learning*

Phonological processing of text is widely understood to be a powerful predictor of later reading comprehension (Rueckl et al., 2015). Some form of sound-letter connection is taken for granted as a universal element in learning to read (Shankweiler & Fowler, 2019). There is also evidence that learners acquire the components of literacy specific to the decoding skills necessary for that language (McBride et al., 2022). In languages with transparent phoneme-grapheme representation such as Finnish and Korean, these skills first involve recognizing and decoding individual sound units and connecting them with visual representations. For opaque logographic languages like Chinese, recognizing characters is often a more complex matter of mapping sounds onto the individual logograms. Other languages like English fit somewhere in between these two, with elements of mapping sound through memorization of lexical units as well as decoding words by semi-regular sound units.

The process of developing literacy in any language is thus a matter of recognizing the appropriate balance of skills necessary for that language, although the specific elements of this in different languages remains a subject of debate (McBride et al., 2022). One important component of learning to read alphabetic scripts is the development of sound-letter correspondences (Siegelman et al., 2020). As a step toward acquiring connections between orthography and phonology, young learners first acquire some measure of phonological awareness (Melby-Lervåg et al., 2012), defined as an understanding of how speech in a language is broken into individual sounds and how those sounds may be recombined to form words (Kahn-Horwitz et al., 2012). Learners then use this knowledge to create grapheme-phoneme correspondences, such as the recognition that in English the letter "D/d" most often represents the sound [d]. For these alphabetic languages, first- and second/foreign language phonological abilities are highly correlated (Melby-Lervåg & Lervåg, 2014), with some transfer of skills across alphabetic languages (Arfé & Danzak, 2020). Research has suggested that L1 reading can significantly predict L2 reading performance in children learning to read (Caravolas, et al., 2019). Furthermore, these elements are teachable (Castles et al., 2018), with children responding positively to instruction across diverse L1s (McArthur et al. 2018).

Elementary school foreign language curricula are designed as a way to develop the fundamentals that later lead to literacy and other language skills (Kang & Crandall, 2013). Despite a consensus regarding the central role of phonology in developing literacy in foreign language learning (Koda & Yamashita, 2019; Yamashita, 2022) and an uptick in research on the phonological contributions to reading in the L2 (Jeon & Yamashita, 2022), the process of acquiring phoneme-grapheme concordance in foreign language learning environments is an under-researched issue (Arfé & Danvak, 2020; Ikeda, 2018). Further investigations are necessary to clarify the process of letter-sound recognition within young foreign language learners and then develop tools to improve curricula to best support it.

### *English phonological awareness in the context of Japanese native speakers*

In the case of the Japanese language specifically, phonological awareness refers to the ability to understand how mora (i.e., syllable-like sound units) make up words: for example, 猫 (neko, cat), ne-ko is two moras. Since Japanese characters directly correspond to a single syllabic unit (mora) (Kubozono & Honma, 2002), when teaching English to Japanese children, it is necessary not only to ensure that students recognize each English phoneme, but also to understand that some English characters do not directly correspond to only one sound (Siegelman et al. 2020). Furthermore, it should be taken into

account that when some characters are combined or arranged differently, their sounds can change. These complexities can also impact English speaking and listening (i.e., a considerable portion of English, like other languages, can only be fully understood through literacy) as well as reading fluency making their direct instruction important (Caravolas et al., 2019). For these reasons, it is necessary to support school curricula in developing phonemic and broader phonological awareness ability during primary school L2 English education.

While acknowledging the increasing amount of time the national curriculum has committed to foreign language instruction, it is also important to note some of the natural barriers Japanese elementary school students face when learning English. As part of the Japanese students' native language studies, students learn four different types of scripts. Kana refers to two of these: a. First, Kanji, which is a Japanese script based on Chinese characters; b. hiragana and katakana, which are types of phonetic characters, and basically one character is classified as a syllabary representing one syllable. Romaji is the fourth script, referring to the general rules for transcribing kana (Japanese script) into Latin letters (Romaji notation). Romaji is studied in grade three. For many students, this is their first formal introduction to the letters of the alphabet. The difference between Romaji and the English alphabet is that much like Kana, each letter corresponds to one sound and in some cases, it is a sound that is not represented clearly in English. This means that Japanese students can have difficulty identifying the English voiceless labio-dental fricative [f]. Japanese language does not use this exact sound, instead there is an aspirated voiceless fricative [ɸ] which is romanized using both "h" and "f;" thus characters like 服 (clothing) can be romanized as either "huku" or "fuku," though "fuku" tends to be preferred. Other phonological differences and near-similarities abound (Tsujimura, 2014).

Prior tests of phonemic awareness and sound-letter recognition have indicated cross-linguistic transfer as a potentially confounding phenomenon for Japanese learners of English. Ikeda (2018) conducted one test of elementary school learners' phonemic awareness in English, showing that Japanese children tend to process English sounds more similarly to Japanese sounds, defaulting to the use of mora units with their concordant consonant-vowel structure. Later tests of elementary students' recognition of English sounds have indicated that students are able to recognize the initial sounds of familiar words when those sounds have a clear regular correspondence to Japanese Romaji, but that performance degrades when students are presented with words with less consistent sound representations (Nakao et al., 2022). Despite the interference of the Romaji system, cross-sectional investigations of students' Phoneme-Grapheme Recognition show a clear stepwise increase in students' knowledge as they progress through elementary school (Nakao et al., 2022).

Japanese students can thus struggle to identify English sounds, both due to general differences in phonological awareness between the languages (Ikeda, 2018) and interference from the Romaji system (Nakao et al., 2022; Okada, 2005). This kind of inconsistency is exacerbated by the fact that both Romaji and English are now taught at the same curricular point (MEXT, 2017). As Japanese language is the dominant subject during elementary school, romaji is learned much more thoroughly than English phoneme-grapheme correspondences. As a result, students have learned a set of rules for alphabetic notation (i.e., one letter, one sound) that is often not correct or only partially correct for English (Okada, 2005). The fact is that many young learners struggle to acquire English orthography rules generally (Russak & Kahn-Horwitz, 2015). The added difficulty of translating from Japanese L1 to English L2 (Ikeda, 2018) only compounds this problem, making it a critical area for language learning research with young learners.

*Learning English in Japan's elementary schools*

For two decades foreign language study has been progressively integrated into Japan's national curriculum for elementary school students. Beginning in 2002, English oral communication became an optional part of Japanese elementary school students' comprehensive study. Beginning in 2011, one class per week for foreign language activities became compulsory for fifth and sixth grade students. In the subsequent national course of study, announced in 2017, foreign language activities were included in grades three and four, while foreign language studies were established as formal subjects for grades five and six (MEXT, 2017).

In 2017, Japanese Ministry of Education, Culture, Sports, Science and Technology [henceforth MEXT] announced that foreign language studies would become a formal subject. What had been once-a-week (35 hours a year) foreign language activity became a twice-a-week (70 hours a year) formal subject of study for fifth and sixth grade students, with third and fourth graders now getting one lesson each week (MEXT, 2017). Upper elementary school has focused on the comprehensive teaching and learning of four skills (i.e., listening, reading, speaking, and writing).

According to the current Course of Study (MEXT, 2017), students are expected to be able to write uppercase and lowercase letters in block type, and to be able to copy out familiar oral expressions. Importantly, although MEXT is clear, regarding the difficulties

Japanese students face in acquiring literacy, while students are expected to identify letters (i.e., A or C, /ei/ or /si:/), they are not yet expected to recognize the variety of sounds these letters might represent (e.g., /æ/ for A as in bag, both /s/ and /k/ for C in circle; etc) (MEXT, 2017, p. 78). Despite this curricular direction, the overwhelming evidence continues to lean towards a need to teach decoding, including phonological awareness and phoneme-grapheme correspondence (Melby-Lervåg & Lervåg, 2014). Despite the need for appropriate instruction into sound-letter correspondences, due to current MEXT policies, no standard tools or methods have been put forth to assess students' acquisition of phoneme-grapheme correspondences for use in the Japanese curricular environment.

The aims of the national curriculum are clear: Japanese elementary school students are expected to develop the fundamentals of English (MEXT, 2017). However, the national curriculum does not include a description of expected teaching methods or means of evaluation, including methods for bridging the gap between basic letter recognition and word reading. Additionally, there are few cross-sectional and longitudinal empirical studies on Phoneme-Grapheme Recognition with L2 English students in Japanese elementary schools. While the national programme was initiated in 2017 and guidelines/textbooks were created for the widespread start in 2020, there has been no nationally recognized training or retraining curriculum for future or current elementary school teachers (Machida, 2016; Nakao et al., 2019). Despite being required to teach English, this has left many teachers lacking confidence in teaching the new subject (Yonezaki et al., 2016). Many current Japanese elementary school teachers do not have even basic knowledge and skills related to language and/or language teaching; many hold no specific licenses or recognized training in language pedagogy. (Butler, 2015; Nakao et al., 2019).

*The current study*

Phonology is thus a central issue for native and foreign language literacy skill development. Despite its importance, direction regarding how the phonological aspects of learning might be supported or assessed is not substantively addressed in the current Japanese national curriculum or teaching approaches. A few persistent issues further exacerbating the difficulty in addressing this aim are: a). a lack of re/training on the part of current and future elementary school teachers; b). a lack of a framework and measurement for students' developmental stages of phonemic awareness learning; and c). insufficient national and international research in the area of L2 PGR with elementary school students.

Seeking to begin to address some of the issues highlighted, the present study built on a cross-sectional pilot of a practical classroom test of basic PGR (Nakao et al., 2022). While there are various levels of phonological knowledge (sound isolation, combination, blending, etc.), the most basic testable level rests on the ability to identify sound-letter connections based on the curriculum. For this reason, the present study's measurement focuses on the initial connection between phonemes and their regular graphemic representations (i.e., /k/ represented by the letter k but not irregulars such as c). The initial pilot study (Nakao et al., 2022) identified a clear pattern of cross-sectional growth across grade levels, with older children performing better than younger children. The present work sought to extend the work beyond cross-sectional findings to confirm a continued trend in the same direction over time.

In the current longitudinal examination of Japanese elementary school students' development of basic PGR, students' basic letter-sound connections were assessed twice (same students), across two semesters of school, seven months apart. Analyses tested differences between the participating grades (cross-sectionally and longitudinally) and students' ability across time.

**Aims**

Building on the foundation of Phoneme-Grapheme Recognition research and a previous pilot study in the same school context, this study aimed at extending our understanding of Japanese elementary school students' general and specific Phoneme-Grapheme Recognition across their four years of English instruction (grades three to six). This study therefore addressed two research questions and tested three hypotheses.

Research Question One (RQ1): Does Phoneme-Grapheme Recognition (PGR) present significant differences at each of two time-points, with a seven-month gap? Hypothesis One (H1): Based on Nakao et al., (2022) incremental differences were expected between grades, but only between grades three and four, three and five, three and six, four and six.

Research Question Two (RQ2): Does students' PGR increase across two semesters of instruction? (a): Does the overall score go up? (b): Does the PGR increase for each grade? Hypothesis Two (H2a): an overall increase in elementary school students' PGR was expected across the two semesters of the study. (H2b). Based on results from previous studies (Nakao et al., 2022), PGR was expected to increase for each grade but the differences in increase for grades five and six might not be significantly different.

## Methods

### *Sample & Ethics*

We present cross-sectional and seven months of longitudinal data from a study of public elementary school students aged eight to twelve. Elementary school students from Western Japan participated in this study. Time 1 (T1) (Total *n* = 261, female *n* = 138) in July 2020, and Time 2 (T2) (Total *n* = 256, female *n* = 130) in March 2021. Students in each grade were taught under the same curriculum. All elementary schools in Japan were closed from March to May in 2020 due to -19. The new national curriculum began from 2020 April (MEXT, 2017). The 3rd and 4th grade students engaged in foreign language activities class once a week, while 5th and 6th grade students attended twice a week.

A Japanese teacher of English who worked at this school collaborated with the researchers to conduct tests. All participating classes were taught by this Japanese teacher of English.

Data collection occurred at a small-to-medium-sized school in the suburbs of a large Japanese city in western Japan. The assessment was administered in the third semester of the 2020 school year during regular foreign language classes. Ethical oversight was included in the review process for JSPS Grant-in-aid for Scientific Research and approved by schools and boards of education. All procedures were in accordance with the ethical standards of the national research committee.

## Methodology

The sound-letter recognition test used in this study consisted of fifteen items, selected from the third grade assigned Ministry textbook (MEXT, 2017). An optical mark reader (OMR) sheet was used for students to report their answers, with letters A to Z, and ? for "I don't know" presented as choices (test sheet included in appendices). Capital letters were used to increase students' recognition and ease of reporting. Previous studies using this testing format have indicated students with a stronger recognition of initial sounds have better PGR (Sodoro et al., 2002). The instrument in question is a criterion-referenced test designed by the researchers to investigate the specific phonological needs of Japanese elementary school students (Sodoro et al., 2002). The test had been successfully piloted in a study conducted seven months prior (Nakao et al., 2022).

The test was administered by the native Japanese teacher of English who taught at the elementary school where the study took place during regular class time. The participating teacher pronounced each of the fifteen words twice with no specific emphasis on any syllable. The teacher participated in a brief training on how to read the alphabet words by the first author. The students selected the letter on the test sheet (appendix) after hearing each of the fifteen target words. The teacher distributed and collected test papers for all classes. Students took between six to nine minutes to complete the test.

Tests were scanned and converted to data using OMR software. The first author reviewed each scan to address marking errors and input mistakes. The finalized data were imported to JMP14.1 (SAS Inc., 2019) for analysis.

## Analyses

### *Descriptive statistics and test normality*

This study's analyses proceeded in four stages. To begin with, students' scores for the 15-item test were calculated by summing their correct answers. Students' summed scores and their standard deviation were reviewed. To assess the normality of students' test scores, skewness and kurtosis were calculated. Based on George and Mallery's (2010) suggested heuristics for assessing distribution normality, if skew values are between -1 and 1, that skewness is deemed to be approximately symmetric. Based on the same heuristics, if kurtosis values are between -2 and 2, they were deemed to be within reasonable limits. Next, reliability (Cronbach's Alpha) for tests at each time point were calculated.

### *Overall and grade test longitudinal results*

Addressing RQ1 and H1, analysis of variance (ANOVA) was conducted for both T1 and T2. For this analysis, the four (third, fourth, fifth, and sixth) participating grades were used as the independent variable (IV), and test scores as the dependent variable (DV). This analysis was followed by pairwise difference testing (Tukey-Kramer Honest Significance Difference; Tukey-Kramer HSD) to examine differences between the students' year of study. For all tests, statistical significance was set at $p < .05$. Where feasible, effect sizes (Cohen's d or R2) were reported.

Addressing RQ2 and H2, *t*-tests were conducted to test for differences between T1 and T2. First, overall changes between T1 and T2 were tested. Following this initial broad test, *t*-tests were conducted to test for differences in each of the four grades included in the study. In addition to p-values, confidence intervals were reviewed. For all *t*-tests Bonferroni correction was employed to account for multiple significant tests: As a result, statistical significance was set at $p < .007$ (7 tests) for all tests.

## Results

Both T1 and T2 tests presented sufficiently normal distribution of scores; skew was approximately symmetric (-1 to 1) and kurtosis within reasonable limits (-2 to 2; George & Mallery, 2010). Table 1 presents the descriptive statistics with skew and kurtosis for each grade at T1 and T2. At both T1 and T2, the test presented reasonable reliability (.90 and .84 respectively). Please see Table 1 for Means and SDs for T1 and T2 tests for each grade.

A one-way between-subjects ANOVA (H1) compared the effect of year of study (IV) on test score (DV). For T1 test, there was a significant effect of year of study (IV) on test score (DV) at the p<.05 level for four conditions [$F(3, 257) = 40.97$, $p < .0001$]. Given the simple nature of the test, year of study accounted for a considerable amount of the variance in students' test scores ($R^2 = .32$). For T2 test, there was a significant effect of year of study (IV) on test score (DV) at the $p < .05$ level for four conditions [$F(3, 252) = 19.64$, $p < .0001$]. Given the simple nature of the test, students` grade accounted for a reasonable amount of the difference in students' test scores ($R2 = .19$).

**Table 1.**
*Descriptive Means and SDs by Time 1 and Time 2 test score*

| | Time 1 | | Time 2 | |
|---|---|---|---|---|
| Grade | M | SD | M | SD |
| 3 | 2.84 | 2.77 | 6.31 | 3.90 |
| 4 | 7.06 | 3.74 | 8.25 | 3.60 |
| 5 | 8.64 | 3.93 | 10.00 | 3.31 |
| 6 | 9.18 | 4.19 | 10.87 | 3.51 |

A Tukey-Kramer HSD post hoc test (H1) was significant ($q^* = 2.59$, Alpha = .05) for the T1 test. Results suggested that there was no statistically significant difference between grades 4 and 5, and grades 5 and 6. Grade 3 scored lower than grades 4, 5, and 6 ($p < .0001$). Grade 4 scored lower than grade 6 ($p < .001$). For T2 test, there was no statistically significant difference between grades 5 and 6. Year 3 scored lower than grades 4 ($p < .05$), 5 ($p < .0001$), and 6 ($p < .0001$). Grade 4 scored lowered than grades 5 and 6 ($p < .0001$).

Tables 2 and 3 present the pairwise differences, confidence intervals, and p-values for T1 and T2 tests respectively.

**Table 2.**
*T1 Tukey-Kramer HSD post hoc test for test scores by each grade*

| Grade | Grade | Difference | Std Err Dif. | Lower CL | Upper CL | p-Value |
|---|---|---|---|---|---|---|
| 6 | 3 | 6.34 | 0.63 | 4.70 | 7.98 | <.0001 |
| 5 | 3 | 5.80 | 0.65 | 4.13 | 7.47 | <.0001 |
| 4 | 3 | 4.22 | 0.63 | 2.59 | 5.85 | <.0001 |
| 6 | 4 | 2.12 | 0.64 | 0.47 | 3.77 | 0.0056 |
| 5 | 4 | 1.58 | 0.65 | -0.11 | 3.26 | 0.0750 |
| 6 | 5 | 0.54 | 0.65 | -1.15 | 2.23 | 0.8404 |

**Table 3.**
*T2 Tukey-Kramer HSD post hoc test for test scores by each grade*

| Grade | Grade | Difference | Std Err Dif. | Lower CL | Upper CL | p-Value |
|---|---|---|---|---|---|---|
| 6 | 3 | 4.56 | 0.64 | 2.89 | 6.22 | <.0001 |
| 5 | 3 | 3.69 | 0.65 | 2.00 | 5.38 | <.0001 |
| 4 | 3 | 1.94 | 0.63 | 0.30 | 3.58 | 0.0127 |
| 6 | 4 | 2.62 | 0.65 | 0.95 | 4.29 | 0.0004 |
| 5 | 4 | 1.75 | 0.65 | 0.06 | 3.44 | 0.0398 |
| 6 | 5 | 0.87 | 0.66 | -0.85 | 2.59 | 0.5615 |

A Tukey-Kramer HSD post hoc test (H1) was significant ($q^* = 2.59$, Alpha = .05). Results suggested that there was no statistically significant difference between grades 5 and 6, but that students' Phoneme-Grapheme Recognition increased across longer time spans (i.e., grades 3 compared to 5 and 6, grade 4 compared to 6).

Addressing RQ2, a pairwise t-test and examination of confidence intervals confirmed H2a. Between T1 and T2, test scores increased significantly: the matched $t$-test, $t(245) = 12.499$, $p < .007$, $d = .80$. Addressing H2b, a statistically significant difference was found across T1 and T2 for grades three, four, five and six: Grade three, $t(64) = 8.81$, $p < .007$, $d = .95$; Grade four, $t(64) = 4.10$, $p < .007$, $d = .32$; Grade five, $t(57) = 5.91$, $p < .007$, $d = .36$, and Grade six, $t(59) = 7.20$, $p < .007$, $d = .42$.

## Discussion

The present longitudinal study builds on cross-sectional pilot research undertaken in the same school context as a previous pilot study (Nakao et al., 2022). The previous pilot established the basic measurement and practicality of the current testing format, while prior studies have established a clear link between Phoneme-Grapheme Recognition and literacy (Allen-Tamai, 2019). On this foundation, the current study attempted to begin to map the development of basic Phoneme-Grapheme Recognition (PGR) for Japanese elementary school students (grades three

to six) across two semesters of academic study. The current study focused on two research questions and tested three hypotheses. First, does students' sound-letter recognition significantly differ (based on their grade) at each of two time-points separated by seven months (RQ1)? Based on Nakao et al., (2022) pilot findings, incremental differences were expected between the grades at both time points; however, statistically significant differences were expected just between years three and four and then two-grade gaps (H1). Statistically significant differences between grades at both time points were found. The hypothesis was partially supported by the pairwise difference testing Tukey's Honest Difference results. T1 test results presented statistically significant differences between all grades except 4-5 and 5-6. T2 test results presented statistically significant differences between all grades except 5-6.

Longitudinal tests addressed RQ2: Does students' phoneme-grapheme recognition increase across two semesters of instruction? Analyses aimed to test whether students' overall score, and therefore students' PGR, increased in each grade. Hypothesis Two (H2a) proposed that an overall increase in elementary school students' PGR was expected across the two semesters of the study. Furthermore (H2b), based on Nakao et al. (2022), PGR was expected to increase for each grade across the seven-month gap, but the increases for years five and six were not expected to be significantly different. Addressing H2a, pairwise t-test and examination of confidence intervals confirmed that the increase in test between T1 and T2 was statistically significant. Addressing H2b, statistically significant differences in students' PGR were found between T1 and T2 for each of the four grades included in the study.

*Theoretical implications*

Do very simple foreign language curricula, with superficial focus on PGR provide sufficient support students' PGR skills?

Both the pilot study (Nakao et al., 2022) and the current study suggest that even limited curricula and instruction provide some support for elementary school students in developing basic PGR. Results are consistent with prior indications that language exposure can positively impact skills like basic phonemic awareness and grapheme recognition (Hulme et al., 2020; Silverman et al., 2020). This finding supports the government's efforts to initiate the national curriculum and make foreign language a formal part of elementary school education. Even with very basic curricular guidelines, simplistic textbooks and teachers who often cannot substantively speak the language of instruction, students' PGR does improve.

Do students at different grades have meaningfully different phonemic awareness?

With a cross-sectional cohort study, and using the same type of test, Nakao et al. (2022) demonstrated that Japanese elementary school students' PGR improves cross-sectionally by grade (progressing from grade 3 to 6). The stepwise difference was not always statistically significant, suggesting that particularly in the later grades, students might not be sufficiently challenged by curricula and instruction. Across two PGR assessments at the same school, separated by seven months, the current study supports those findings. Presumably during the earlier years of elementary school, curricula are sufficient to support students in gaining very basic sound-letter recognition. However, for more comprehensive PGR skill development, students might need more challenging curricula and/or more intensive instruction to continue to improve.

Can simple classroom tests capture phoneme-grapheme recognition (PGR) gains?

One large barrier to improving elementary school students' PGR is practical and effective assessment. The current study confirms that a short, pen-and-paper assessment of initial word sounds can be conducted by classroom teachers with students from grades three through six. Furthermore, such an assessment can provide reliable information about students' current and growing PGR. The test used here suggested the development of PGR during the school year, indicating suitability for use as a standard-based academic ability test (Sodoro et al., 2002). These findings can be built on, creating regular assessment or a wider variety of sounds, providing direction for students and educators about the language learning process across early learning years.

*Practical implications*

What are the benefits of basic foreign language instruction and how might they be enhanced given the limitations inherent in Japanese elementary schools?

One clear outcome of this study and its pilot is the fact that even simple engagement with a foreign language has benefits. Even without clearly structured curricula and explicit instruction, students' PGR does see a meaningful increase across elementary school experiences. Findings confirm the fact that children's language skills improve over time and are thus likely teachable with appropriate interventions (Hulme et al., 2020).

Currently, explicit phonological instruction is not yet part of the curriculum of foreign language education in Japanese primary school education (MEXT, 2017). Even though the current test indicates some potential

for growth without explicit instruction, the need to teach the connection between sounds and letters that are not in their mother tongue (Arfé & Danzak, 2020; McBride et al., 2022) is also well-established. Greater focus on this in the future is likely to increase teachers' impact on students' PGR, and thus improve decoding skills and prevent literacy problems that arise later (Coulson et al., 2013).

What is the potential of simple classroom tests for supporting instruction and curricula in Japanese elementary schools going forward?

A second important outcome of the present study is the fact that a very simple classroom test of PGR is a useful and reliable tool for classroom teachers. This classroom PGR assessment is a first step in the right direction, opening the door to a wider variety of assessments, undertaken regularly across elementary school foreign language classes. They have the potential to not only estimate PGR growth but also set goals/benchmarks for each year and even expectations for basic language fluency prior to the critical transition to secondary school.

How do we address weaker learning gains for grades five and six?

One issue of immediate practical value for educators that arose from the current study is the indication that upper elementary school children are being underserviced. The diminishing returns of the national curriculum are seen most poignantly in their weaker gains in PGR. While the national curriculum is less likely to immediately adjust materials and guidelines, prefectures, school districts or even single schools might make adjustments to address this issue. Given the fact that many teachers are not proficient in the foreign language and have little formal language teaching training, the simplest adjustment is to expose students to a wider variety of language content through multimedia. They might also expand students' independent studies, encouraging students to engage in individual or group projects which draw on books or the internet. Since 2020, all students have been issued personal tablets and internet access at schools (MEXT, 2021). Taking advantage of this new affordance will be critical to expanding the means by which students engage with foreign language education. In addition to offering personalisation and gamification of the language learning experience, tablets might well offer opportunities for independent learning at home as well during free periods during school.

### Limitations and Future Discussion

This study used a simple (initial letter sound) PGR test to assess students' cross-sectional and longitudinal abilities. The results of this study indicate basic gains in students' sound-letter knowledge, though greater depth of testing is needed. Information about the developmental trajectories of PGR, however, would necessitate both a wider variety and a larger number of assessments. For this kind of assessment to be feasible, inside and outside the classroom, intermittent online assessment is necessary (Butler, 2022).

### Conclusions

This study demonstrates the potential of a simple test of phoneme awareness in young learners in foreign language for Japan's elementary school education. The test can be easily and effectively conducted by a non-English teacher with minimal training. Findings from the longitudinal study presented here demonstrate the significance of the current early foreign language curricula in Japan. Current cross-sectional and longitudinal tests of students' PGR across four grades suggest potential developmental trends and point to minimum amounts of input required to construct PGR. To build on current foreign language PGR development in Japanese elementary schools in the near future, building PGR assessment into curricula is an important first step. A wider variety of language engagement opportunities, including self-directed learning and game-based interventions, might offer greater learning affordances. At a curricular level, integrating explicit instruction in curricula is likely needed to improve sound-letter recognition ability; this will require appropriate support systems for teachers, including comprehensive training for teachers and efficient material delivery systems. As noted, not all letters and sounds will require the same attention. By targeting the most necessary and difficult phoneme-grapheme representations, instruction will likely have maximum impact.

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**Appendices**


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# Detecting the Training Needs of Primary Education Teachers On Learning Disabilities

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## Abstract

For students to learn adequately depends, among other things, on keeping teachers' knowledge up to date. Thus the continuous training of teachers is essential, both for new teachers and those with more experience. The aim of this study was to detect the training needs on Specific Learning Disabilities (SLDs) of active primary-education teachers. Through a descriptive design, this work analyses the responses of 75 teachers to the questionnaire designed for this study have revealed limited knowledge about SLDs, due to factors such as the lack of specific training during their degree or scant continuous training programmes. They therefore show the necessity for greater training in this area of special educational needs. We weigh up the educational implications of our results and propose procedures for action.

**Keywords:**

Learning Disabilities; Training Needs; Teaching Profession; General and Specific Training; Primary Education

## Introduction

Continuous or ongoing training is considered to be a fundamental element for the successful functioning of any organization and for the achievement of its aims. In the specific case of continuous teacher training, the final purpose is to improve student learning through the acquisition of new professional skills by teachers.

However, the first step to updating knowledge appropriately lies in determining the teacher training needs. This would make it possible to define and adapt the specific contents of the training itself. Therefore, the process of detecting those needs is essential to being able to describe the differences between the actual situation and the ideal one, and so direct the process of change (Zaragoza, 2007).

As Pérez Serrano (1999) showed, teachers perceive that they need better training, both practical and scientific, in different areas. Specifically, most teachers agreed that they needed to learn strategies for collaborative work and research in the classroom, as well as improve their knowledge in ICT. They also stated that they needed to acquire techniques and skills for creating educational projects, carrying out tutorials, and giving guidance to students. Lastly, they asserted that they preferred continuous training courses to be held during work hours and that attendance be compulsory.

The continuous training and ongoing development of the teachers is determined, among other factors, by legislative changes. One of the most recent changes in Spain came with Organic Law 2/2006, of 3rd May, on Education (LOE), in which the term "Dificultades Específicas de Aprendizaje (DEA)" (Specific Learning Disabilities, SLD) was included for the first time. Specifically, Section II is devoted to "Equity in Education", and includes students with SLDs in "students with specific need of educational support". This law represents a significant milestone in the development of the SLD field, since it recognizes them for the first time at the legislative level as a specific category and opens up the possibility of setting up the support needed for these types of students. More recently, with Organic Law 8/2013, of 9th December, for the Improvement of Education Quality (LOMCE), a fourth sub-section has been added to Chapter I of Section II, and one article, 79 bis, with specific aspects referring to the enrolment and care of students with SLDs.

According to DSM-5's diagnostic criteria, the term SLD refers to a heterogeneous group of disabilities characterized by persistent difficulties in learning academic skills (reading, writing, written expression, and mathematics). The symptoms of learning disabilities should last at least six months, even when interventions aimed specifically at improving them have been put in place. Furthermore, the academic skills affected should be significantly below the expected level according to the person's age, and interfere in their performance both academically and in their daily life. Learning Disabilities are not due to intellectual, sensory or linguistic disabilities, nor due to inadequate teaching or an environment that is socioculturally disadvantaged (APA, 2014).

One of the consequences of recognizing SLDs at the legislative level in Spain has been the inclusion of the subject "Learning Difficulties" in the Primary Education and Early Childhood Education degrees (ANECA, 2010). This has meant that new graduates have had the opportunity to gain specific knowledge about SLDs. However, current teachers who took the Primary Education Diploma did not have this opportunity in their university course, and therefore there may be the need for training in this area.

The review carried out by Castejón (2004) highlights the importance of studying the attitudes of teachers concerning Special Educational Needs (SEN) in order to implement, where necessary, programmes adapted to the characteristics of this group. However, to our knowledge no studies have been made about the detection of the training needs of teachers about SLDs in Spanish-speaking population. This, therefore, is the general aim of the present study.

Up until now, most of studies on detecting the needs of teachers or on evaluating the attitudes and knowledge of primary-education teachers have looked at SEN in general (e.g. Alemany & Villuendas, 2004; Álvarez, Castro, Campo-Mon & Álvarez-Martino, 2005; Domenech, Esbrí, González & Miret, 2005). In these studies, the instruments used were questionnaires and semi-structured interviews designed specifically for the studies, with the aim of evaluating the attitudes of teachers from different specialities toward students with SEN.

The main conclusions these studies made were that there was a positive attitude toward integration but that most teachers agreed that the lack of training and integration for students with special educational needs was due to the poor management of education administrations and the lack of resources. They also found that the teachers specializing in Special Education, Hearing and Language, Therapeutic Pedagogy, and Music Education had a more positive attitude toward integration compared to early-childhood and foreign-language teachers, who held more negative attitudes (e.g. Domenech et al., 2005).

A large difference can also be observed regarding the personnel available for taking care of these students in a school: state-school teachers believe that they are better equipped than their charter-school counterparts, and that there is not a great deal of knowledge about the schooling modalities. However, a high percentage of teachers have completely acquired the concept of SEN (Domenech, Esbrí, González & Miret, 2005; Álvarez, Castro, Campo-Mon & Álvarez-Martino, 2005).

Lastly, teachers are aware of the lack of training and of the need for co-operation between the different specialists in a school, and that significant changes in methodology and in the curriculum may be needed. Nonetheless, they are also conscious of the fact that this is not always possible due to lack of time and resources (Alemany & Villuendas, 2004).

Other studies also exist that examine the training needs of teachers in Spain in Secondary Education and "Bachillerato" (A-Level/High-School Diploma) (López & Llorent, 2012; Valdés & Perezgazga, 2004). The methodology most used in these studies was also that of questionnaires and interviews as instruments for gathering information. One of the most relevant results was that 100% of the samples considered their initial training in a negative way, and thus the area where they had the most problems was that of attending to students with SEN. Specifically they highlight the difficulties of carrying out activities with ICT and of adapting exams to the characteristics of these pupils (López & Llorent, 2012). There was also evidence of a general need for training in carrying out collaborative

work and on updates in the fields of pedagogy and teaching (Valdés & Perezgazga, 2004).

Training needs have also been studied with the inclusion, as participants, of students taking different degree courses in the field of education, such as Pedagogy or Teacher Training (Sales, Moliner, Odet & Sanchís, 2001; Tenorio, 2011). Both these studies used questionnaires and/or semi-structured interviews on SEN, disability, inclusion, attending to diversity, and school integration. The results showed that most students did not feel that they were sufficiently prepared to teach students with SEN, and if they could choose they would prefer not to have these types of students enrolled in their classrooms. Both studies also agree on observing a negative attitude toward integration and the inclusion of students with SEN. Lastly, only a minority of the sample considered that it was better to educate these students in ordinary schools; most thought they should be in a specialist school. However, most teachers stated that the presence of students with SEN was favourable for the rest of their classmates, since it developed positive attitudes toward integration.

Furthermore, it has been confirmed that many teachers do not have a clear concepts regarding SEN, inclusion and disability (Tenorio, 2011). The large majority of the sample were in agreement in stating that their initial training focused more on curricular/subject knowledge than on pedagogy, thus explaining their lack of training on SEN. Likewise, it was shown that most education students did not remember having dealt with these concepts during their degree course, and that the information and tools they had on these topics had been acquired outside of university.

Based on the bibliographical review, the general aim of this study is to discover whether there is a need for training on SLDs for primary-education teachers. As specific objectives, we aim to examine the influence of two variables that could affect the knowledge and attitudes of teachers: years of teaching experience and the type of professional certification undertaken. In this regard, our hypothesis is that a higher number of years of teaching experience will be related to greater theoretical and practical knowledge of SLDs. Similarly, we expect to observe that teachers who specialized in SEN or Hearing and Language show a greater knowledge of SLDs. In order to examine the knowledge and attitudes held by primary-education teachers on the SLDs, we designed a questionnaire that includes questions with a Likert scale, open questions, and multiple-answer questions. This questionnaire is structured in four segments: academic training, specific knowledge of SLDs, professional experience, and training needs.

## Method

### *Research Design*

The present research follows a descriptive design with exploratory approach which studies the knowledge of primary school teachers about SLD through a questionnaire designed specifically for this research (see details in section "Instruments").

### *Participants*

At the first stage of sampling, fifteen schools were taken randomly by lottery method from four geographical location in the South of Spain. In these 15 schools, 118 questionnaires were handed out and 75 collected from eleven schools. In other words, there was a response rate of 63.6%. The final sample of teachers came from both public schools (70.7%) and private subsidized schools (29.3%), and all had a medium socio-economic level. The number of students per classroom ranged from 18 to 27.

The description of the participants is presented in Table 1. Regarding their specialization, 32% are general teachers, 13.33% are foreign-language teachers, 9.33% music teachers, 5.3% Special Education, 13.33% Physical Education, and 1.33% Roman Catholic Religion while the remaining 25.35% did not specify a specialization.

**Table 1.**
*Description of the sample of participating teachers*

| % Women | % Men | Mean age (minimum and maximum) | Mean years of teaching experience (minimum and maximum) | % of the sample with other university studies/ degrees |
|---|---|---|---|---|
| 44 | 56 | 38.6 (23-62 years old) | 12.1 (2 months - 39 years) | 52% |

## Instruments

The instrument used in this study was a questionnaire designed specifically for this research (see Annex). The basis for its creation was the questionnaire used in the study by Álvarez et al. (2005). The questionnaire is structured in four sections with a total of 57 questions. Fifty questions are in the format of a Likert-type answer, where 1 indicates "completely disagree" and 5 corresponds to "completely agree". An option 6 is also included, for "n/a or don't know". Four questions are multiple-choice (items 10 to 13), and three questions (items 1, 2 and 9) are open-answer. A reliability analysis was conducted of the Likert-scale items, and the reliability obtained, calculated using Cronbach's alpha, is 0.72.

Following the opening part, in which the personal data on the school and teacher surveyed are collected, the first section focuses on aspects related to academic training. Specifically, information is gathered on the reason why they studied teacher training, if they received training on SLDs during their degree, and whether they have attended teacher-training courses on SLDs.

In the second section, information is collected on teachers' specific knowledge on SLDs. Specifically, the participants are asked about the definition and types of SLD, the professionals who are responsible for assessment and intervention, the legislation that deals with SLDs, and their characteristics.

The third section brings together aspects of professional experience with students with SLDs. The questions include information on actions for their integration, the use and provision of material for working, availability and collaboration of the educational community, among other related questions.

Lastly, the fourth segment addresses the perception of the training needs that each teacher has in aspects such as the school placement of children with SLDs, teaching materials, time and classroom organization, and making curricular adaptations and intervention.

*Procedure*

First we contacted the headteachers of schools to request their participation in the study. In the cases where they agreed to collaborate, we delivered the questionnaires personally and set a date for their collection (between one and three weeks later). Before completing the questionnaires, it was explained that the process was anonymous and that there were no right or wrong answers, and an introduction was given explaining the purpose of the questionnaire.

The data collection was carried out with the written informed consent of the teachers. The purpose of the study were explained before the data collection. The anonymity and confidentiality regarding all information collected was maintained and the information provided by them was used only for the research purpose.

**Results**

The results are presented using descriptive analysis of the response frequency of the answers in each of the categories evaluated. The SPSS (version 20.0) statistical program was used to do this.

*Section A. Academic Training*

Looking at academic training, Table 2 shows the distribution of response frequency to each option in the whole sample (75 teachers). As we can see, most participants indicate that they studied teaching due to a sense of vocation and not because their grades were insufficient to enter a different degree (items 3 and 4). For item 5, on the training received during their university degree, the most frequent responses show that they did not study specific subjects on SLDs. Despite the fact that most teachers frequently attend teacher-training courses, they also indicate that those courses tend not to be specifically on SLDs. Lastly, the responses to item 8 show that they do not believe that they have a high level of general training on SLDs.

Regarding the specific objectives, we carried out a response frequency analysis as a function of training (specific and general), and years of experience (more than or less than 15 years). However, the sample distribution was not homogeneous, which means that the interpretation of the results is limited. Regarding the frequencies in Section A distributed according to specific and general training, we can observe that the result profile is similar in both groups and in the whole sample, except the response to item 7, in which the teachers with specific training state that they had taken courses on SLDs whereas the general teachers had not.

**Table 2.**

*Percentage of frequencies for each option in Section A for the total sample.*

| | | Response Options (1 = Completely disagree; 5 = Completely agree; 6 = n/a or Don't know) | | | | | |
|---|---|---|---|---|---|---|---|
| | Mode | 1 | 2 | 3 | 4 | 5 | 6 |
| 3- Vocation | 5 | 2.7 | 1.3 | 9.3 | 12 | 73.3 | 1.3 |
| 4- No qualification | 1 | 91.4 | 0 | 1.4 | 0 | 4.3 | 2.9 |
| 5- I have received training on SLDs | 3 | 21.9 | 16.4 | 27.4 | 16.4 | 13.7 | 4.1 |
| 6- I attend courses | 4 | 0 | 8.2 | 32.9 | 34.2 | 21.9 | 2.7 |
| 7- I have done SLD courses | 1 | 27.4 | 23.3 | 12.3 | 20.5 | 12.3 | 4.1 |
| 8- My training on SLDs is high | 3 | 9.6 | 30.7 | 32.9 | 20.5 | 2.7 | 2.7 |

The comparison of frequencies between the teachers with more than and less than 15 years teaching experience indicates that there is a difference, whereby the teachers with greater experience stated that during their university training they had not received any SLD training, whereas the teachers with less experience had received some type of training.

*Section B. Specific Knowledge of SLDs*

In order to analyse item 9, an open question on the definition of SLDs, all the responses were reviewed, and then three categories were established according to

the common ideas the teachers revealed. Most of the teachers' answers (72%) were included in category A, which comprised those with no answer or those that simply repeated the meaning of the initials SLD. In category B (14.7%), the answers referred to aspects included in the definition of SLD, such as that they are not due to a lower intellectual capacity, and give examples such as dyslexia, dysgraphia or dyscalculia. Lastly, category C comprises answers, representing 13.3% of the sample, that correspond to mistaken conceptions since they state that SLDs are caused by decreased cognitive abilities or attention problems. They also state that these students need to follow a parallel curriculum.

For the analysis of question 10, the teachers were deemed to have obtained the maximum score of 9 if they underlined the four SLDs and left the other five distractors unmarked. Thus 48% had between eight and nine correct answers, 28% obtained 6 to 7 correct answers, 18.6% had between 3 and 5, while 5.3% had no correct answer.

The general results of questions 11, 12 and 13 show that 70% of the teachers state that the identification and assessment of SLDs should lie with different professionals, that is, with tutors, guidance counsellors, Therapeutic Pedagogy (TP) teachers, psychologists, or teachers specializing in SEN or Hearing and Language. Furthermore, 30% indicate that this should be done with a combination of the aforementioned professionals, always including more than one. In addition, regarding intervention, 85% of the sample think that all the aforementioned professionals along with the family should be responsible for its undertaking.

Table 3 shows the frequency distribution for the Likert-scale items of Section B. As can be observed, the results obtained in questions 14 and 15 show that most of the participants do not know the latest version of the regulations regarding SLDs, and consider that they need more knowledge on the legal changes. Likewise, they state that they do not have a clear understanding of the different types of SLD, although most are able to identify some important characteristics, such as that they do not present low intelligence, they tend to be a heterogeneous group, and do not always need curricular adaptations (items 16, 17, 18, 20 and 24). Question 19 produces a surprising frequency pattern, in that the teachers' responses show that SLDs are not normally detected or evaluated in Primary Education. And in questions 21, 22 and 23, we observe how most of the sample do not know whether the current legislation makes it possible to give an adequate educational response to children with SLDs, nor whether the educational community provides specific economic resources for students with SLDs. Moreover, they tend not to know the number of children with SLDs in a classroom.

**Table 3.**
*Percentage of frequencies to each response option in Section B for the total sample.*

| | Response Options (1 = Completely disagree; 5 = Completely agree; 6 = n/a or Don't know) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Mode | 1 | 2 | 3 | 4 | 5 | 6 |
| 14- I know the legislative changes | 1 | 34.7 | 26.7 | 17.3 | 9.3 | 8% | 4% |
| 15- I need knowledge of changes | 5 | 5.3 | 5.3 | 13.3 | 20 | 54.7 | 1.3 |
| 16- I know the LD characteristics | 3 | 13.7 | 26 | 31.5 | 19.2 | 8.2 | 1.3 |
| 17- Low intelligence | 1 | 53.3 | 17.3 | 18.7 | 1.3 | 4% | 5.3 |
| 18- Homogeneous group | 1 | 63.5 | 16.2 | 5.4 | 4.1 | 2.7 | 8.1 |
| 19- They detect and assess in P.E. | 1 | 22.9 | 18.9 | 20.3 | 9.5 | 17.6 | 10.8 |
| 20- They do not achieve objectives | 3 | 21.3 | 22.7 | 26.7 | 17.3 | 4 | 8 |
| 21- Legislation meets needs | 6 | 21.7 | 14.9 | 17.6 | 6.8 | 4.1 | 35.1 |
| 22- Economic resources | 6 | 16.7 | 29.2 | 13.9 | 5.6 | 1.4 | 33.3 |
| 23- I know the number | 3 | 11 | 9.6 | 28.8 | 15.1 | 15.1 | 20.5 |
| 24- Curricular adaptations | 1 | 51.4 | 14.9 | 10.8 | 8.1 | 8.1 | 6.8 |

As with the previous section of the questionnaire, the result pattern does not show notable differences, except in items 22 and 23, where the teachers with specific training indicate that they do not know the number of students with SLDs in their classes, and highlight the lack of sufficient economic resources.

Continuing with the comparison between teachers with more than and less than 15 years of experience, the teachers with more experience have less knowledge of the different types of SLD than those with less experience. Another observable discrepancy occurs in item 19, in which the teachers with less experience are more in agreement in affirming that SLDs are detected and assessed.

*Section C. Professional Experience*

The percentages of responses in Section C of the whole sample are shown in Table 4. Most of those surveyed currently have students with SLDs in their class, or have had them at some point in their career (items 25 and 26). Most also believe, as shown in item 27, that these students should be schooled in an ordinary classroom, since they state that they would give them the necessary attention, as we can observe in the responses to question 28. Furthermore, many of the participants indicate that they have detected children with SLDs in their class at some time (item 29). From the responses to item 30, we can discern that families tend to find it difficult to accept the fact when their child is identified or detected with an SLD.

However, the teachers indicate that there is limited knowledge in the education community regarding how to handle these types of student (item 31), and that they do not usually have sufficient human resources (item 33) or specific materials (item 41). They also show high agreement over their integration in school (item 32), and 50.7% do not think that they are detrimental to the rest of the class (item 35). However, they do indicate that their integration requires a lot of effort and attention from the teacher (item 38), and they can occasionally hamper the pace of the class (item 34).

The teachers perceive that the children with SLDs behave adequately (item 39), and they tend to have high expectations of them (item 37), although in general they reveal a diversity of opinions regarding their preference for working with them (items 36 and 43). Lastly, the answers to item 42, on curricular adaptation, are noteworthy, for although the mode is option 2, there is a fairly similar percentage for all of the options.

**Table 4.**

*Percentage of frequencies for each option in Section C for the total sample*

| | | Response options (1 = Completely disagree; 5 = Completely agree; 6 = n/a or Don't know) | | | | | |
|---|---|---|---|---|---|---|---|
| | Mode | 1 | 2 | 3 | 4 | 5 | 6 |
| 25- I have SLD students | 5 | 25.3 | 4 | 5.3 | 9.3 | 53.3 | 2.7 |
| 26- I have never had students with SLD | 1 | 75.7 | 0 | 9.5 | 2.7 | 10.8 | 1.3 |
| 27- Children with SLDs are in my classrooms | 5 | 1.3 | 5.3 | 21.3 | 22.7 | 46.7 | 2.7 |
| 28- I would give them the attention they need | 5 | 4 | 2.7 | 14.7 | 22.7 | 53.3 | 2.7 |
| 29- I have detected SLDs | 5 | 10.8 | 5.4 | 12.2 | 20.3 | 48.6 | 2.7 |
| 30- The family of children with SLDs | 3 | 9.3 | 20 | 37.3 | 17.3 | 8 | 8 |
| 31- The education community has knowledge | 3 | 10.8 | 22.7 | 25.3 | 21.6 | 10.8 | 8.1 |
| 32- Integration of students with SLDs | 4 | 5.3 | 2.7 | 24 | 29.3 | 26.7 | 4 |
| 33- The education community has the necessary human resources | 3 | 13.3 | 22.7 | 34.7 | 9.3 | 13.3 | 6.7 |
| 34- SLDs hamper the pace of the class | 3 | 24 | 18.7 | 36 | 14.7 | 5.3 | 1.3 |
| 35- SLDs are detrimental to the rest | 1 | 50.7 | 20 | 14.7 | 8 | 4 | 2.7 |
| 36- I would prefer not to have students with SLDs | 1 | 43.1 | 8.33 | 19.4 | 12.5 | 12.5 | 4.2 |
| 37- I do not have high expectations | 1 | 52 | 17.3 | 16 | 6.7 | 6.7 | 1.3 |
| 38- The problem of integrating | 5 | 5.3 | 13.3 | 18.7 | 29.3 | 30.7 | 2.7 |
| 39- They behave adequately | 3 | 4 | 13.3 | 33.3 | 29.3 | 17.3 | 2.7 |
| 40- Specialized materials | 5 | 8 | 1.3 | 10.7 | 22.7 | 54.7 | 2.6 |
| 41- I have specific materials available | 3 | 27 | 17.6 | 28.4 | 19 | 5.4 | 2.7 |
| 42- Tutors responsible for curricular adaptations | 2 | 19.2 | 21.2 | 21.2 | 19.2 | 12.3 | 5.5 |
| 43- I like working with students with SLDs | 3 | 4.1 | 10.8 | 33.8 | 27 | 17.6 | 6.7 |

The response frequencies of the teachers with specific and general training show that, although the general profile is similar to the whole sample, differences are observed regarding the complete agreement shown by the specialist teachers in affirming that the tutors are responsible for the devising and following of curricular adaptations, whereas the general teachers disagree with this statement. Another discrepancy observed here is that the specialist teachers show a higher liking for working with these students than the teachers without specialized training.

The responses of the teachers with more than and less than 15 years of experience show differences, specifically that the more practised teachers consider that they have few specific materials to assist with the problems of children with SLDs. We also observe a notable difference in item 42, where the teachers with more than 15 years' experience show complete disagreement with the idea that curricular adaptations should be the exclusive task of the tutor.

*Section D. Training Needs*

The results for the section on training needs are shown in Table 5. Regarding item 44, 26.67% indicate that they know the procedure to follow with already diagnosed children, yet 21.33% state that they have no knowledge in this regard. There is no complete agreement on the knowledge the teachers possess for designing curricular adaptations (item 50), as the response percentages are similar.

Similarly, 34.67% indicate that they know the procedures to follow for children that have not been diagnosed, but also 24% show little or no knowledge. However, 43.2% feel capable of identifying children with SLDs in the classroom, although the responses to item 53 show that most do not know how to assess these types of students.

There is a high level of agreement in stating that there are not enough continuous teacher development courses to enhance their knowledge of SLDs (item 51), as there is in recognizing that they need more complementary training to identify and intervene with these children (items 54 and 55). Lastly, a representative number of the sample consider that their colleagues need training on identification and intervention, and that currently Hearing and Language and SEN teachers are the only ones who possess specific training on SLDs (items 56 and 57).

Regarding the comparison between teachers with specific and general training, we observe that the teachers with specialized training show more knowledge on the assessment of children with SLDs and on how to organize the classroom when they are present. There is also a discrepancy concerning the availability of training courses, whereby the teachers

with general training indicate that there is more availability than the teachers with specific training.

The comparison between teachers with more than and less than fifteen years of teaching experience, meanwhile, reveals differences: the less experienced teachers consider that they have more training to assess a student with an SLD than their more experienced counterparts; they are more in agreement over their training for devising curricular adaptations for SLD students; and also agree more on their knowledge of teaching materials and resources for these students.

**Table 5.**
*Percentage of frequencies for each option in Section D for the total sample.*

| | Response options (1 = Completely disagree; 5 = Completely agree; 6 = n/a or Don't know) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Mode | 1 | 2 | 3 | 4 | 5 | 6 |
| 44- Enrol diagnosed in school | 4 | 21.3 | 8 | 17.3 | 26.7 | 17.3 | 9.3 |
| 45- Enrol non-diagnosed in school | 4 | 12 | 12 | 14.7 | 34.7 | 17.3 | 9.3 |
| 46- I know how to assess | 1 | 26.7 | 18.7 | 22.7 | 17.3 | 6.7 | 8 |
| 47- I have knowledge on teaching materials | 3 | 18.7 | 22.7 | 29.3 | 20 | 4 | 5.3 |
| 48- Organize the classroom | 5 | 6.7 | 14.7 | 24 | 20 | 33.3 | 1.3 |
| 49- Programme time | 5 | 6.7 | 13.5 | 23 | 18.9 | 33.8 | 4.1 |
| 50- Make adaptations | 3 | 16.4 | 21.9 | 24.6 | 19.2 | 9.6 | 8.2 |
| 51- Courses are made available | 1 | 25.7 | 24.3 | 20.3 | 14.9 | 1.3 | 13.5 |
| 52- Identify a student | 4 | 5.4 | 9.4 | 23 | 43.2 | 17.6 | 1.3 |
| 53- Assess a student with SLD | 3 | 21.6 | 17.6 | 29.7 | 18.9 | 10.8 | 1.3 |
| 54- Training for intervention | 5 | 4.1 | 12.2 | 17.6 | 22.9 | 41.9 | 1.3 |
| 55- Training for identifying | 5 | 5.4 | 9.4 | 16.2 | 28.4 | 39.2 | 1.3 |
| 56- My colleagues | 5 | 4.2 | 6.9 | 11.1 | 26.4 | 36.1 | 15.3 |
| 57- Hearing and Language and SEN teachers | 5 | 6.7 | 12.2 | 23 | 21.6 | 28.4 | 8.1 |

## Discussion

The general purpose of this study was to determine the possible existence of teachers' training needs on SLDs. In order to do so, as per the methodology of the studies we reviewed, we drew up a questionnaire, which was applied to 75 teachers from 11 state and charter schools. The results of this ground-breaking study in Spain confirm that most teachers did not have specific training on SLDs during their university teaching degree. As stated above, only the teachers specializing in Special Educational Needs, and Hearing and Language, had been taught subjects relating to SLDs during their university degree. The results also show that teachers tend to do training courses but highlight that courses specifically on SLDs are not usually available.

Regarding knowledge on SLDs, it is noteworthy that only 14.7% can name some fundamental aspects of their definition, while the large majority do not know the new laws concerning SLDs, nor their estimated prevalence. Nevertheless, they do recognize examples of SLDs and some of their characteristics (e.g. they are a heterogeneous group, or that they have average intellectual abilities). This result contrasts with Thomas & Uthaman (2019) which observed that 63% of the participants had an average level of knowledge about SLD. As Castejón (2004) and Zaragoza (2007) have shown, defining the baseline is essential for the adequate design of an adapted training action. In this case, as they are education professionals, we observe a notable level of prior knowledge regarding the topic, but they have also demonstrated lacunae that a training activity could fill.

Our results show that 75.67% of the teachers state having had students with SLDs in their classroom at some time in their teaching career, and 53.33% report that they have them in the current academic year. This is in line with studies that indicate the high prevalence of these types of difficulties (Jiménez, Guzmán, Rodríguez & Artiles, 2009), and makes clear the great importance of developing the necessary skills in teachers for helping these children overcome their challenges. It also needs to be highlighted that, as in the study by Álvarez et al. (2005) on special educational needs, the attitude of teachers toward students with SLDs is positive, and they report having good expectations of them. This fact will enable a possible training action to be developed more smoothly and with suitable motivation from the participants. Thomas & Uthaman (2019) found a significant correlation between teachers´ knowledge and their attitude towards inclusive education, therefore, it can be considered essential to increase the knowledge in this field to ensure an educational response for these students.

In terms of the teachers' perception of a need for training, they report that their knowledge of SLDs is inadequate. Therefore, they require training courses that would enable them to acquire the tools for identifying, assessing and intervening with students with SLDs. They perceive this need both for themselves and for their colleagues, except SEN and Hearing and Language teachers. These results converge with those of Pérez Serrano (1999), in which the teachers were also aware of their lack of knowledge and requested continuous training. In keeping with the study by Alemany and Villuendas (2004), the teachers highlight the difficulty that attending to children with SLDs entails, since they have limited material and human resources to deal with the reality they face in the classroom. In this regard, one of the objectives that could be solved by continuous training of teachers would be to offset the limitations of specialized personnel in schools in order to facilitate the integration and care of these students. Beyond this, as pointed out Woodcock (2013), educators need

to understand the impact and relevance that their attitudes and knowledge in students with SLD, that is educators must understand the indirect messages that they may send to students with SLD and how these can have dangerous consequences more than academic context.

On the other hand, as specific objectives, this study aimed to verify whether years of teaching experience and the type of teaching degree studied affected the attitudes and knowledge of the teachers on this subject. The results are not conclusive, since the final sample distribution in the groups was very unequal. Nevertheless, despite the limitations, we observe a similar pattern of results except in the group of specialist teachers in the questions regarding greater continuous training and motivation for working with these types of students.

There are differences regarding the comparison of teachers with more and less experience, in line with the studies by Tenorio (2011) and Sales, Moliner, Odet and Sanchís (2001). Specifically, we can see that the teachers with less experience state that they have had training on SLDs during their university degree. This discrepancy could be due to the fact that the SLD category was not legally recognized in Spain until the Spanish Organic Law of 2006.

It should be stated that this study has certain limitations related to the sample and the instrument used. Teacher participation was voluntary and, as mentioned above, only 63.6% completed the questionnaire. This fact could indicate that the sample is biased, since it may be that only those teachers responded who had a particular motivation for participating in the university study and/or who had greater knowledge of SLDs. Regarding the questionnaire, it has been detected that certain items could present social desirability, such as: "If I had students with SLDs in my classroom I would give them the attention they need." For this reason, this study could be considered a pilot study for validating the questionnaire and for selecting more precise items to detect the needs of teachers.

As a continuation of the exploratory study carried out in this research, we should consider conducting further studies with the comprehensive participation of all teachers in order to avoid biases. Moreover, the number and type of participating schools could be increased (with different cities and socio-economic environments) to make the results more representative. In addition, we would pursue the aim of achieving an equal sample of teachers with different training and experience so that the results can be interpretable and would meet the specific aims established in this study.

Based on the results of this study, we conclude that the proposal for continuous teacher training courses on SLDs is important for active teachers. We suggest, in response to the gaps in knowledge we have detected, that a training action be initiated that includes content related to definition, types, manifestation, legislative changes, identification, assessment, and intervention in the classroom (including materials that can be used). Since this content is now taught in Primary Education degrees, we propose the possibility of carrying out a joint training course between active teachers and recent graduates, where both groups can mutually benefit one another, the recent graduates sharing their up-to-date knowledge and the active teachers their experience of the reality found in schools.

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## ANNEX: QUESTIONNAIRE DESIGNED IN THE STUDY

QUESTIONNAIRE ON ATTITUDES OF TEACHERS REGARDING SLDs

The aim of this questionnaire is to carry out a research on the attitudes of primary-education teachers regarding Specific Learning Disabilities (SLDs). The data that are requested in this questionnaire are strictly confidential and will only be used on a mass level, not individually. Please read carefully and answer all the questions. Your collaboration and sincerity will help us to understand the reality of this subject matter and the possible teacher training needs related to it.

Bear in mind that there are no right or wrong answers. Your responses will only show your opinion and teaching experience, and therefore they are all valid.

We thank you in advance for your collaboration.

PERSONAL AND SCHOOL INFORMATION:

Age: Sex:

Year of graduation from teaching degree:

Years of teaching experience:

Specialization:

Type of school: State___ Charter____ Private____

Location: City centre___ Metropolitan area____

Primary Education Years/Grades currently teaching:

Primary Education Years/Grades you have taught for the majority of your professional career:

N° of students in your class:

Below you are presented with a series of statements and questions, organized into four sections, on academic training, specific knowledge of SLDs, professional experience, and training needs, which should be answered with the utmost sincerity possible. At the end of the questionnaire, there is a section for comments, if you consider it appropriate to make any observation that has not been dealt with in the questionnaire.

Most questions give you an answer scale, where 1 equals "Completely disagree" and 5 equals "Completely agree" with the statement in question. There is also an option 6, which equals n/a or "don't know", if you have no information or knowledge to be able to answer that question.

**A. ACADEMIC TRAINING**

1-Do you have other university qualifications besides the teaching degree? What are they?

2-Do you have a Master's Degree related to Education?

| | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 3 | I studied teaching due to a sense of vocation | | | | | | |
| 4 | I studied teaching because I did not get good enough grades to do another degree | | | | | | |
| 5 | During my teaching degree, I received training on SLDs | | | | | | |
| 6 | I have attended courses organized for the continuous training of teachers | | | | | | |
| 7 | I have attended continuous teacher training courses on SLDs. | | | | | | |
| 8 | I consider that I have had a high level of training for attending to students with SLDs | | | | | | |

**B. SPECIFIC KNOWLEDGE OF SLDs**

9- What do you understand by students with SLDs?

10- From the following options, underline those you consider to be part of the category of "Specific Learning Disabilities": Dyslexia, Dyslalia, Dyscalculia, Down's Syndrome, Dysgraphia, Reading Delay, Intellectual Disability, Physical Disability, Specific Language Impairment.

11- Students with SLDs should be schooled in:

a) an ordinary classroom c) specialist schools

b) specific classrooms in ordinary schools d) integration-support classrooms

12- Of the following professionals, indicate those responsible for SLDs in terms of early detection and assessment:

a) Teachers b) Tutors c) Counsellor

d) Therapeutic Pedagogy teacher e) Hearing and Language teacher

f) Psychologist g) Doctor h) Speech therapist i) Others:_____...

13- Of the following professionals, indicate those responsible for SLDs in terms of intervention:

a) Teachers b) Tutors c) Counsellor

d) Therapeutic Pedagogy teacher e) Hearing and Language teacher

f) Psychologist g) Doctor h) Speech therapist i) Others...:_____

| | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 14 | I know the latest changes in the education regulations of the autonomous community where I work | | | | | | |
| 15 | The current legislation makes it possible to meet the needs of children with SLDs | | | | | | |
| 16 | In the autonomous community where I work, actions, plans, programmes, accords, etc., aimed at students with SLDs have been put into action | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 17 | Children with SLDs tend to have a below-average intelligence | | | | | | |
| 18 | Children with SLDs tend to be a homogeneous group | | | | | | |
| 19 | All SLDs tend to be evaluated in Primary Education | | | | | | |
| 20 | Despite providing sufficient support, children with SLDs are not capable of achieving the same objectives as the rest of their classmates | | | | | | |
| 21 | There are professionals who attend specifically to students with SLDs in my school | | | | | | |
| 22 | The education community provides specific economic resources for attending to students with SLDs | | | | | | |
| 23 | I know the number of children with SLDs there are in my school | | | | | | |

**C. PROFESSIONAL EXPERIENCE**

| | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 24 | Before working, I had already had dealings with students with SLDs | | | | | | |
| 25 | Currently there are students with SLDs in my class | | | | | | |
| 26 | I have never had contact with students with SLDs | | | | | | |
| 27 | I think it is appropriate that children with SLDs are in ordinary classrooms | | | | | | |
| 28 | If I had students with SLDs in my classroom I would give them the attention they need | | | | | | |
| 29 | I have at some point detected children with SLDs in my class | | | | | | |
| 30 | The families of children with SLDs do not have a problem accepting it and usually collaborate | | | | | | |
| 31 | The education community has adequate knowledge about how to deal with SLDs | | | | | | |
| 32 | Students with SLDs are fully integrated in the school | | | | | | |
| 33 | The education community has the necessary human and material resources to meet the needs of students with SLDs | | | | | | |
| 34 | I think that students with SLDs hamper the pace of the class | | | | | | |
| 35 | Having students with SLDs in the classroom is detrimental to the rest of the students | | | | | | |
| 36 | If I could choose, I would prefer not to have students with SLDs in my classroom | | | | | | |
| 37 | I recognize that I do not have high expectations for the improvement of students with SLDs | | | | | | |
| 38 | The problem of integrating a child with an SLD in the ordinary classroom is that it requires a lot of time and attention from the teacher | | | | | | |
| 39 | The students with SLDs tend to behave appropriately in class | | | | | | |
| 40 | I believe that the use of specialized materials facilitates the learning of students with SLDs | | | | | | |
| 41 | I have specific materials available to address the problems of children with SLDs | | | | | | |
| 42 | Tutors should be the ones responsible for the design and monitoring of curricular adaptations | | | | | | |
| 43 | In general, I like working with students with SLDs | | | | | | |

**D. TRAINING NEEDS**

| | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 44 | I know the procedure to be followed when a student already diagnosed with an SLD is enrolled in my class | | | | | | |
| 45 | I know the procedure to be followed when a student with an undiagnosed SLD is enrolled in my class | | | | | | |
| 46 | I know how to assess a child to detect whether they have an SLD | | | | | | |
| 47 | I have knowledge on teaching materials and resources for students with SLDs | | | | | | |
| 48 | I know how to organize the classroom when there are students with SLDs | | | | | | |
| 49 | I have knowledge about how to programme time with students with SLDs | | | | | | |
| 50 | I know how to design curricular adaptations for students with SLDs | | | | | | |
| 51 | Sufficient continuous teacher training courses are currently being offered to expand my knowledge about SLDs | | | | | | |
| 52 | I believe that I am capable of identifying a student with an undiagnosed SLD in my classroom | | | | | | |
| 53 | I believe that I would be capable of assessing a student with an SLD | | | | | | |
| 54 | I believe that I need more training on intervening with children with SLDs in the classroom | | | | | | |
| 55 | I believe that I need complementary training to identify and intervene with children with SLDs | | | | | | |
| 56 | I believe that most of my colleagues need training on identification and intervention of SLDs in the classroom | | | | | | |
| 57 | I believe that currently only Hearing and Language teachers and SEN teachers have specific training on SLDs in schools | | | | | | |

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# The Use of Digital Technologies in Professional Training of Primary School Teachers

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## Abstract

The growing significance of digital technologies in society creates a need to train teachers who can use these technologies in the educational process and prepare students for life in the digital world. The aim of this study was to analyse the impact of digital technologies used in professional training of primary school teachers on increasing their professional competence level. The adapted versions of Ferrell & Daniel's test for Measuring Teacher Career Motivations, the Orshanski's orientation of future teachers towards humanistic and professional value were used to diagnose the state of development of professional competence. The level of the development of the subject-subjective model of pedagogical communication (modified test based on Sternberg & Williams, Alexander & Winne) and the level of projective skills in primary school teachers were also diagnosed. The students' performance was assessed based on the results of the examinations. Chi-squared test ($\chi 2$) was used for statistical confirmation of the conducted research. Positive dynamics were found in both groups after the formative stage of the experiment. However, the experimental group was noted for greater quantitative and qualitative improvement for the selected criteria. The largest changes were observed for the operational criterion with a difference of 15.40% (against 7.90% in the control group). The cognitive criterion showed the smallest increase: 8.5% in the experimental group compared to 3.4% in the control group. The high general mean showed a difference of 11.22% for the experimental group and 5.1% for the control group. It is also important to note a greater increase in the average indicator at the general level in the experimental group of 52.04% compared to 40.82% in the control group. The differences in the distributions of the control and experimental groups according to the levels of each criterion are statistically reliable and testify to the effectiveness of using digital technologies for the development of professional competence of future primary school teachers. The areas for further research include the analysis of the impact of digital technologies on the development of information literacy skills and critical thinking.

**Keywords:**

Education, Digital Technologies, Pedagogical Training, Primary Education, Innovations In Education, Computer Training

## Introduction

The modern world is experiencing rapid development of digital technologies. This transformation affects all areas of our lives, including education. It becomes especially important in professional training of primary school teachers. Now, children are growing up in a world where digital technologies have become an integral part of their daily lives, so teachers must be ready to use these technologies to improve learning and support children's development.

The use of digital tools and teaching methods is important to teach primary school teachers to be flexible and adaptable to changes. The ability to use digital tools will help them better adapt to new technologies and pedagogical approaches. When it comes to the professional training of future primary school teachers, it should be understood that at least 2-3 years will pass from the time of education of current students to the beginning of their pedagogical activities. According to the Pew Research Center, those born after 1997 and before 2012 belong to the so-called Generation Z (Dimock, 2019). This is the average statistical age of today's students of pedagogical specialties (representatives of generation Z are 12-27 years old as of 2024). The defining characteristics of representatives of this generation are defined as authentic digital natives who are a hyper cognitive generation, students of Generation Z (other names - iGeneration, Gen Tech, Online Generation, Facebook Generation, Switchers, "always clicking") are always connected to the network and fast in all types of activities they perform, including decision-making and implementation (Dolot, 2018). This means that an educational environment filled with digital technologies is the most and only optimal environment for the personal and professional development of students of higher education. However, it is worth taking into account, first of all, the fact that today's students will already teach those students of the category of primary school students who will belong to the Generation Alpha or the Google Kids generation born between 2010 (2012) and 2025 and even beyond (Hernandez-de-Menendez et al., 2020; Cickovska, 2020). It is predicted that the next generations will become even more attached to the world of digital technologies. Since the technological process is irreversible, this means that training future primary school teachers using digital technologies is not only the optimal way to build an educational paradigm for them (Generation Z), but the only way to make them competent in relevant teaching practices for use in independent pedagogical activities (for teaching young schoolchildren of the Generation Alpha and beyond). That is why the topic of the current article is acutely relevant and timely.

Lewin et al. (2019) note that digital technologies can improve the quality of learning and student assessment. Although digital technologies are well integrated into higher education environments, their impact on student achievement of higher education goals has not been empirically proven (Lacka et al., 2021).

Therefore, despite the large number of studies on this problem, there are not enough practical studies on the use of digital technologies in the professional training of primary school teachers.

The aim of this study is to analyse the impact of the use of digital technologies in the process of professional training of primary school teachers on increasing their level of professional competence.

The main objectives determined by the relevance of the issue under research are the following:

- determine the initial level of professional competence of future primary school teachers;

– research and analysis of the results achieved through the implementation of digital technologies in the educational process of primary school teachers;

- analysis of opportunities and limitations of using digital technologies in the process of training primary school teachers.

## Literature Review

Modern universities should revise their approach to education, moving away from the idea of training ready-to-work graduates. Instead, they should focus on providing students with knowledge and experience at the early stages of their studies, actively engaging them in technological innovation (Nguyen, 2018; Prensky, 2008). Researchers single out a number of key competencies, the formation of which is necessary for high-quality professional training of future teachers, in particular primary school teachers (Albarra Shidiq et al., 2022). These are such teachers' professional competencies as motivational (Chagovets et al., 2020), cognitive (Bardach & Klassen, 2020), communicative (Atavullayeva, 2023), operational activity criterion (Sharofutdinova, 2021) and personality (Vorkapić & Peloza, 2017; Kokkinos, 2007) of primary teachers. Nevertheless, one of the most relevant is the identification and characterization of digital competencies (Fernández-Batanero et al., 2022). However, the last one is already included into the recently adopted and implemented Professional Standard of Primary School Teachers (Ministry of Education and Science of Ukraine, 2020) as a separate competency. It is verbalized as information and digital competency. Nevertheless, it has an umbrella nature and penetrates as a supportive one into other listed competencies: linguistic and communicative, subject-methodical, psychological, emotional and ethical,

pedagogical partnership, inclusive, health-preserving, design, prognostic, organizational, evaluative and analytical, innovative, reflexive, lifelong learning ability. Research emphasizes the importance of digital competence as one of the challenges facing teachers today. There are also many typical shortcomings, which are manifested in insufficient quality digital competence in initial teacher training (Björk & Hatlevik, 2018).

When we talk about the digitization of the economy and society, we define it as an evolution that takes place due to the introduction and spread of digital technologies affecting all spheres of life and economy. In turn, digitization of education means the use of digital means to create, process, exchange and transfer information in the educational process (Shaxnoza, 2022). Digitalization is currently defined as "a series of profound and coordinated changes in culture, workforce, technology and operating models" (Brooks & McCormack, 2020, p. 3) that lead to cultural, organizational, and operational changes through the integration of digital technologies (Iosad, 2020).

The education in the modern world is aimed at technological learning and increasing the usability of new learning tools (Dudnyk, 2018; Marttinen et al., 2019). It is important not only to master new technologies, but also to adapt them to specific needs and tasks in a timely manner. Education becomes a process where a skill that is relevant today may lose its relevance tomorrow. This approach can be referred to as Education 4.0, where the emphasis is on combining learning with modern technologies and continuous improvement of skills taking into account changes in society and the labour market (Khan & Qureshi, 2020).

Technological improvements in education make life easier for students. Instead of using pen and paper, students use a variety of software and tools to create presentations and projects (Haleem et al., 2022).

Digital technology goes beyond innovative and less traditional teaching and learning methods through educational collaboration (Qureshi et al., 2021). It is an indisputable fact that computer technologies improve new ways of learning and teaching. The goal of integrating digital technologies into the educational process is to improve the quality of education (Singh, 2021). ICT helps the teacher to present the material in an understandable form for students at any level of education (Ratheeswari, 2018; Stringer et al., 2021).

The advantages of digital technologies in education include:

– digital technologies provide instant access to the necessary information and train important skills in working with information sources;

- contribute to the formation of information culture;

- help the teacher to automate or simplify the performance of a number of tedious duties;

- ensure greater accessibility of education through the use of distance learning;

- enable using didactic tools in various forms of education (Shahid et al., 2019; Aroyev & Juraev, 2023; Cevikbas et al., 2023).

The list of disadvantages of online education can include such points as:

– unequal access: not all students and educational institutions have the same level of access to digital technologies;

– many teachers and students may not have sufficient skills in using digital tools;

– constant access to digital devices can lead to distraction from learning and contribute to the development of addiction to social networks and entertainment;

– in some cases, the use of digital technologies can contribute to social isolation, as students can interact less personally and communicate less with fellow students;

– the problem of overload may arise because of an easy access to a large amount of information, when students cannot effectively process and analyse large data flows (Moraes et. al., 2023).

**Figure 1**

*The Main Types of Digital Technologies*

## Methods and Materials

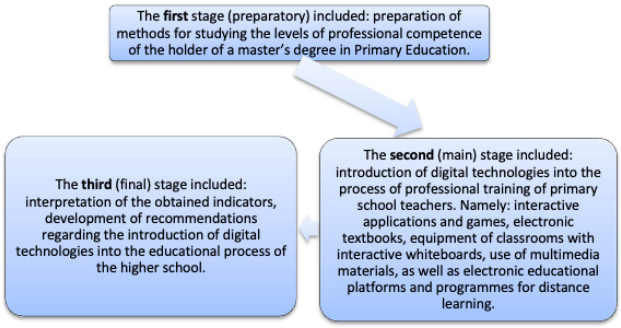
### *Research Design*

The method of the study is experimental. The theoretical basis for the current experimental study was the conclusions from the conducted literature review and the results of analytical and theoretical studies. In particular, those regarding the theoretical basis and practical prerequisites for the formation of digital competence of future primary school teachers, namely the works of Aidarbekova et al. (2021), Robles Moral and Fernandez Diaz (2021), Porln and Sanchez (2016), and Pongsakdi et al. (2021). In particular, in the work, we used the idea of influencing, thanks to the use of digital technologies in the process of professional training of primary education specialists, to increase their level of professional competence.

The study was organized in three stages from September 2021 to May 2023.

**Figure 2**

*Stages of the Research*




### *Sample*

The experimental base of the study was randomly selected higher education institutions: Mukachevo State University, Ferenc Rakoczi II Transcarpathian Hungarian College of Higher Education, Yuriy Fedkovych Chernivtsi National University and Kamianets-Podilskyi Ivan Ohiienko National University.

As of the beginning of the 2022/2023 academic year, 16,804 students studied in Ukraine at the second (Master's) level majoring at 013: Primary Education on a full-time basis, who made up the general population of the sample (State Statistics Service of Ukraine, 2022; Ministry of Economic Development, Trade and Agriculture of Ukraine, 2020). Master's students were chosen for the experimental study because they already have an initial level of professional competence. After calculating the size of the required (representative) sample using an online calculator (with parameters: confidence probability - 85%, error - 10%), the size of the valid sample was 264 people. This number was the starting point for forming the experimental group (EG) ($n$ = 134) and the control group (CG) ($n$ = 130). The experimental data of each team were tested for normality of distribution using the one-sample Kolmogorov-Smirnov test λ.

## Data Collection and Analysis

The criteria and indicators of the level of professional competence of Master's students were distinguished in order to diagnose it. The basis was the Professional Standard of Primary School Teachers (Ministry of Education and Science of Ukraine, 2020) valid in Ukraine. Each criterion of professional competence was diagnosed by appropriate methods (Table 1).

To assess the general level of readiness of future primary school teachers for each evaluation method, an indicator was determined at the following levels: objective, objective-subjective, subjective-functional, subjective-activity, transformative, which were assigned points 1, 2, 3, 4, 5 in the order of their presentation. The general level was defined as the arithmetic mean. The absolute error of this experiment did not exceed 0.5 points.

The SPSS 17.0 package was used for statistical data processing. The chi-squared test ($\chi^2$) was used for statistical confirmation of the conducted research, the value of which is calculated according to the formula 1, using classical designation:

$$\chi^2_{emp} = \frac{1}{n_1 n_2} \sum_{i=1}^{3} \frac{(n_1 Q_{2i} - n_2 Q_{1i})^2}{Q_{2i} + Q_{1i}}$$

where $n_1$ and $n_2$ are the volumes of the first and second samples, $Q_{11}$, $Q_{12}$, $Q_{13}$ – the number of objects of the first sample that fell into the category of the state of the studied property (in our case, to the groups of students with high, medium, and low levels of competencies), $Q_{21}$, $Q_{22}$, $Q_{23}$ — the number of objects of the second sample that fell into the category of the state of the studied property (for groups of students with high, medium, and low levels of competencies).

### *Ethical criteria*

The respondents' participation in the study was voluntary, the principles of protecting the rights of research participants, ensuring their safety and data confidentiality were observed in the process of data collection. The research was based on the principles of impartiality and objectivity.

## Results

Ferrell & Daniel's test for Measuring Teacher Career Motivations was used in order to diagnose the motivational criterion (Ferrell & Daniel, 1993). The cognitive criterion was evaluated based on the results

**Table 1**

*Diagnostic Tools of Future Teachers' Professional Competence*

| Criterion | Indicators | Methods |
|---|---|---|
| Motivational criterion | nature of professional motives;<br>manifestation of value attitude towards oneself as a future primary school teacher;<br>manifestation of a value attitude to the processes, phenomena, and subjects of primary school;<br>willingness to work with children, to contribute to their development and education.<br>the ability to motivate students to study and achieve success. | K. Zamfir's Motivation for Professional and Ferrell & Daniel's Test for Measuring Teacher Career Motivations for detecting professional and pedagogical activity (Ferrell & Daniel, 1993). |
| Cognitive criterion | the level of specific professional, didactic and methodical, psychological and pedagogical, differential and psychological, as well as socio-psychological knowledge;<br>flexibility, reflecting the ability to interpret knowledge, apply it in both standard and problem situations;<br>practicality, which implies the possibility of practical implementation of the acquired knowledge in order to fulfil professional tasks. | Evaluation of students' performance based on the results of the examinations |
| Communicative criterion | the ability to effectively interact with students of different age groups;<br>the ability to clearly and effectively express instructions and explanations;<br>the ability to listen and understand the students' questions and needs;<br>the ability to use different methods of communication (oral language, written language, non-verbal communication);<br>the ability to cooperate with students' parents and families, including open and effective exchange of information;<br>the ability to resolve conflicts between students or students and colleagues;<br>the ability to give constructive feedback to students to improve their educational activities. | Diagnostics of the level of subject-subjective model of pedagogical communication (according to Sternberg and Williams (2010); Alexander and Winne (2012)) |
| Operational and activity criterion | development of projective and constructive, analytical, organizational and communicative skills;<br>striving for self-realization as a primary school teacher;<br>subjective professional position;<br>pedagogical activity;<br>subjective experience;<br>empathy. | Diagnostics of the level of projective skills in primary school teachers Boyko (2013a) |
| Personality criterion | the ability for self-awareness and self-improvement;<br>the ability to recognize and analyse one's own strengths and weaknesses in the role of a teacher;<br>the interest in own professional development and training;<br>emotional stability and empathy;<br>compliance with ethical norms and standards in teaching and relations with students, parents, and colleagues;<br>flexibility and adaptability. | the Teachers' Humanistic Value Orientations (test by Orshanski's (2018) orientation of future teachers towards humanistic and professional value) |

of the students' performance at the examinations. The communicative criterion was evaluated using the diagnostics of the level of subject-subjective model of pedagogical communication (modified test based on Sternberg & Williams, Alexander & Winne). The operational and activity criterion was determined by diagnosing the level of projective skills of a primary school teacher (Boyko, 2013b). The personality criterion was determined by using the Teachers' Humanistic Value Orientations – Orshanski's (2018) orientation of future teachers towards humanistic and professional value.

The experimental and control groups of students with approximately the same distribution according to the levels of certain criteria were formed to conduct the summative stage of the pedagogical experiment (Table 2).

**Table 2**

*The Level of Professional Competence of Future Primary School Teachers (Results of the Summative Stage of the Experiment (as a Percentage))*

| Criteria | High level | | Medium level | | Low level | |
|---|---|---|---|---|---|---|
| | CG | EG | CG | EG | CG | EG |
| Motivational | 1.4 | 1.5 | 31.8 | 32.6 | 66.8 | 65.9 |
| Cognitive | 1.2 | 1.3 | 16.3 | 16.4 | 82.5 | 82.3 |
| Operational and activity | 1.9 | 1.8 | 15.2 | 15.8 | 82.9 | 82.4 |
| Communicative | 1.4 | 1.6 | 24.8 | 25.6 | 73.8 | 72.8 |
| Personality | 1.6 | 1.7 | 14.8 | 14.9 | 83.6 | 83.4 |
| Mean | 1.5 | 1.58 | 20.58 | 21.06 | 77.92 | 77.36 |

So, the results of the surveys and the diagnostic test of the level of professional competence of future primary school teachers confirmed the relevance of the research and made it possible to draw the following conclusions: the vast majority of students have a low level of the studied phenomenon both on average and in terms of individual criteria, which significantly affects the quality of further professional activity.

Before starting the experimental research at the summative stage, we put forward a null ($H_0$) and an alternative ($H_1$) hypothesis.

$H_0$: The level of professional competence of future primary school teachers has not changed significantly.

$H_1$: The level of professional competence of future primary school teachers has undergone significant qualitative changes.

To calculate the value of the $X^2_{ex}$ statistics, we enter the designation corresponding to the one used in the formula for calculating the value of the Pearson's chi-squared test and make the necessary calculations. We compiled auxiliary Table 3. By substituting the values of the relevant variables into the formula for calculating the value of the Pearson's chi-squared test, we will get $X^2_{ex}$ for each criterion of the professional competence of future primary school teachers.

**Table 3**

*An Auxiliary Table for Calculating the Value of X2ex when Comparing the Distributions of Future Teachers of the Experimental and Control Groups According to the Levels of Professional Competence at the Beginning of the Experiment*

| Sample | The number of teachers | The number of students with high level | The number of students with a medium level | The number of students with a low level |
|---|---|---|---|---|
| Motivational criterion | | | | |
| EG | $n_1$=134 | $Q_{11}$=2 | $Q_{12}$=44 | $Q_{13}$=88 |
| CG | $n_2$=130 | $Q_{21}$=2 | $Q_{22}$=41 | $Q_{23}$=87 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=85 | $Q_{13}+Q_{23}$=175 |
| Cognitive criterion | | | | |
| EG | $n_1$=134 | $Q_{11}$=2 | $Q_{12}$=22 | $Q_{13}$=110 |
| CG | $n_2$=130 | $Q_{21}$=2 | $Q_{22}$=21 | $Q_{23}$=107 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=43 | $Q_{13}+Q_{23}$=217 |
| Communicative criterion | | | | |
| EG | $n_1$=134 | $Q_{11}$=2 | $Q_{12}$=34 | $Q_{13}$=98 |
| CG | $n_2$=130 | $Q_{21}$=2 | $Q_{22}$=32 | $Q_{23}$=96 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=66 | $Q_{13}+Q_{23}$=194 |
| Operational and activity criterion | | | | |
| EG | $n_1$=134 | $Q_{11}$=2 | $Q_{12}$=21 | $Q_{13}$=110 |
| CG | $n_2$=130 | $Q_{21}$=2 | $Q_{22}$=20 | $Q_{23}$=108 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=41 | $Q_{13}+Q_{23}$=218 |
| Personality criterion | | | | |
| EG | $n_1$=134 | $Q_{11}$=2 | $Q_{12}$=20 | $Q_{13}$=112 |
| CG | $n_2$=130 | $Q_{21}$=2 | $Q_{22}$=19 | $Q_{23}$=109 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=39 | $Q_{13}+Q_{23}$=221 |

Table 4 shows the values of the criteria calculated for the data of our experiment according to the motivational, cognitive, communicative, operational and activity, and personality criteria of the professional competence of future primary school teachers according to the table values.

So, the obtained results provide grounds to state that the selected groups of future primary school teachers of the experimental and control groups are equivalent according to the specified criteria.

According to certain characteristics of the levels of indicators of each criterion of the professional competence, the future teacher could fall into one of three categories: a group with a low level, a group with a medium level, a group with a high level of the indicators and criteria of the professional competence.

The analysis of the results showed a significant increase in the quantitative indicators of the criteria in the experimental group, while the changes were insignificant in the control group. Table 5 shows the obtained results.

The general sample population of students was 264 people. Despite the positive trend, which is manifested in the increase (decrease) in the indicators of the levels of students' performance in the experimental and control groups, the qualitative results are significantly higher.

**Table 4**

*The Value of the Criterion Statistics when Comparing the Distributions of Future Primary School Teachers of the Experimental and Control Groups According to the Levels of Professional Competence at the Beginning of the Experiment*

| Readiness criteria | | $X^2_{ex}$ statistics | | |
|---|---|---|---|---|
| | Sample | $X^2_{ex}$ | $X^2_{ex}$ | Result |
| Motivational criterion | EG CG | 0.05 | 5.99 | $\chi^2_{excr\rightarrow} < \chi^2$ |
| Cognitive criterion | EG CG | 0.004 | 5.99 | $\chi^2_{excr\rightarrow} < \chi^2$ |
| Communicative criterion | EG CG | 0.02 | 5.99 | $\chi^2_{excr\rightarrow} < \chi^2$ |
| Operational and activity criterion | EG CG | 0.012 | 5.99 | $\chi^2_{excr\rightarrow} < \chi^2$ |
| Personality criterion | EG CG | 0.05 | 5.99 | $\chi^2_{excr\rightarrow} < \chi^2$ |

**Table 5**

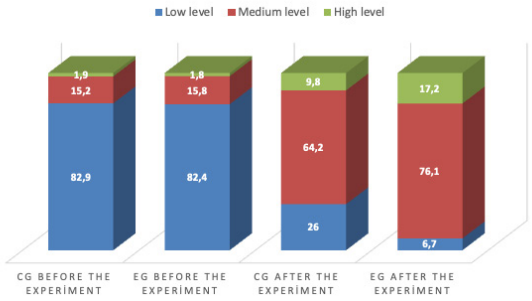
*Results of the Control Stage of the Experiment (as a Percentage)*

| Criteria | High level | | Medium level | | Low level | |
|---|---|---|---|---|---|---|
| | CG | EG | CG | EG | CG | EG |
| Motivational | 5.6 | 11.6 | 62 | 74 | 32.4 | 14.4 |
| Cognitive | 4.6 | 9.8 | 58 | 69.1 | 37.4 | 21.1 |
| Operational and activity | 9.8 | 17.2 | 64.2 | 76.1 | 26 | 6.7 |
| Communicative | 7.6 | 11.9 | 54 | 67.2 | 38.4 | 20.9 |
| Personality | 8.5 | 12.4 | 56 | 67.5 | 35.5 | 20.1 |
| Average | 6.6 | 12.8 | 61.4 | 73.1 | 32 | 14.1 |

At the high level, the greatest increase was found for the operational and activity criterion (9.8% in the control groups and 17.2% in the experimental groups, and 64.2% and 76.1%, respectively, at the medium level) (Figure 3).

**Figure 3**

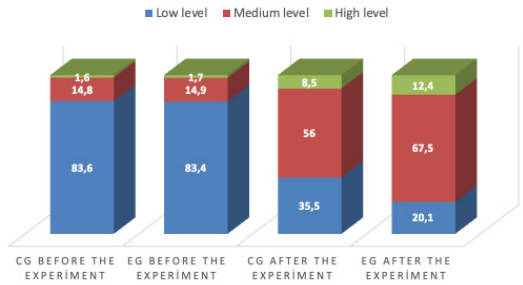
*Results of the Comparative Analysis of the Summative and Control Stages of the Experiment for the Operational and Activity*




According to the personality criterion at a high level, the difference in the experimental groups is 12.4%, and in the control groups — 8.5%, and on average 56% and 67.5%, respectively (Figure 4).

**Figure 4**

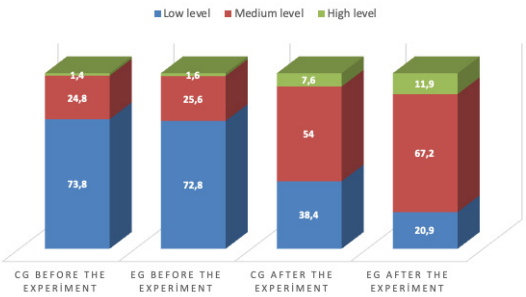
Results of the Comparative Analysis of the Summative and Control Stages of the Experiment for the Personality Criterion




For the communicative criterion at a high level, the difference in the experimental groups is 11.9% compared to 7.6% in the control group (Figure 5), on average 67.2% and 54.0%, respectively.

**Figure 5**

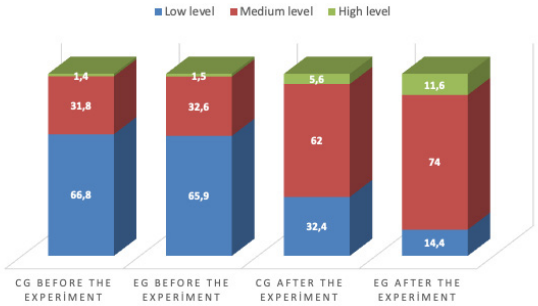
*Results of the Comparative Analysis of the Summative and Control Stages of the Experiment for the Communicative Criterion*




According to the motivation criterion at a high level, the increase in the experimental groups was 11.6%, in the control groups - 5.6% (Figure 6), and it was on average 62.0% and 74.0%, respectively.

**Figure 6**

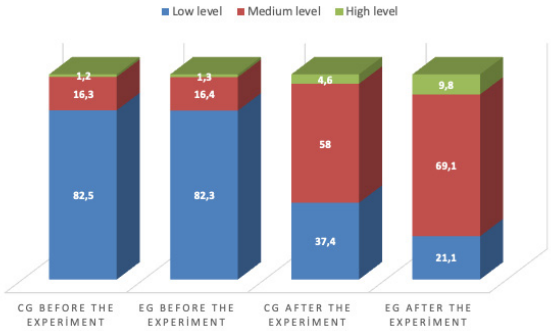
*Results of the Comparative Analysis of the Summative and Control Stages of the Experiment for the Motivational Criterion*




The difference in the experimental groups for the cognitive criterion at the high level of the criterion is 9.8%, and in the control groups - 4.6% (Figure 7), which on average is 69.1% and 58.0%, respectively.

**Figure 7**

*Results of a Comparative Analysis of the Summative and Control Stages of the Experiment for the Cognitive Criterion*




To calculate the value of the statistics after the experiment, we enter the designation corresponding to the one used in the formula for calculating the value of Pearson's chi-squared test, and make the necessary calculations (Table 6).

We obtain the statistical values for each criterion by substituting the values of the relevant variables into the formula for calculating the value of Pearson's chi-squared test (Table 7).

The results of the comparative analysis of the summative and control stages of the experiment (Table 8) showed a significant advantage of the developed methodical system of learning with the help of digital technologies (according to the averaged indicators), which is presented in Figure 8.

**Table 6**

*Auxiliary Table for Calculating the Value when Comparing the Distributions of Teachers of the Experimental and Control Groups According to the Levels of Professional Competence after the Experiment*

| Sample | The number of teachers | The number of students with a high level | The number of students with a medium level | The number of students with a low level |
|---|---|---|---|---|
| | | Motivational criterion | | |
| EG | $n_1$=134 | $Q_{11}$=16 | $Q_{12}$=99 | $Q_{13}$=19 |
| CG | $n_2$=130 | $Q_{21}$=7 | $Q_{22}$=81 | $Q_{23}$=42 |
| Total | N=264 | $Q_{11}+Q_{21}$=23 | $Q_{12}+Q_{22}$=180 | $Q_{13}+Q_{23}$=61 |
| | | Cognitive criterion | | |
| EG | $n_1$=134 | $Q_{11}$=13 | $Q_{12}$=93 | $Q_{13}$=28 |
| CG | $n_2$=130 | $Q_{21}$=6 | $Q_{22}$=75 | $Q_{23}$=49 |
| Total | N=264 | $Q_{11}+Q_{21}$=19 | $Q_{12}+Q_{22}$=168 | $Q_{13}+Q_{23}$=77 |
| | | Communicative criterion | | |
| EG | $n_1$=134 | $Q_{11}$=16 | $Q_{12}$=90 | $Q_{13}$=28 |
| CG | $n_2$=130 | $Q_{21}$=10 | $Q_{22}$=75 | $Q_{23}$=50 |
| Total | N=264 | $Q_{11}+Q_{21}$=26 | $Q_{12}+Q_{22}$=168 | $Q_{13}+Q_{23}$=78 |
| | | Operational and activity criterion | | |
| EG | $n_1$=134 | $Q_{11}$=23 | $Q_{12}$=102 | $Q_{13}$=9 |
| CG | $n_2$=130 | $Q_{21}$=13 | $Q_{2}2$=83 | $Q_{23}$=34 |
| Total | N=264 | $Q_{11}+Q_{21}$=4 | $Q_{12}+Q_{22}$=185 | $Q_{13}+Q_{23}$=43 |
| | | Personality criterion | | |
| EG | $n_1$=134 | $Q_{11}$=17 | $Q_{12}$=90 | $Q_{13}$=27 |
| CG | $n_2$=130 | $Q_{21}$=11 | $Q_{22}$=73 | $Q_{23}$=46 |
| Total | N=264 | $Q_{11}+Q_{21}$=28 | $Q_{12}+Q_{22}$=163 | $Q_{13}+Q_{23}$=73 |

**Table 7**

*The Criterion Statistics when Comparing the Distributions of Future Teachers of the Experimental and Control Groups According to the Professional Competence Levels after the Experiment*

| Readiness criteria | | $X^2_{ex}$ criterion statistics | | |
|---|---|---|---|---|
| | Sample | $\chi^2_{er}$ | $\chi^2_{cr}$ | Result |
| Motivational criterion | EG<br>CG | 13,96 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |
| Cognitive criterion | EG<br>CG | 10,17 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |
| Communicative criterion | EG<br>CG | 10,03 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |
| Operational and activity criterion | EG<br>CG | 19,2 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |
| Personality criterion | EG<br>CG | 7,94 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |
| Level | Arithmetic mean | 11,2 | 5,99 | $\chi^2_{excr\rightarrow} > \chi^2$ |

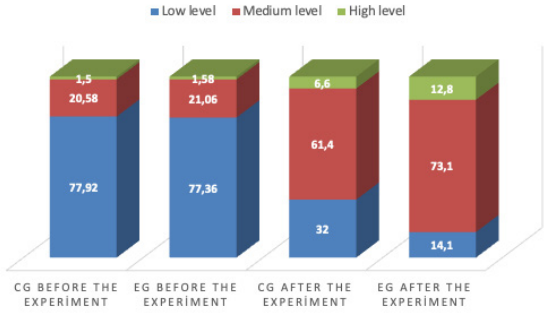
**Table 8**

*Comparison of the Results of the Summative and Control Stages of the Experiment (as a Percentage)*

| Criteria | Group | CE | FE | Difference | CE | FE | Difference | CE | FE | Difference |
|---|---|---|---|---|---|---|---|---|---|---|
| Motivational | EG | 1.50 | 11.60 | 10.10 | 32.60 | 74.00 | 41.40 | 65.90 | 14.40 | -51.50 |
| | CG | 1.40 | 5.60 | 4.20 | 31.80 | 62.00 | 30.20 | 66.80 | 32.40 | - 34.0 |
| Cognitive | EG | 1.30 | 9.80 | 8.50 | 16.40 | 69.10 | 52.70 | 82.30 | 21.10 | - 61.20 |
| | CG | 1.20 | 4.60 | 3.40 | 16.30 | 58.00 | 41.70 | 82.50 | 37.40 | - 45.10 |
| Operational and activity | EG | 1.80 | 17.20 | 15.40 | 15.80 | 76.10 | 60.30 | 82.40 | 6.70 | - 75.70 |
| | CG | 1.90 | 9.80 | 7.90 | 15.20 | 64.20 | 49.00 | 82.90 | 26.00 | - 56.90 |
| Communicative | EG | 1.60 | 11.90 | 10.30 | 25.60 | 67.20 | 41.60 | 72.80 | 20.90 | - 51.90 |
| | CG | 1.40 | 7.60 | 6.20 | 24.80 | 54.00 | 29.20 | 73.80 | 38.40 | - 35.40 |
| Personality | EG | 1.70 | 12.40 | 10.70 | 14.90 | 67.50 | 52.60 | 83.40 | 20.10 | - 63.30 |
| | CG | 1.60 | 8.50 | 6.90 | 14.80 | 56.00 | 41.20 | 83.60 | 35.50 | - 48.10 |
| Average | EG | 1.58 | 12.80 | 11.22 | 21.06 | 73.10 | 52.04 | 77.36 | 14.10 | - 63.26 |
| | CG | 1.50 | 6.60 | 5.10 | 20.58 | 61.40 | 40.82 | 77.92 | 32.00 | - 45.92 |

**Figure 8**

*Results of the Comparative Analysis of the Formative Stage of the Experiment (According to Average Indicators)*




A comparison of the values of the *ex* = 11.2 criterion, the calculated data of the conducted experiment and the critical *cr* = 5.99 with a significance level of 0.05 and the number of degrees of freedom 2 gives grounds for the conclusion that the differences in the distributions of the control and experimental groups according to the levels of each criterion are statistically reliable and testify to the effectiveness of the use of digital technologies for the development of professional competence of future primary school teachers.

## Discussion

The formative stage of the pedagogical experiment involved a comparative analysis of the students' performance in the control and experimental groups. As a result, the positive dynamics were recorded in both groups, however, the quantitative indicators of the criteria in the experimental group grew faster and with a greater difference compared to the change in the control group, both in each of the criteria and in average indicator. At a high level, the largest changes were observed in the experimental group for the operational criterion: the difference was 15.40% (against 7.90% in the control group). In our opinion, this is explained by the fact that students could additionally develop the acquired practical skills during quasi-professional activities thanks to the expansion of the content of the forms and methods of professional training with the involvement of digital learning. The smallest increase at a high level was recorded for the cognitive criterion: 8.5% in the experimental group and 3.4% in the control group. This is related to the practical focus of the developed training content and the use of the competency approach as the main one in the process of organizing experimental training. According to the average indicator at the high level, the difference in the experimental groups is 11.22% and in the control groups - 5.1%. A greater increase in the average indicator at the medium level was also recorded in the experimental groups, namely 52.04% (against 40.82% in the control groups).

The researchers such as Timotheou et al. (2023), Schraube (2022) found that the implementation of digital technologies in education has a significant impact on student learning. The same conclusions were drawn by Timotheou et al. (2023), who noted that the integration of ICT in schools affects not only student performance but also some other aspects related to the school and the parties concerned.

According to Keser et al. (2011), Shatri (2020), students can stay connected, obtain and share information, for example, in class groups, online and in virtual environments through the use of technological tools. We haven't studied this aspect, but the level of communication skills of EG students increased significantly compared to EG.

Baytak et al. (2011), Zaporozhchenko et al. (2022) found that the majority of students believe that the integration of technology into the curriculum plays an important role in improving their learning abilities. Integrating technology into education is also beneficial for students with special needs. Elshareif and Mohamed (2021) noted that the integration of technology in education enhanced student motivation and involvement in the educational process, which also confirms the results of the diagnostics of the motivational criterion of professional competence.

So, the results of the study indicate that the integration of digital technologies into the learning process contributes to the improvement of students' academic performance, especially in operational and medium-term planning. This emphasizes the importance of the development of digital education for improving the quality of education and preparing students for modern challenges.

### *Research Limitations*

The main limiting factors of the study are the involvement of only full-time students in the diagnostics, and conducting of the experiment during one academic year.

### *Recommendations*

For further development of the raised problem, we recommend developing a single diagnostic method for diagnosing the professional competence level of primary school teachers during professional training for the Master's degree.

## Conclusions

Digital technologies, as well as information and communication tools are changing the way of learning and teaching. Professional training of future teachers should meet current requirements so that

graduates can implement these technologies in the educational process.

The analysis of the results of the formative stage of the pedagogical experiment confirmed the effectiveness of digital technologies for the development of professional competence of future primary school teachers. The advantages of digital technologies in the educational space are the individualization of the educational process, personal orientation. The advantages include minimization of paperwork, simplification of teaching and learning. Students develop more practical skills. The use of digital technologies makes it possible to bring education to a qualitatively new level characterized by the accessibility of knowledge.

The education is currently moving to a new level, where the priority is not only to fulfil the requirements of the programme, but also to take into account the students' interests and individual abilities. The use of digital educational technologies expands the students' horizons, opens up new opportunities for acquiring knowledge in the most structured and understandable form.

The promising areas for further research are studying the impact of the use of digital technologies for the development of information literacy and critical thinking.

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# Global Diversity Values in Indonesia: An Elementary School High-Grade Indonesian Language Textbook Analysis

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## Abstract

This research aims to analyze global diversity values present in Indonesian language textbooks for fourth-grade elementary school students. The study employs a qualitative approach with content analysis as the method. The research objects consist of four textbooks published by Erlangga, Yudistira, Bumi Aksara, and Puskurbuk Kemdikbudristek. The analysis process involves selecting relevant material samples, developing analytical categories, coding the content, and interpreting emerging patterns. The research findings indicate that the Indonesian language textbooks for fourth-grade elementary school students provide activities and experiences that enrich their understanding of cultural diversity in Indonesia. Students are taught to develop attitudes of tolerance and intercultural communication, as well as reflection and responsibility towards diversity. These books contribute to shaping students who are inclusive, tolerant, and capable of communicating in a multicultural environment, embodying the values of global diversity character. The importance of fostering global diversity character in primary school students is highlighted through education, particularly using meticulously designed Indonesian language textbooks. These textbooks introduce students to various aspects of Indonesian and other cultures, promoting understanding, appreciation, and tolerance for cultural diversity. Emphasizing character development, the textbooks instruct students in intercultural communication and encourage interactions with culturally diverse peers, fostering effective communication skills for multicultural environments. Furthermore, students are prompted to reflect on their own multicultural experiences, shaping their global perspectives. In summary, Indonesian language textbooks serve as a vital resource in shaping students into inclusive, tolerant individuals proficient in effective communication within multicultural contexts.

**Keywords:**

Pancasila Student Profile, Global Diversity, Textbook, Indonesian Language, Elementary School


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## Introduction

Indonesia is a country with a large population, boasting rich cultural diversity that has gained global recognition (Kohler, 2019) . Amidst this diversity, which is a source of national pride, the concept of global diversity emerges as a unique aspect, highlighting the challenges faced by a multicultural society in Indonesia. This concept is one of the six essential values encapsulated within the Pancasila Student Profile, alongside faith and piety in God Almight, noble character, cooperation, independence, critical reasoning, and creativity. The Pancasila Student Profile outlines the character traits and competencies that all Indonesian students are expected to possess, rooted in the noble values of Pancasila as the national ideology (Saifuddin, 2017; Zarbaliyev, 2017).

Global diversity in the Pancasila student profile is fundamental, emphasizing the importance of respecting diversity to foster tolerance, appreciation, and cooperation among citizens from various cultural backgrounds. This value of global diversity is crucial not only within Indonesia's domestic context but also in preparing the society to become an integral part of the global community (Daniel et al., 2013). In today's globalized era, the ability to interact, respect, and collaborate with people from diverse cultural backgrounds is essential for success (Denson & Bowman, 2013; Wood et al., 2023). Global diversity in Indonesia includes tolerance, respect, and cooperation among the various ethnic, religious, and cultural groups in the country (Muchtar et al., 2022; Sahal et al., 2018). Since its independence, Indonesia has established a robust foundation to enhance global diversity (Brigg et al., 2016; Mavridis, 2015).

The 1945 Constitution of Indonesia guarantees religious freedom and recognizes the rights of citizens regardless of religion, ethnicity, or cultural background (Colbran, 2010; Lerner, 2013). Articles 28E and 29 of the 1945 Constitution explicitly state these rights. Additionally, there are laws protecting minority rights and promoting interfaith dialogue and intercultural cooperation, such as Law Number 39 of 1999 on Human Rights in Indonesia (Aragon, 2022; Ishak & Mikea Manitra, 2022; Sardol, 2014).

Indonesia acknowledges the significance of diversity and adheres to values of religious and cultural harmony through its legislation (Crouch, 2013; Jereza, 2016). For Example, In Kalimantan, Indonesia, there it shows how the diversity of Malay, Dayak, and Chinese communities is harmoniously accommodated through various cultural activities, still strongly valued by the people of West Kalimantan, Indonesia (Yanti et al., 2022). The aim of understanding diversity is to protect individual rights, fostering mutual understanding among community groups to create an inclusive and harmonious environment for all citizens (Huda, 2019; Iwai, 2013).

Currently, Indonesia focuses on the demographic dividend phenomenon (Lerch, 2020; Mason & Lee, 2012; Ogawa et al., 2021). With a predominantly young population, investing in character education from an early age is crucial to ensure that future generations deeply understand the values of tolerance, appreciation for differences, and inclusivity in dealing with the complexities of an increasingly connected global society (Baehr, 2017; Hampton-Garland, 2021; Pattaro, 2016).

However, the moral and character education once highly regarded continues to face challenges (Nurohmah & Dewi, 2021; Özerk & Kerchner, 2014). Despite the form and strength of Pancasila's practice varying over time, its implementation has seen a significant decline (Faidah & Dewi, 2021). Social issues fraught with moral degradation, such as brawls, sexual harassment, narcotics, violence, and other distressing occurrences, seem to be a recurring phenomenon (Checkel, 2017; Page & Pina, 2015; Warburg & Jensen, 2020). These issues are not unique to Indonesia but are also prevalent globally.

The above facts indicate that the values of solidarity and tolerance within Pancasila continue to lose their meaning. The attitudes displayed by the nation's younger generations diverge from Pancasila's values (Habibah & Setyowati, 2021). It seems that differences are perceived as hostility, while Pancasila, as the guiding principle of the nation, teaches the beauty of unity and togetherness. If all the tenets of Pancasila are practiced well, the nation's life would be peaceful and harmonious (Kulsum, 2020).

In the global context, issues of disintegration are becoming increasingly acute and are occurring nearly everywhere in the world (Walter, 2020). The global community continues to polarize, and it is unclear when these problems will be resolved (Grover, 2022; McCoy et al., 2018; Waller & Anderson, 2021). Conflicts arising from differences in opinions, ideologies, ethnicities, and religions have become serious issues that the world faces. Therefore, as the next generation of their nations, students worldwide must initiate and understand that national unity, both nationally and globally, must stand above group or personal interests. All stakeholders, including teachers, parents, and governments, must work together to devise the best solutions for addressing and anticipating the issues of character and unity that the global community currently faces (Gennaioli & Tabellini, 2018; Santagati, 2020; Saroglou, 2016).

Thus, it is crucial for the future generation, including students, to be equipped with the understanding

and values necessary to face these challenges on a global scale (Črešnar & Nedelko, 2020; HOEG & BENCZE, 2017; Maloni et al., 2019). Collaboration among various stakeholders, including educators, parents, and governments, is essential in finding effective solutions to these urgent global issues. The value of global diversity and character education includes respecting differences, tolerating diversity, appreciating other cultures, communicating interculturally when interacting with community environments, and reflecting and taking responsibility for one's experiences with global diversity (Yudha & Aulia, 2020).

One way to instill the moral values of Pancasila, especially the aspect of Global Diversity, is by incorporating relevant content about unity into textbooks. Particularly in primary schools, the instillation of global diversity values must continue to be imparted to students as preparation for facing social dynamics (Byker & Marquardt, 2016; Juvonen et al., 2019; Sprecher, 2017). This education is crucial from an early age because children tend to quickly absorb meanings and information and to form more flexible mindsets and behaviors (Tarmini et al., 2023). Therefore, this study aims to analyze the global diversity values present in Indonesian language textbooks for fourth-grade elementary school students.

Previous research on global diversity aspects, particularly the Pancasila Student Profile in textbooks, has shown that textbooks featuring the Pancasila Student Profile can support Education for Sustainable Development (ESD), promoting sustainable change (Afriyadi, 2020). Additionally, research by Garita & Alvarado (2020), Chapelle (2016), and Kong & Sung (2020) explains that cultural content, arts, and folk stories in textbooks provide students with an understanding and knowledge of diverse cultures (diversity). This research is also consistent with Nabila and Wulandari's findings (2022), where textbooks containing cultural content help students understand diversity as a manifestation of global diversity character. On the other hand, (Faidah & Dewi, 2021) conducted a literature study on the Pancasila Student Profile in language learning but did not specify a particular educational institution. Thus, this research will comprehensively examine global diversity character values in Indonesian Language textbooks for higher grades of elementary schools. Previous research has not explored global diversity values in Indonesian Language textbooks for higher grades of elementary schools, making the findings of this study novel.

Research on global diversity in elementary school textbooks is essential for two main reasons. First, elementary school textbooks play a central role in shaping children's attitudes and perceptions towards cultural and social diversity. Research conducted by Aderibigbe et al. (2023) and Bouillet & Miškeljin (2017) indicates that exposure to diversity education materials from an early age can strengthen tolerance and respect for differences among students. However, there is a gap in current practices, where most textbooks have not effectively reflected global diversity due to limitations in inclusive representation of cultures, ethnicities, and religions. In the era of globalization, it is crucial to teach values of diversity, tolerance, and appreciation for differences from an early age so that the content in textbooks reflects the diversity of the world and promotes an inclusive attitude in children. Second, research on global diversity in elementary school textbooks prepares children to live in an increasingly globally connected society. As identified by Bennett et al. (2022), Knoblauch (2023), and Blanchard et al. (2018), introducing cultural, ethnic, religious diversity, and other backgrounds in early education enables children to be better prepared for a complex world and equips them with the skills to interact with people from different backgrounds. The identified gap between expectations and the reality in current textbooks underscores the need for this research to evaluate and recommend improvements that can make global diversity education more effective and inclusive.

**Methods**

In an effort to enhance the understanding of the internalization of global diversity character values and the Pancasila Student Profile through textbooks, this study will utilize a qualitative approach with a comparative method (Milošević & Maksimović, 2020; Sattar et al., 2020; Silverman & Patterson, 2021; Thomann & Maggetti, 2020). This comparative study approach is supported by social learning theory (Bandura, 1977) by highlighting best practices in teaching these values and contributing to the improvement of student character education quality in Indonesia. This approach will enable the research to conduct a thorough comparison between various Indonesian language textbooks used in upper elementary school classes, as well as between the content of the textbooks and the manifestation of these values in students' characters. This step is taken to understand how global diversity values and the Pancasila Student Profile are presented and assimilated within the context of formal education.

The research will involve selecting textbooks from various publishers to assess the internalization of values through textbooks. An analysis instrument will be developed to effectively evaluate the presentation of values in textbooks using qualitative content analysis. This comparative analysis process will compare and evaluate the effectiveness of textbooks in teaching these values, as well as identifying best practices

and areas that require improvement. Overall, this study aims to provide a comprehensive evaluation of the extent to which elementary school textbooks support the reinforcement of the Pancasila Student Profile and global diversity values, while also offering recommendations for the development of more effective teaching materials.

The objects of analysis in this research are Indonesian Language textbooks for fourth-grade elementary school students in the Merdeka curriculum. The textbooks consist of four books published by:

1. Erlangga, authored by A. Indradi and Rahmah Purwahida, containing Chapters I to VIII, published in 2022.

2. Yudistira, First Edition, First Printing in July 2022, authored by Aira Kimsela and Rinasti Amalia, comprising Lessons one to eight.

3. Bumi Aksara, Copyright 2022, authored by Rohmiyatun, consisting of Chapters I to VIII.

4. Ministry of Education, Culture, Research, and Technology. Center for Curriculum and Book Development Research and Development Agency, First Printing in 2021, authored by Eva Y. Nukman and C. Erni Setyowati, comprising Chapters I to VII.

Erlangga, Yudistira, Bumi Aksara, and the Ministry of Education, Culture, Research, and Technology through the Center for Curriculum and Book Development are some of the publishers in Indonesia that have published many school textbooks used nationally. These four publishers have built a good reputation in publishing school textbooks used throughout Indonesia (Indradi & Purwahida, 2022; Kimsela & Amalia, 2022; Nukman & Setyowati, 2021; Rohmiyatun, 2022).

## Findings and Discussions

### *Findings*

The Profile of Pancasila Students refers to a guide of values and behaviors expected from students based on the principles of Pancasila, which is the foundation of the Indonesian state. One crucial aspect of the Profile of Pancasila Students is global diversity, which pertains to the recognition and respect for cultural, religious, ethnic, racial, and linguistic diversity on a global level (Hamzah et al., 2022).

Global diversity encourages students to develop an understanding and appreciation of the diversity present in the world. This involves recognizing that every individual has the right to maintain their cultural identity and religious beliefs, and be respected by others. Through global diversity, students are expected to view diversity as a wealth and a potential source of learning and mutual enrichment (Liu, 2023; Moloney & Saltmarsh, 2016; Zhang, 2019).

In the context of the Profile of Pancasila Students, global diversity also teaches the importance of international cooperation (Sulastri et al., 2022). Students are expected to collaborate with peers from different cultural and ethnic backgrounds and to appreciate diverse perspectives. This can broaden their perspectives, enrich their learning experiences, and help build harmonious relationships among the global community (Li & Zhang, 2015; Mittelmeier et al., 2018).

In order to implement global diversity in the Profile of Pancasila Students, educational institutions are expected to provide an inclusive and supportive learning environment for all students. Learning that involves direct experiences, dialogue, and intercultural interactions can be effective tools to promote understanding and tolerance among individuals (Riswanto, 2022; Wulandari, 2020).

The aim of global diversity in the Profile of Pancasila Students is to create a generation that is open-minded, tolerant, and caring towards global diversity (Rozana & Putri, 2023). By understanding and appreciating global diversity, students are expected to play a role as positive agents of change in building a more inclusive, just, and harmonious society (Denson & Bowman, 2013; Karimi & Matous, 2018; Pantić & Florian, 2015; Weaver et al., 2023).

In terms of the aspect of global diversity, the Directorate of Elementary Schools at the Ministry of Education, Culture, Research, and Technology of Indonesia (2020) has divided it into 3 indicators that need to be achieved to reach the goal of diverse but united national teachings. They include: (1) Recognizing and respecting other cultures; (2) Inter-cultural communication skills in interacting with others; (3) Reflection and responsibility towards diversity experiences. Therefore, to achieve these goals, the Indonesian Language textbook becomes one of the media that can accommodate the objectives of global diversity as an effort in shaping the Profile of Pancasila Students.

### *Understanding and Respecting Other Cultures*

The character of understanding and respecting other cultures in global diversity involves understanding, appreciating, and maintaining an open attitude towards cultural diversity in the world. This education teaches students about different cultures, encourages appreciation of differences, and shapes individuals who are inclusive, tolerant, and capable of adapting in a multicultural environment, to create a more harmonious and understanding society (Banks, 2015; Sahal et al., 2018).

**Table 1.**
*The Aspect of Understanding and Respecting Other Cultures in the Textbook*

| No | Topics | Examples of Cultural Aspects from Textbooks | Textbook Publication Resources |
|---|---|---|---|
| 1 | Traditional Dance | Ratoh Jaroe (Aceh), Serimpi (Central Java), Saman (Aceh), Pendet (Bali), Piring (West Sumatra) | Erlangga, 2022, BAB 1 page 11 |
| 2 | Cultural Sites | Taman Mini Indonesia Indah (TMII), Borobudur Temple | Erlangga, 2022, Bab IV page 59 |
| 3 | Traditional House | Pendopo and Joglo House from Central Java | Erlangga, 2022, Bab VI page 105 |
| 4 | Cultural Sites | Borobudur Temple in Taman Mini Indonesia Indah | Erlangga, 2022, Bab VI page 107 |
| 5 | Traditional Song | Song "Tokecang" from West Java | Erlangga, 2022, Bab VII page 111 |
| 6 | Traditional Games | Gobak Sodor and Egrang Game | Yudistira, 2022, Pelajaran Tiga page 53 |
| 7 | Traditional Dance | Serimpi Dance (Central Java), Saman Dance (Aceh), Pendet Dance (Bali), Piring Dance (West Sumatra), Tor-Tor Dance (North Sumatra), Jaipong Dance (West Java) | Yudistira, 2022, Pelajaran Empat page 73 |
| 8 | Traditional House | Rumah Gadang (West Sumatra), Rumah Limas (South Sumatra), Rumah Joglo (Central Java), and Rumah Bolon (North Sumatra). | Yudistira, 2022, Pelajaran Empat page 74 |
| 9 | Traditional Clothing | Javanese Traditional Clothing | Yudistira, 2022, Pelajaran Empat page 74 |
| 10 | Traditional Food | Rendang (West Sumatra), Gudeg (Yogyakarta), Konro Soup (South Sulawesi), Tumpeng (Java). | Yudistira, 2022, Pelajaran Empat page 74 |
| 11 | Traditional Dance | Busak Baku Dance, Mance, Hornbill, Mandau (Dayak, Kalimantan) | Yudistira, 2022, Pelajaran Empat page 67 |
| 12 | Folklore | Sangkuriang and Dayang Sumbi's Folklore | Bumi Aksara, 2022, Bab VII page 154 |
| 13 | Traditional Crafts | Bugis Sutra ("sabbe"), Besurek Batik (Bengkulu) | Bumi Aksara, 2022, Bab VII page 159 |
| 14 | Traditional Dance | Seblang Dance (Banyuwangi) | Puskurbuk, 2021, Bab IV page 77 |
| 15 | Traditional Crafts | Besurek Batik (Bengkulu) | Puskurbuk, 2021, Bab VII page 172 |
| 20 | Traditional Dance | Pendet Dance (Bali) | Bumi Aksara, 2022, Bab IV page 66 |
| 22 | Cultural Activities | Traditional Dance Competition | Erlangga, 2022, Bab I page 11 |

In the Indonesian Language Textbooks for Grade IV Elementary School, the aspect of global diversity in the indicator of understanding and respecting other cultures is evident in the introduction of various Indonesian cultures. Examples include the Ratoh Jaroe dance from Aceh and other traditional dances, traditional houses, the cultural site of Borobudur Temple, the traditional song "Tokecang" from West Java, and traditional games like gobak sodor and egrang. All these aspects of introducing Indonesian culture are present in the Bahasa Indonesia SD Grade IV textbook published by Erlangga.

In the Yudistira publication, the aspect of understanding and respecting other cultures is reflected in the introduction of traditional houses such as Rumah Limas, Rumah Gadang, Rumah Joglo, and Rumah Bolon. Additionally, traditional foods like rendang, gudeg, sop konro, and tumpeng are also introduced. Similar to Erlangga, Yudistira also includes materials about traditional dances such as dances from the Dayak tribe, tari Busak Baku, tari Mance, tari Burung Enggang, tari Mandau, and others.

In the Bumi Aksara publication, culture and art are introduced, including the Bugis silk fabric (Sabbe) and the traditional dance from Bali, tari Pendet. Bumi Aksara also includes content about local folktales, such as the Legend of Tangkuban Parahu from West Java. Lastly, the book published by Pusat Kurikulum dan Perbukuan, Kemdikbud Ristek, includes cultural content introducing batik besurek from Bengkulu and tari Seblang from East Java.

By including various aspects of Indonesian culture, such as batik besurek from Bengkulu and tari Seblang from East Java, in the textbook published by Pusat Kurikulum dan Perbukuan, elementary school students can learn about and recognize Indonesian culture from an early age. Through understanding Indonesian culture, students can gain a broader perspective on cultural diversity both within and outside the country. Moreover, introducing Indonesian culture

to elementary school students helps them develop attitudes of tolerance, respect, and appreciation for differences. Students will learn to respect and appreciate other cultures, including their customs, traditions, arts, and languages. This will help them overcome prejudices, build intercultural brotherhood, and foster cooperation amidst diversity.

The findings above indicate that understanding and respecting other cultures are crucial in the context of global diversity. By learning about other cultures, we can gain a better understanding of the values, traditions, and perspectives of others. This helps students eliminate any prejudices they may have towards unfamiliar cultures. A deeper understanding of other cultures also helps prevent misunderstandings or conflicts that may arise due to ignorance. Understanding and respecting other cultures encourage students to cultivate tolerance towards differences.

Students can learn to appreciate cultural diversity and understand that no culture is superior or inferior to another. This teaches students to respect and embrace differences as natural and valuable in an increasingly interconnected global society. Additionally, understanding and respecting other cultures open the door to more open intercultural dialogue. It allows for the exchange of ideas, views, and experiences that can enrich students personally and collectively. With increased intercultural dialogue, students can build bridges to solve social issues together and achieve mutually beneficial goals.

Respecting other cultures also entails preserving and caring for diverse cultural heritage, especially in Indonesia. By recognizing and appreciating other cultures, students can help preserve unique traditions, languages, arts, and cultural practices. This is essential to ensure the sustainability and diversity of cultural heritage amid the challenges brought about by globalization, which often poses threats to cultural identity.

*The ability of intercultural communication in interacting with others*

The character of intercultural communication ability in interacting with others in the context of global diversity involves developing effective communication skills with individuals or groups from different cultural backgrounds. Through education, students are taught about cultural differences in communication, understanding nonverbal cues, active listening, respecting others' perspectives, and overcoming communication barriers (Hurn & Tomalin, 2013). With this character, individuals can build harmonious relationships, mutual understanding, and support cooperation and exchange of ideas in an increasingly multicultural global context (Spitzberg, 2000).

**Table 2.**
*The Ability of Intercultural Communication in Interacting with Others in the Textbook*

| No | Topics | Examples of Intercultural Communication Aspects in Textbooks | Textbook Publication Resources |
|---|---|---|---|
| 1 | Inter-tribal friendship | Hani and Manda are good friends despite being from different tribes | Erlangga, 2022, Bab VII page 121 |
| 2 | Learn other cultures and eat together | After studying together, Haikal and his friends feel hungry and eat together, showing how eating together can be a moment of cultural learning. | Erlangga, 2022, Bab VII page 151 |
| 3 | Culture of greeting rebuke | Show respect for each other by greeting, emphasizing the importance of mutual respect in daily interactions. | Erlangga, 2022, Bab III page 52 |

The cultivation of global diversity values in intercultural communication skills is also evident in the Indonesian language textbook for fourth-grade elementary school students published by Erlangga. The textbook contains intercultural communication values within its characters, such as the friendship between Hani and Manda, who come from different ethnic backgrounds, as well as stories about Haikal's family.

The ability of intercultural communication is evident in the friendship between Hani and Manda. Despite their different ethnicities and cultural backgrounds, they can maintain a good relationship and show mutual respect. This demonstrates their ability to communicate interculturally, meaning the ability to interact with others from different cultural backgrounds. In the story, Hani and Manda do not discriminate against each other because they realize that through friendship, they can learn about each other's cultures. They can overcome their ethnic and regional differences by appreciating and accepting cultural diversity.

Furthermore, the data also shows their ability to communicate interculturally when Hani and Manda dine with Haikal's parents. In this moment, they can interact harmoniously with Haikal's family, who have a different cultural background. They engage in activities involving other cultures with an open and respectful attitude.

The findings emphasize the importance of greeting each other in interacting with others as a form of intercultural communication skill. By greeting one another, we can show appreciation and acknowledge the presence of others. A friendly and polite greeting becomes the first step in building good relationships with people from different cultural backgrounds. Thus, intercultural communication skills in interacting with others involve the ability to establish respectful

friendships, participate in cultural activities, and have a friendly greeting. These skills enable individuals to interact harmoniously in a multicultural environment and enrich their experiences in appreciating cultural diversity.

Intercultural communication is closely related to global diversity aspects as it involves the exchange of information, ideas, and values between individuals or groups from different cultural backgrounds. In this era of globalization, cross-cultural communication becomes increasingly important due to the growing interactions across cultures in various fields such as business, education, tourism, and technology.

Global diversity refers to the recognition and appreciation of cultural, linguistic, religious, customary, and worldview diversity worldwide. Through effective intercultural communication, individuals or groups from diverse cultures can understand, respect, and collaborate better with each other.

Reflection and Responsibility towards Diversity Experience

The aspect of reflection and responsibility towards diversity experiences in global diversity character involves individuals' ability to contemplate their diversity experiences, understand their implications, and take responsibility for their attitudes and actions in promoting diversity and tolerance (Acquah & Commins, 2015; DiGregorio & Liston, 2022). Through education, students are taught to question and criticize their own understanding and attitudes towards diversity, as well as develop a deeper understanding of the importance of inclusion, appreciation, and respect for differences. This character also includes awareness of the impact of individual actions on society and the environment, as well as the responsibility to act positively and advance global diversity. With this character, individuals are expected to take an active role in building an inclusive society, promoting mutual respect, and fostering peace amid an increasingly integrated cultural diversity (Hymel & Katz, 2019; Juvonen et al., 2019; Williams & Soriero, 2021).

**Table 3.**
*Reflection and Responsibility towards Diversity Experience in The Textbook*

| No | Topics | Examples of Aspects of the Diversity Experience in Textbooks | Textbook Publication Resources |
|---|---|---|---|
| 1 | Unity in Diversity | All students, despite different ethnicities and regions, are Indonesian children. | Erlangga, 2022, Bab VII page 109 |
| 2 | Tolerance and Empathy | We are taught to live with tolerance, tolerance, and sympathy amidst racial, ethnic, religious, and cultural diversity. | Erlangga, pada tahun 2022 Erlangga, 2022, Bab III page 52 |

An essential aspect of global diversity is the reflection and accountability of students towards their multicultural experiences. In the Indonesian language textbook for fourth-grade elementary students published by Erlangga, the content about reflection relates to students from different ethnic backgrounds, yet united as one in Indonesia. Additionally, Erlangga emphasizes the need for tolerance towards racial, ethnic, religious, and cultural differences within the diverse student environment. Embracing this diversity ultimately leads students to understand that life is filled with peace. The content in the book aims to teach students to adopt attitudes of tolerance, empathy, and sympathy.

The material on reflection and responsibility towards multicultural experiences acknowledges and understands that students in the classroom come from various ethnic and regional backgrounds, yet they remain an integral part of the Indonesian nation. This reflects awareness of diversity and pluralism within Indonesian society. The reflection also recognizes the various differences that exist in terms of race, ethnicity, religion, and culture in the surrounding community. Through this reflection, students are encouraged to appreciate differences as vital elements in life.

Furthermore, the responsibility towards global diversity reflected in the excerpt is demonstrated through attitudes of tolerance, empathy, and sympathy. Students are reminded to respect and treat others with tolerance despite their diverse backgrounds. This responsibility teaches students to be non-discriminatory and treat everyone fairly and equally, irrespective of their race, ethnicity, religion, or culture.

By internalizing the content on reflection and embracing responsibility towards global diversity, students are expected to contribute to creating a harmonious, inclusive society that values diversity. Through attitudes of tolerance, empathy, and sympathy, we can all work towards building a better world, where everyone is respected and treated equally, regardless of their differences.

**Discussions**

The Indonesian language textbook for fourth-grade elementary students emphasizes the importance of understanding and appreciating other cultures within the context of global diversity. The book provides various examples of activities, information, and experiences that encourage an understanding of cultural diversity in Indonesia. Prominent examples include introducing the Ratoh Jaroe dance from Aceh, reading books that discuss Indonesian cultures, visiting Taman Mini Indonesia Indah to see cultural displays from different regions, and explanations about traditional houses, dances, traditional attire, regional foods, and local history. Furthermore, through this

textbook, students are encouraged to understand and appreciate other cultures in Indonesia. They are given the opportunity to learn about traditional dances from various regions, such as Serimpi, Saman, Pendet, and others. Additionally, students are introduced to various traditional houses, such as Rumah Gadang, Rumah Joglo, and Rumah Bolon. Traditional foods like rendang, gudeg, sup Konro, and tumpeng are also part of the multicultural learning.

It is crucial for upper-grade elementary students to understand and appreciate other cultures as part of shaping their character with global diversity awareness (Kim, 2020; Park & Seo, 2022; Rucinski et al., 2021). Understanding other cultures involves grasping differences in traditions, values, customs, and languages (Krasniqi, 2019). This helps students develop a broader perspective of the world and avoid prejudices or stereotypes that may arise due to ignorance. Understanding and appreciating other cultures also require developing attitudes of tolerance (Atmaja, 2020; Lestari et al., 2020; Sodik, 2020). Students are taught to respect cultural differences, such as religion, ethnicity, race, and language, and learn to respect each individual's rights to live according to their own culture and beliefs. This attitude of tolerance is essential in creating an inclusive environment (Hanafi, 2017), where everyone feels accepted and valued. By exploring and understanding their own culture and others, students can comprehend how their identities are interconnected and influenced. They can also recognize the values and beliefs underlying their own culture, thus developing strong self-awareness and appreciation for others' identities (Hjerm et al., 2020; Kaihlanen et al., 2019).

Furthermore, in the context of developing intercultural communication skills in the Indonesian language textbook for fourth-grade students, they are given the opportunity to interact with peers from different ethnic, religious, and cultural backgrounds. They are encouraged to respect and understand these differences and foster good friendships without discrimination. Students' understanding of intercultural communication concepts in interacting with others is a suitable way to embody global diversity character (Ismail, 2021; Yudha & Aulia, 2020). This aspect provides students with a broader understanding of cultures, enabling them to build harmonious relationships, encourage tolerance, reduce conflicts, and prepare for a globally connected world. These skills also enrich students' personal and collective experiences. Thus, intercultural communication skills are crucial in shaping a global diversity character in students (Othman & Ruslan, 2020).

Moreover, the Indonesian language textbook for fourth-grade students also teaches reflection and responsibility towards multicultural experiences. Students are encouraged to contemplate the significance of diversity and the importance of possessing attitudes of tolerance, empathy, and sympathy towards others. Through this understanding, students are expected to develop intercultural communication skills that allow them to interact positively and effectively with people from diverse cultural backgrounds. Consequently, the reflection and responsibility towards multicultural experiences will lead students to preserve and cherish the diverse cultural heritage (Istiningsih & Dharma, 2021; Utami et al., 2023), both within Indonesia and worldwide. This includes efforts to preserve traditional culture, maintain diversity within society, and actively promote unity amidst cultural differences.

Furthermore, based on the comparison of several textbooks, it can be seen that the textbooks published by the Ministry of Education, Culture, Research, and Technology (Kemendikbud) (2021) serve as the primary textbooks of the Indonesian language education curriculum. These main textbooks are designed to provide a comprehensive foundation on the national curriculum, offering a broad coverage of essential materials to meet educational standards and student character development. The findings of this study indicate that Kemendikbud textbooks effectively integrate global diversity values, helping students develop a deep understanding of cultural diversity in Indonesia and the importance of tolerance and empathy in social interactions.

In addition to the main textbooks from Kemendikbud, supplementary textbooks published by publishers such as Erlangga (Indradi & Purwahida, 2022), Yudistira (Kimsela & Amalia, 2022), and Bumi Aksara (Rohmiyatun, 2022) act as additional learning resources that enrich the curriculum with diverse perspectives and interactive activities. These findings emphasize that these supplementary books not only support the learning material from the main textbook but also add an extra dimension to students' learning experiences (Gu et al., 2015; Lau et al., 2018). Through the introduction of stories, poems, and discussions about other cultures, these supplementary books expand students' understanding of global diversity. The integration between the main and supplementary textbooks creates a dynamic learning environment (Hanifa, 2018), where students not only learn about diversity in a national context but are also prepared to interact in an increasingly connected global society.

Understanding global diversity in the Indonesian language textbook for upper-grade elementary students is essential to introduce them to cultural diversity, languages, and traditions worldwide. The reasons for emphasizing global diversity content in the textbook are numerous:

1. Cultural Understanding: Introducing students to various cultures from around the world helps them understand that societies are not solely composed of one ethnic or cultural group. This broadens their minds to different ways of life, traditions, and beliefs, fostering tolerance and appreciation for diversity (Gardner, 2021).

2. Developing Empathy: By studying global diversity, students learn to empathize with people from diverse cultural backgrounds. They gain insight into others' perspectives, promoting understanding and reducing prejudice (Rambaree et al., 2023; Tran, 2020).

3. Improving Language Skills: Engaging with texts, stories, and poems in Indonesian that represent global diversity helps students enhance their reading, writing, and speaking abilities. They are exposed to different language variations and word usages, expanding their vocabulary and comprehension (Getie, 2020).

4. Fostering Creativity: Introducing global diversity in Indonesian language learning can encourage students to express their thoughts and ideas more creatively. They can explore various cultural themes and depict them through writing, poetry, or other art forms (Yun et al., 2020).

5. Global Preparedness: In today's interconnected world, it is essential for students to understand the global context. Introducing global diversity in upper-grade elementary school prepares them to be more knowledgeable global citizens capable of interacting with diverse cultures in the future (Rajput et al., 2023).

In delivering the content of global diversity in the Indonesian language textbook for upper-grade elementary students, the content can include short stories, poems, fables, and songs from various cultures around the world. The textbook can also include activities and assignments that engage students in understanding and exploring these cultures. Consequently, students will actively participate in their learning and broaden their knowledge of global diversity within the Indonesian language.

Overall, this textbook makes a significant contribution to shaping students' understanding and appreciation of cultural diversity within the context of global diversity. Through the knowledge and experiences provided, students are encouraged to become inclusive, tolerant, and open-minded individuals who can communicate effectively in a multicultural environment..

## Conclusions

This study shows that high-grade Indonesian language textbooks in Indonesia have highlighted the importance of education in promoting tolerance, empathy, and appreciation for cultural diversity. A comparative analysis of four selected textbooks indicates that exposing students to cultural diversity through learning materials not only enriches their understanding of diversity in Indonesia but also prepares them to participate in a diverse global society. These findings affirm that an inclusive educational curriculum reflecting diversity values can contribute to shaping students' characters, enabling them to appreciate and interact with cultural diversity.

Based on these findings, it is recommended that curriculum developers and educators make further efforts to enrich textbooks with content that broadens students' perspectives on global diversity, beyond the confines of local culture. This includes integrating stories, cases, and examples from various cultures around the world to strengthen students' understanding of global diversity and multicultural perspectives. Additionally, it is important to adopt interactive learning methodologies that encourage discussion, reflection, and student engagement in topics related to diversity, tolerance, and intercultural cooperation. Through this approach, Indonesian language education can effectively contribute to shaping a young generation that not only values cultural diversity but is also equipped with the skills to communicate and collaborate in a global context.

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# Psychological and Pedagogical Aspects of Adaptation of Displaced Ukrainian Children to the Educational Environment of Another Country

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## Abstract

The sudden and unexpected war in Ukraine led to a large flow of citizens displaced abroad. Almost half of them are preschool- and school-age children. The peculiarities of their adaptation to the educational environment of another country necessitates the study of the main aspects of adaptation in these conditions. The aim is to identify the psychological and pedagogical aspects of adaptation to the educational environment of another country of school-age refugee children. The research included the use of surveys, questionnaires (Strengths and Difficulties Questionnaire, SDQ), analysis of official information sources. The research found that the studied 203 children relocated to other countries have high rates of adaptation to the educational environment. Their performance indicators improved, high satisfaction with school, teachers, and relationships with classmates was revealed. The SDQ found a low overall level of adjustment difficulties ($M$ = 16.3, $SD$ = 1.9). The study showed that, in general, displaced Ukrainian children have high rates of adaptation to the educational space of other countries. They are emotionally stable, sociable, moderately hyperactive, have no behavioural disorders, and have high prosocial behaviour. The obtained results can contribute to the development of a programme to support Ukrainian children of immigrants to the educational environment of other countries, which will contribute to their psychological and pedagogical adaptation to it.

**Keywords:**

Adaptation, Refugees, Asylum Seekers, Educational Environment, Adaptability, Socio-Cultural Environment

## Introduction

The war in Ukraine, which began on February 24, 2022, became a crisis period for many citizens. A large number of people were forced to leave the country, seeking asylum in other countries. They include, in particular, a large proportion of children who had to adapt to the socio-cultural and educational environment of another country.

Analysis of data from the Office of the United Nations High Commissioner for Refugees indicates an increased flow of refugees to European countries. According to the

latest data, more than 7 million Ukrainian citizens were displaced abroad at the end of May 2022. As of January 31, 2023, a total of 8,046,560 refugees from Ukraine were registered throughout Europe. As the publication Visit Ukraine notes, in 2023 the largest increase in the number of refugees was recorded in Germany, the Czech Republic, and Ireland. As of June 30, the number of Ukrainians in the European Union was 4 million 70 thousand people. Most of them found asylum in Germany (28%), Poland (24%), and the Czech Republic (9%) (Visit Ukraine, 2023; Operational data portal, 2023). According to updated UNHCR data, there are 5,946,000 Ukrainian refugees in Europe as of November 21, 2023 (UNHCR, the UN Refugee Agency, 2023).

In connection with the war in Ukraine, the European Union implemented its directive on temporary protection for the first time (European Union, 2022b), stipulating that Ukrainians received the right to live, work and receive social assistance in EU member states.

Many countries have signed international conventions to guarantee the right of access to education for all categories of people, including displaced persons and refugees (Ruşitoru, 2017; United Nations, 2013). These are mainly the International Convention on the Rights of the Child (United Nations, 1950; United Nations, 1989), the European Convention on Human Rights (European Court of Human Rights & Council of Europe, 1950) and the European Social Charter (Council of Europe, 1961). In particular, the principles of the realization of the right to education, accessibility and effectiveness of education, equal access to education of vulnerable segments of the population, including refugee children and children seeking asylum, are specified in the European Social Charter (Convention on Refugees, 1951; Council of Europe, 1961).

However, the legislative regulation of the issue of relocation of Ukrainian citizens does not determine the aspects of their socio-cultural, psychological, and educational adaptation to the environment of another country. The issue of children's adaptation to the educational environment of another country deserves special attention (UNESCO, 2021; United Nations High Commissioner for Refugees, 2023). Children who are forced to flee their home country because of military operations are characterized by many psychological problems. These include communication problems (Chovpan, 2023), manifestations of negativism, psychosomatic disorders (Patel et al., 2023), emotional instability, etc. Besides, there is also the problem of adaptation to the education system and educational institution of another country. The adaptation, being intensified by a difficult psychological state, can be difficult and take quite a long time (Teleková et al., 2023; Albrecht & Panchenko, 2022). Different lifestyle, habits, daily routine, mentality provoke anxiety and withdrawal of children (Pagel & Edele, 2022). Therefore, they need active pedagogical and psychological support.

In many countries, Ukrainian children are perceived positively, with sincerity and kindness (Lokshyna et al., 2022). There are many active programmes and organizations that provide them with material, financial, and social-psychological support. Nevertheless, forcibly displaced children experience psychological discomfort (Soylu et al., 2020) in the new educational environment, which is determined by the cultural environment of the new country, the lifestyle, the social position of the arriving family, and the child's personal qualities (Radhouane, 2023). This can lead to a decrease in their adaptation capabilities, behavioural disorders (Ruşitoru, 2017), negative emotional experiences, conflicts in the school environment (Yohani, 2011). As some researchers point out, the main problems faced by children of forced migrants are the difficulties of psychological adaptation (Chovpan, 2023).

Therefore, the aim of the study is to determine the main psychological and pedagogical aspects of the adaptation of forced migrant children, which will contribute to the development of effective means of increasing their adaptability to a new educational environment. The aim involved the fulfilment of the following research objectives:

1. carry out a methodological analysis of the definition of the concepts "refugees", "asylum seekers", "displaced persons", "immigrants";
2. conduct a content analysis of the dynamics of Ukrainian children displaced abroad;
3. conduct a survey of immigrant families to identify schoolchildren's adaptation to the educational environment of another country.

## Literature review

Before the full-scale war in Ukraine, the concept of displaced persons was mostly limited to the term "refugees". However, a significant number of people who left Ukraine after February 24, 2022, have different statuses. It is determined depending on the specifics and legislation of each country.

The Temporary Protection Directive for refugees from Ukraine (European Union, 2022a) uses the term "persons displaced from Ukraine". At the same time, the term "refugees" does not apply to the specified category of Ukrainian citizens. Therefore, we will rely in this work on the status of displaced persons, which reflects the forced resettlement of citizens as a result of military operations in Ukraine.

All displaced persons without exception undergo adaptation to a new environment. This is adaptation to the social environment, rhythm of life, financial situation, living conditions, language environment and communicative interaction, work, study, etc. School-age children who are undergoing all kinds of adaptation and require pedagogical support and psychological support need attention the most.

Buzarov (2023) notes that already existing local Ukrainian communities or their own social contacts played a significant role in the adaptation of Ukrainian displaced persons. In the later stages, international humanitarian organizations played a predominant role. However, the integration of displaced persons from Ukraine for permanent residence in European countries largely depends on language, age, education, labour, and social characteristics. Accordingly, the adaptation process will be more successful if actions are taken to provide social, psychological, and communicative support by the governments of European countries at the early stages of the relocation of Ukrainians (Embassy of Ukraine in the Republic of Poland, 2022; Kovács et al., 2023).

Adaptation is a two-way process based on the interaction of the individual and society, and contributes to the optimal correlation of the values of the individual and the group in which this individual stays (Berezka, 2022).

Understanding certain psychological and pedagogical aspects of the process of adaptation to the educational environment and creating optimal conditions can contribute to its positive course and alleviation of adaptation difficulties. It is quite important to facilitate the adaptation of children to the educational environment, otherwise it can negatively affect their health (Teleková et al., 2023).

Bozdağ and Bilge (2022) point out the importance of establishing positive contact by refugee children with their peers and teachers at school for their successful social integration. This will contribute to their full adaptation to the new social and educational environment.

Adaptation in a new educational environment of another country can be accompanied by the influence of many factors. They include external factors (ethnicity and culture, social class, material situation, cultural environment of the new country) and internal factors (individual characteristics of the child: abilities, character, behavioural strategies). The most significant factors that influence the process of children's adaptation include the economic factor, the factor of uncertain status, the psychological state of parents, mental or physical injuries, and a favourable atmosphere at school (Chovpan, 2023).

Some researchers indicate that the interaction between the culture of the host society and the culture of the refugees, including education, is a key aspect of the transition to a new environment (Sung & Wahl, 2021).

Radhouane (2023) singles out two main problems in the adaptation of displaced children:

1. the need to develop a comprehensive approach to the adaptation of refugee children in order to analyse the adaptive processes before and after displacement, as well as contribute to the understanding of the children's attitude to education and the educational institution of the new country;

2. problems related to the relationship with parents, who are more difficult to adapt than children and can worsen the child's adaptation because of certain barriers, at the same time, the attitude and competence of educational institutions' staff in the host country are important factors in successful adaptation.

On March 31, 2022, the European Commission proposed key principles for the integration of Ukrainian refugee children into education systems of member states in its Policy Guidance on Supporting Inclusion of Ukrainian Refugees in Education: Considerations, Key Principles and Practice (Council of Europe, 2022). The priority in the document is the creation of safe places for refugee children, where they would feel like full members of society.

Lokshyna et al. (2022) established that the level of the integration of Ukrainian displaced children into the educational space of other countries is high, which contributes to their rapid adaptation to the educational environment. In particular, attention is focused on pedagogical conditions: the organization of education with due regard to the needs of the child, the opportunity to learn the language of the country, separate classes for displaced persons with a choice of additional subjects, the opportunity to simultaneously study online in Ukrainian schools.

According to some researchers, an even distribution of Ukrainian displaced persons among local children in classes is effective. This will make it possible for Ukrainian children to more likely adapt to the educational environment of another country (Lintner et al., 2023).

Important factors in the adaptation of Ukrainian displaced children to the educational environment are:

- educational strategies in which support comes from the school administration, teachers and peers;

- development of subject competencies in accordance with the curriculum of the host country;

balancing assessment strategies in order to promote the development of individual qualities of each student and guarantee the final control in parallel in the host country and in Ukraine (if children are studying in parallel) (Parmigiani et al., 2023).

Although Ukrainian displaced children are quite easily adaptable compared to refugees from other countries (Zindler et al., 2023), the issue of the main psychological and pedagogical aspects of Ukrainian children's adaptation to the educational space of other countries remains problematic.

## Methods

### *Research design*

The identification of psychological and pedagogical aspects of the adaptation of displaced Ukrainian school-age children to the educational environment of other countries was based on a questionnaire for parents created with the use of Google Forms. The study was conducted in the period from April 26 to October 20, 2023. The first stage of the research provided for an analysis of existing international legal documents, which classify the status of displaced persons from Ukraine and grant them the right to residence. The second stage involved a content analysis of the official statistics of the United Nations High Commissioner for Refugees (UNHCR) on the number of families displaced abroad and the number of school-age children. The third stage was the search for displaced families took place through Facebook groups (Ukrainians in Poland, Ukrainians in Germany, Ukrainians in Romania, Ukrainians in Austria", Ukrainians in Italy, etc.), where they were offered a survey to determine children's adaptation and difficulties.

### *Sampling*

The survey was created in Google Forms for conducting the research, which involved 230 families with school-age children who moved abroad. Each interviewed family has from 1 to 3 children, so the total number of children is 387. Of them, 224 are female and 163 are male. The inclusion criteria were the child's age from 6 to 16 years and moving abroad because of military operations after the start of the full-scale invasion of Ukraine.

The surveyed families live in 15 European countries: Poland (27), Germany (19), Bulgaria (21), the Czech Republic (18), the Netherlands (15), Austria (12), Romania (9), Slovenia (11), Spain (13), France (18), Norway (16), Turkey (12), Italy (12), Hungary (10), Sweden (17).

## Methods

A questionnaire Child's Adaptation to the educational system of a foreign country in Google forms was created for the research.

The structure of the questionnaire included three blocks. The first block included general information about the family (number of children, age, gender, duration of stay abroad). The second block included 7 questions related to the organization of the child's educational environment:

1. Does the child attend an educational institution in the host country? (yes, no);
2. Do the teachers show support for your child and his/her educational support? (yes, no)
3. Are conditions created in the educational institution for the integration of your child into the educational space? (yes, partially, no)
4. Do you use electronic resources developed by European countries to improve the education of Ukrainian displaced children? (yes, not familiar with them, do not use them)
5. Does a psychologist work with your child? (yes, no, we don't see the need)
6. Is it possible to learn the language of the country for free? (yes, no)
7. How did the level of your child's academic performance change in the new class? (improved, worsened, remains unchanged).

The third block provided for determining the child's psychological state. It included 5 questions:

1. Is the child satisfied with communication with peers? (yes, partially, not satisfied);
2. How can you determine the psycho-emotional state of your child (positive, satisfactory, indifferent);
3. Do you notice that your child has become withdrawn since being in another country? (yes, the child's condition has not changed, no, the child is completely open);
4. Is your child satisfied with school and class? (very satisfied, partially, not satisfied);
5. Does the child have a desire to spend leisure time with new classmates? (yes, no)

The Strengths and Difficulties Questionnaire (SDQ) was used to determine the characteristics of the child's psychological state. The questionnaire contains 25 items and is aimed at determining the child's emotional and behavioural development. It is used to determine whether the child has emotional or behavioural problems, and what is the nature of these problems. Each item should be evaluated with an answer — "False", "True to a certain extent" or "True". The questionnaire was created for children from 3 to 16 years old. The parents fill out the questionnaire for children up to 11 years of age, while children from 11 to 16 can do it independently. All questionnaire items are grouped into 5 scales (prosocial scale, hyperactivity

scale, emotional symptoms scale, behavioural problems scale, and peer problems scale).

A content analysis of informational statistical data of the UNHCR on the number of families displaced abroad and the number of school-age children was conducted to determine the number of children displaced abroad. The data on the number of displaced Ukrainian citizens are constantly updated on the organization's website to monitor the dynamics of the movement of Ukrainian displaced persons and the directions of their movement.

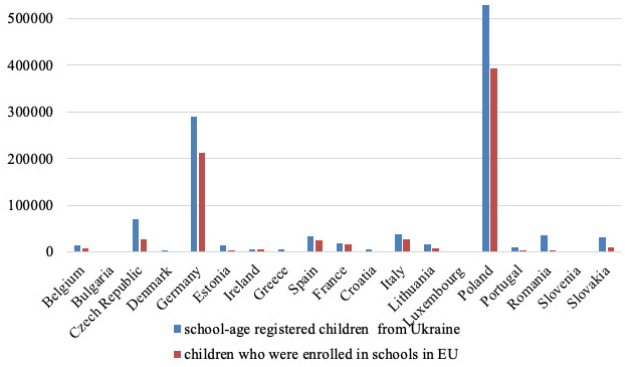
Ethical criteria of research

The survey was conducted anonymously, without specifying the respondents' names and e-mail addresses. All studied families voluntarily completed the survey and provided information about themselves.

**Results**

The study showed that there were more than 600,000 school-age children abroad as of September 2022, with the largest number studying in Poland (Figure 1).

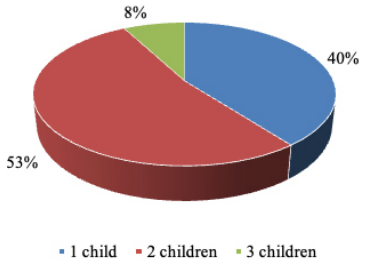
**Figure 1.**
*Total number of displaced Ukrainian children and children studying in European countries*




According to the figure, we can see that Poland and Germany hosted the largest number of displaced children. At the same time, only half of them attend an educational institution in the host country. In other countries, the number of arriving children is almost equal to the number registered in educational institutions. Such data indicate that displaced Ukrainian citizens continue to arrive in Poland and Germany, so the figures may be inaccurate.

According to the survey data, 230 families that participated in the study raise 1 to 3 children (Figure 2).

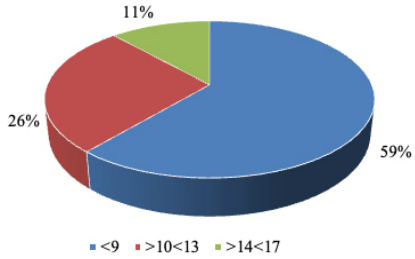
**Figure 2.**
*The number of children in surveyed families*




Most families have 2 children (53%), slightly less than half of the respondents have 1 child (40%), and only 8% have 3 children. The total number of surveyed families was 387 children.

The conducted survey determined that, the majority of the interviewed displaced children are children of primary school age (Figure 3).

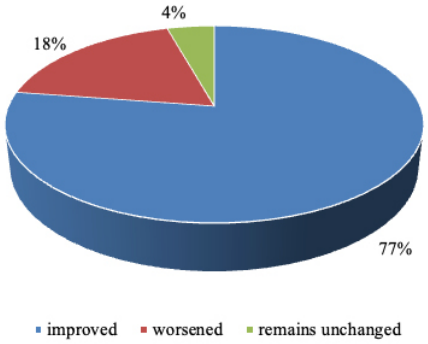
**Figure 3.**
*Age classification of surveyed children*




The questions of the second block established that among the studied families there is a very low percentage of those who are not satisfied with the state of the educational system or educational institution. A total of 90% of children attend an educational institution in the host country, of which 35% continue to study online in Ukrainian schools in parallel. At the same time, only 8% of the surveyed children are studying online and 2% are temporarily not studying. Such data show that almost all children are enrolled in educational institutions, most of them — full-time in local schools.

The majority of parents noted (87%) that teachers show support for children and provide them with educational support. According to the parents, the educational institution has created all the conditions for the integration of the child into the educational space (82%), a psychologist works with the child (75%), there are free language lessons (95%), there is an opportunity to use international educational resources for learning (84 %). In general, as parents noted, the level of children's educational performance has improved (Figure 4).

**Figure 4.**
*Level of educational performance of displaced children according to their parents*




A total of 77% of parents believe that the level of their child's academic performance has improved, 18% have indicated that it has worsened and 4% have indicated that it has not changed. Such data indicate that there are children who, despite the created conditions of the educational space, still find it difficult to adapt to a new educational environment, a different culture and language.

Evaluating the child's psychological state, parents indicated that, in general, their children feel positive in the school environment (Table 1).

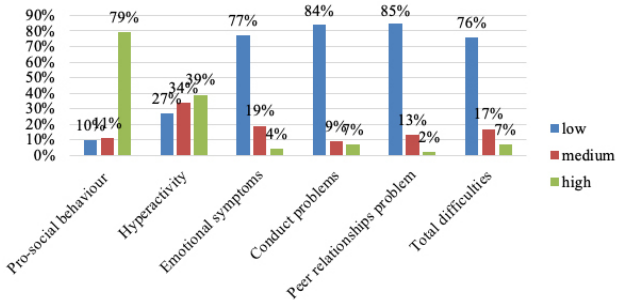
**Table 1.**
*Indicators of psychological adaptation of displaced children to the educational space of another country*

| Evaluation parameters | satisfied | partially satisfied | not satisfied |
|---|---|---|---|
| Communication with classmates | 80% | 16% | 3% |
| The school as a whole | 67% | 20% | 13% |
| Teachers | 77% | 15% | 9% |
| Organization of learning | 71% | 21% | 8% |
| | positive | satisfactory | indifferent |
| Psycho-emotional state | 85% | 12% | 3% |

Among the surveyed families, a high percentage of those who are satisfied with communication with classmates (80%), the school as a whole (71%), teachers (77%), and the organization of education (71%). These children receive all the necessary services and conditions for educational integration, which contributes to their adaptation to the educational space of another country. The majority of parents identified the psycho-emotional state of the child as positive (85%), some noted that it was satisfactory (12%), and indifferent (3%). Such results indicate that a significant proportion of displaced children receives full support from the educational institution, they actively communicate with their peers, show interest in learning, in language learning, and come in contact with teachers.

Based on the results of the SDQ questionnaire, data were obtained that indicate a low level of adaptation difficulties for children displaced abroad (Figure 5).

**Figure 5.**
*Scales of difficulties in the adaptation of children displaced abroad*




According to the figure, children displaced abroad have a high level of pro-social behaviour (79%), a medium level of hyperactivity (34%), a low level of emotional problems (77%), behavioural problems (84%), problems with peers (85%). The general level of difficulties is low among the subjects (76%). The obtained indicators show a fairly high level of children's adaptability. They have a fairly positive psycho-emotional well-being, no mood swings, typical constructive behaviour, and positive relationships with peers.

The ratio of the general level of adaptation difficulties of displaced children by age and gender showed minor differences (Table 2).

**Table 2.**
*Indicator of the level of general adaptation difficulties of displaced children*

| | Total difficulties | | |
|---|---|---|---|
| age | Mean | *SD* | *N* |
| <9 | 8.2 | 1.1 | 227 |
| >10<13 | 9.6 | 1.5 | 102 |
| >14<17 | 12.4 | 2.2 | 58 |
| gender | Mean | SD | N |
| male | 16.3 | 1.9 | 163 |
| female | 16.8 | 2.7 | 224 |

The obtained results state that the smallest adaptation difficulties were found in the group of children under the age of 9 (*M* = 8.2, *SD* = 1.1), a slightly higher indicator — in the group from 10 to 13 years (*M* = 9.6, *SD* = 1.5), and the largest —among children aged 14 to 17 (*M* = 12.4, *SD* = 2.2). Although all indicators are low, younger children are still easier to adapt to external conditions than older children.

The analysis by gender established that there were no clear differences in the indicators of adaptation difficulties for boys (*M* = 16.3, *SD* = 1.9) and girls (*M* = 16.8, *SD* = 2.7).

The conducted research showed that the main aspects of adaptation of displaced children to the educational space of another country are psychological. It is the

psychological state that depends on the individual characteristics of the personality that determines the degree of its adaptability. Under the best organized conditions, the education of such children in other countries is optimal for their adaptation.

**Discussion**

The obtained results indicate that more than 600,000 school-age children have left Ukraine since the beginning of the war. Most of them started attending educational institutions at their place of residence. The issue of adaptation of displaced children has gained considerable importance, as the child's academic performance and emotional well-being depend on it (Ruşitoru, 2017).

It is noted that maladaptation in the educational environment of a new country can negatively affect the already difficult condition of the child (Yohani, 2011; Panchenko, 2022). At the same time, a positive school experience plays an important protective role in overcoming the challenges associated with moving and adapting to a new educational environment (Patel et al., 2023; Bondarenko, 2022).

Radhouane (2023) points out that displaced persons are reluctant to seek help from support services and psychologists, so for children the environment of the educational institution is crucial in terms of adaptation. This shows that schools play a key role in the adaptation of refugee children from different socio-cultural structures to social life (Soylu et al., 2020; Cerna, 2019).

The results of the study showed that displaced Ukrainian children in a new educational environment have fairly high adaptation rates, which is due to the high level of organization of their educational conditions. Lokshyna et al. (2022) obtained the same results, who established that the educational policy of most European countries is oriented towards social, emotional, and psychological support of displaced Ukrainian children.

The problems with hyperactivity and emotional symptoms were identified among the problems of adaptation in a small number of children. Such results indicate that there were certain changes in the children's psyche as a result of military operations. They may feel emotional discomfort in direct or indirect psychological situations, which is intensified by the new social and cultural environment, educational space of another country. Zindler et al. (2023) also indicate the negative impact of experienced military operation on the adaptation of children, which reduces functional indicators.

The obtained data are consistent with the results of Lisowska and Łojko (2022) who found that the adaptation of refugee children from Ukraine is determined by various factors, the most important of which are relationships with others. Berezka (2022) adds a psychological aspect to this, as the psychology of communication is the key to successful adaptation to the educational space. At the same time, the study revealed a significant number of children with adaptation disorders, in particular, the emotional spectrum disorder in displaced children, which contradicts the obtained data (Paoletti et al., 2023; Rousseau & Guzder, 2008). It can be the result of directly experienced traumatic events related to war or the loss of loved ones. The surveyed families did not experience such events.

**Conclusions**

Therefore, the conducted research established that the largest international organizations (UN, UNESCO, OECD, EU Council of Europe) have actively participated in the development of strategies for the integration of Ukrainian displaced children into the educational systems of other countries since the beginning of the war in Ukraine, taking into account the already acquired experience of the functioning of education in times of crisis. Nevertheless, the developed recommendations cannot contribute to the full adaptation of school-age children to the educational environment of another country for many reasons. The data obtained during the survey indicate that there is a small, but still significant percentage of children who find it difficult to adapt to a new country and educational space.

There are different types of support for Ukrainian displaced children. What they have in common is the emphasis on children's personal needs and interests, their full support, integration into the educational space based on humanistic principles and in optimal formats, ensuring access to all educational services on a par with other children. However, continuing education according to Ukrainian educational standards and programmes remains an urgent problem as some families still plan to return to Ukraine.

The shortcomings of the study are primarily the constant flow of Ukrainian immigrants abroad, which changes the statistics of displaced persons every week. Therefore, it is difficult to establish valid indicators. The realities of the war force an increasing number citizens to leave their country and seek asylum in other countries. This significantly reduces the demographic indicators of Ukraine, the level of education of the population, and also makes corrections in the process of becoming a state. It is difficult to control the number of displaced persons, as not all of them leave legally, and not all of them have yet decided on their choice of country and resettlement status. This limits the control over their movement. In turn, almost all countries that accept Ukrainian displaced persons

do not conduct regular monitoring of children's adaptation to education. Therefore, parents' survey is the only way to determine the extent of children's adaptation, which complicates the research, as not all parents are willing to cooperate.

Determining psychological and pedagogical conditions for the effective integration of Ukrainian displaced children into the educational space of another country is considered promising. Another promising direction is the development of a system of synchronizing the educational environment of foreign countries and Ukraine in order to improve the adaptation of displaced children to the educational space.

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# Mediating the Effect of the Parent-Child Relationship in the Relationship Between Self-concept and Career Maturity in Children and Adolescents

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## Abstract

The objective of this study is to determine whether the parent-child relationship exerts a mediating effect on the influencing relationship of the self-concept of children and adolescents with career maturity. To this end, we processed data from 5621 students who participated in the first through fifth rounds of the survey in the 2013 Korea Education Longitudinal Study. We performed a paired sample t-test to verify differences between the groups of children and adolescents. To verify the mediating effect of the parent-child relationship on the influencing relationship of self-concept among children and adolescents with career maturity. The results showed that there was a difference depending on gender and city size in terms of self-concept, career maturity, and relationship. This study also revealed a significant discrepancy in the self-concept and parent-child relationship based on the developmental stages. In addition, the study also verified the mediating effect of the parent-child relationship in the relationship between the self-concept of children and adolescents and their career maturity. Based on these findings, it is necessary to implement a systematic education program for parents because the parent-child relationship is highly important in improving students' career maturity.

**Keywords:**

Self-Concept, Career Maturity, Parent-Child Relationship, Mediating Effect, Longitudinal Study Data

## Introduction

Our ego is constantly developing, and our self-concept, our perception of who we are, develops as we interact with our social environment and the people around us. As the home is the first social environment a person experiences after birth, human beings learn basic lifestyles while socializing through family relationships at home and become greatly influenced in the development of linguistic, emotional and social skills. In particular, the relationship with one's parents is an influencing factor for a person's psychological characteristics such as self-concept and career maturity.

Self-concept refers to ideas, appraisals, and evaluations that individuals have regarding their talents or abilities

(Moschner & Dickhäuser, 2018). Self-concept refers to a person's opinion of oneself and is roughly classified into positive and negative self-concepts (Glossary of Educational Psychology, 2000). Through interaction between the perception of the situation and various environments during the development process, self-concept is shaped into one's own specific self-concept as it is continuously specified and changed (Lee & Koh, 2003; Craven et al., 1991). Adolescence is a time when self-identity and self-concept are established, and it is especially important because it is a time of physical and mental changes, as well as many conflicts and choices, and the self-concept that develops during this time will influence adulthood (Kang, 2012). Adolescence is a time of experiencing various developmental changes as it is a preparation period for the transition from childhood to adulthood.

Starting in middle school, adolescents experience conflicts regarding career development while exploring and selecting a future career. This process is closely related to self-concept formation in adolescence. In terms of studies that have supported this, research has been conducted on the relationship between adolescents' self-concept and career maturity (Heo, 2012; Koo et al., 2016) and on the relationship between self-concept and academic performance and career education. Previous studies have highlighted that adolescents should explore their future careers and occupations, understand their talents and aptitudes, and think about the path to take in the future. In this vein, career maturity is defined as affective attitude, cognitive ability, and the degree of preparedness necessary to proactively explore and plan one's future career in relation to career development (Lim et al., 2001).

Although various factors influence career maturity during adolescence, previous studies have primarily explored internal and environmental factors. These scholars advocated that self-concept must be positively formed for the development of career maturity for adolescents to view themselves positively, to decide on a career based on their experience and aptitude, and to conscientiously prepare for that career (Lim et al., 2015; Koo et al., 2016). In addition, many studies have highlighted the significance of home environment among environmental factors, particularly parental influence. It has been reported that parents' educational support, which can be described in terms of parents' academic and emotional support, affects children's level of career maturity (Lee & Song, 2017).

Because self-concept, career maturity, and parent-child relationship constantly change over time based on the surrounding environment, it is imperative to conduct continual research on the relationship between them by considering the developmental attributes and development cycle. From this perspective, it is necessary to examine the relationship between the related variables of the self-concept of children and adolescents, who need to explore careers and systematic career guidance. Therefore, this study aims to determine how self-concept affects career maturity from childhood (fifth and sixth grades of elementary school) to adolescence (first to third grades of middle school), when "career exploration" begins, and whether the parent-child relationship functions as a parameter and influences career maturity in these relationships.

To confirm the overall tendency of Korean children and adolescents, it is highly significant and valid to utilize longitudinal research data collected based on reliable procedures at the national level. Therefore, this study aims to utilize longitudinal data from the 2013 Korea Education Longitudinal Study (KELS) to determine the difference between the group of children (fifth and sixth graders in elementary school) and the group of adolescents (first, second, and third graders in middle school) in terms of self-concept, career maturity, and parent-child relationship. This study also aimed to verify the effect of self-concept on career maturity and the mediating effect of the parent-child relationship. To this end, the hypothesis that there would be differences in self-concept, career maturity, and parent-child relationship according to the gender and city size, and also children and adolescents. And there would be a mediating effect of parent-child relationship on the relationship between self-concept and career maturity in children and adolescents are established.

Hypothesize 1. There would be differences in self-concept, career maturity, and parent-child relationship depending on gender and city size.

Hypothesize 2. There would be a mediating effect of parent-child relationship on the relationship between self-concept and career maturity in children.

Hypothesize 3. There would be a mediating effect of parent-child relationship on the relationship between self-concept and career maturity in adolescents.

Hypothesize 4. There would be differences between groups of children and adolescents in self-concept, career maturity and parent-child relationship.

## Method

### *Subjects*

To analyze the relationship between self-concept, career maturity, and parent-child relationship perceived by children and adolescents, we conducted this study using data from the 2013 KELS. Out of the longitudinal data from the first through seventh years,

we used the first-fifth year data, which was deemed to be free of problems for analyzing or deriving results despite the changes made in some measurement items. Specifically, we utilized data collected for five years from fifth to ninth graders (or third graders in middle school) in terms of their academic year.

This study utilized the data of 5,261 students (fifth and sixth graders in elementary school and first, second, and third graders in middle school) as the research subjects. A total of 5261 responses from 6451 participants were used for data analysis after insincere or incomplete data were excluded.

*Measurement Tools*

Self-Concept. Questions regarding self-concept in the 2013 KELS were derived from the 2005 KELS. The tool consists of four subfactors for self-concept and five questions for each subfactor: social self-concept (e.g., I do well in a group), family self-concept (e.g., I enjoy being with my parents), physical self-concept (e.g., I am content with my body shape), and academic self-concept (e.g., I enjoy going to school). Each item was self-reported on a 5-point Likert scale, with a higher score indicating a higher level of self-concept. The reliability of each factor, indicated by Cronbach's α coefficient, was as follows: .944 for social self-concept, .953 for family self-concept, .939 for physical self-concept, and .939 for academic self-concept. Thus, the measurement tool was reliable.

Career Maturity. The questions regarding career maturity were taken from the first round of survey for the 'Gyeonggi Education Longitudinal Study', which consisted of five questions regarding self-understanding, five questions regarding career planning, and five questions regarding attitude toward work. Of these, we excluded questions related to attitudes towards work as they were not included in the first and second surveys, and analyzed the data based on responses to questions related to self-understanding (e.g. I know my strengths) and career planning (e.g. I want to broaden my experience for the future). Each item was self-reported on a 5-point Likert scale, and a higher score indicated a higher level of career maturity. The reliability of each factor indicated by Cronbach's α coefficient, was .943 for self-understanding and .914 for career planning.

Parent-child Relationship. As a tool for measuring the parent-child relationship to investigate the type of experience each participating student has with their parents at home, we used questions regarding parental support and parent-child interaction. Parental support is divided into academic and emotional support. As emotional support was not included in the first and second rounds of the survey, we excluded emotional support and analyzed only academic support. The measurement items for parents' academic support included six questions, for example, "My parents create an academic atmosphere at home" and "My parents ask me about my schoolwork and homework." The measurement items for parent-child interaction include four questions, for example, "My parents enjoy hobbies or leisure activities with me." Measured on a 5-point Likert scale, the reliability of each factor was .932 for parental academic support and .909 for parent-child interaction.

*Method of analysis*

The collected data calculated Cronbach's α coefficient using the SPSS 26.0 program and performed a paired-sample t-test to examine the differences between the group of children and the group of adolescents. Then, to investigate whether the parent-child relationship has a mediating effect on career maturity, the relationship between the self-concept of children and that of adolescents was measured using SPSS PROCESS macro-3.6. To this end, we applied SPSS PROCESS model 4 (for mediation effect verification) proposed by Hayes (2018).

**Results**

*Differences by background variables*

Gender differences. To examine the gender-related differences among children and adolescents in terms of self-concept, career maturity, and parent-child relationship, we conducted two independent sample t-tests. As shown in Table 1, the results of statistical analysis showed that the difference by gender was statistically significant, except for career maturity among elementary school students ($p<.05$). However, the fact that male students scored higher than female students for all variables may reflect the social circumstances in Korea in which male students in childhood and adolescence are given a more positive valuation.

**Table 1.**
*Gender difference*

*(N=5261)*

| | gender | *N* | *M* | *SD* | *t* |
|---|---|---|---|---|---|
| childhood self-concept | male | 2540 | 4.003 | .526 | 2.695** |
| | female | 2721 | 3.964 | .515 | |
| childhood career maturity | male | 2540 | 3.892 | .601 | 1.261 |
| | female | 2721 | 3.872 | .589 | |
| childhood parent-child relationship | male | 2540 | 3.448 | .620 | 5.428*** |
| | female | 2721 | 3.353 | .650 | |
| adolescence _self-concept | male | 2540 | 3.986 | .527 | 8.468*** |
| | female | 2721 | 3.864 | .515 | |
| adolescence _career maturity | male | 2540 | 3.902 | .589 | 2.528* |
| | female | 2721 | 3.862 | .581 | |
| adolescence _parent-child relationship | male | 2540 | 3.520 | .634 | 7.549*** |
| | female | 2721 | 3.384 | .665 | |

*p<.05 **p<.01 ***p<.001

City size differences. In this study, using city size as a criterion, we examined differences in self-concept, career maturity, and parent-child relationship among children and adolescents by conducting a one-way ANOVA. As shown in Table 2, the differences in city size were statistically significant ($p < .05$).

Examination of the differences by city size showed that there were statistically significant differences in all variables (p<.001), and the mean of metropolitan cities and major cities was significantly higher than that of small and medium-sized cities and rural areas. As for the parent-child relationship among elementary school students, the mean of metropolitan cities was significantly higher than that of major cities, small and medium-sized cities, and rural areas. As such, students' self-concept, career maturity, and parent-child relationship showed statistically significant differences depending on city size, which indicates differences in conditions based on city size and region in Korea. Therefore, Hypothesis 1 was confirmed.

Mediating effect of parent-child relationship in the relationship between self-concept and career maturity of children

To test the mediating effect of the parent-child relationship in the relationship between the self-concept and career maturity of children, we applied the fourth model of SPSS PROCESS Macro Models. As shown in Table 3 and Figure 1, self-concept exerted a significant positive effect on the parent-child relationship ($\beta = .706$, $p < .001$), and the parent-child relationship also exerted a significant positive effect on career maturity ($\beta = .412$, $p < .001$); thus, it can be said that parent-child relationship mediates the effect of self-concept on career maturity. In other words, the total effect of self-concept on career maturity was $\beta = .747$ ($p < .001$), and even when the mediator variable (parent-child relationship) was applied, the direct effect of self-concept on career maturity was significant, $\beta = .457$ ($p < .001$), which showed that the parent-child relationship partially mediated the relationship between self-concept and career maturity.

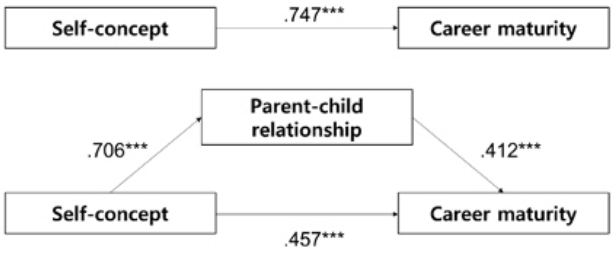
**Table 2.**
*City size differences*

| | city size | *N* | *M* | *SD* | *F* | Scheffé |
|---|---|---|---|---|---|---|
| childhood self-concept | metropolitan city | 917 | 4.117 | 0.510 | 62.594*** | metropolitan city, major city > small and medium-sized city, rural area |
| | major city | 1282 | 4.081 | 0.497 | | |
| | small and medium-sized city | 1996 | 3.904 | 0.519 | | |
| | rural area | 1066 | 3.896 | 0.517 | | |
| childhood career maturity | metropolitan city | 917 | 4.004 | 0.582 | 42.715*** | metropolitan city, major city > small and medium-sized city, rural area |
| | major city | 1282 | 3.979 | 0.586 | | |
| | small and medium-sized city | 1996 | 3.812 | 0.595 | | |
| | rural area | 1066 | 3.789 | 0.582 | | |
| childhood parent-child relationship | metropolitan city | 917 | 3.537 | 0.663 | 30.382*** | metropolitan city > major city, small and medium-sized city, rural area major city > small and medium-sized city, rural area |
| | major city | 1282 | 3.46 | 0.656 | | |
| | small and medium-sized city | 1996 | 3.34 | 0.622 | | |
| | rural area | 1066 | 3.318 | 0.593 | | |
| adolescence _ self-concept | metropolitan city | 917 | 3.987 | 0.530 | 43.113*** | metropolitan city, major city > small and medium-sized city, rural area |
| | major city | 1282 | 4.038 | 0.524 | | |
| | small and medium-sized city | 1996 | 3.853 | 0.510 | | |
| | rural area | 1066 | 3.86 | 0.515 | | |
| adolescence_ career maturity | metropolitan city | 917 | 3.975 | 0.601 | 30.09*** | metropolitan city, major city > small and medium-sized city, rural area |
| | major city | 1282 | 3.968 | 0.581 | | |
| | small and medium-sized city | 1996 | 3.822 | 0.581 | | |
| | rural area | 1066 | 3.808 | 0.563 | | |
| adolescence _ parent-child relationship | metropolitan city | 917 | 3.545 | 0.682 | 26.883*** | metropolitan city, major city > small and medium-sized city, rural area |
| | major city | 1282 | 3.544 | 0.675 | | |
| | small and medium-sized city | 1996 | 3.383 | 0.625 | | |
| | rural area | 1066 | 3.38 | 0.631 | | |

**Table 3.**
*Mediating effect of parent-child relationship in the relationship between the self-concept and career maturity of children*

| variable | β | *se* | *t* | *p* | LLCI | ULCI |
|---|---|---|---|---|---|---|
| mediator variable model (criterion variable: parent-child relationship) | | | | | | |
| constant | .587 | .055 | 10.603 | .000 | .479 | .696 |
| self-concept | .706 | .014 | 51.212 | .000 | .679 | .733 |
| criterion variable model (criterion variable: career maturity) | | | | | | |
| constant | .664 | .043 | 15.611 | .000 | .581 | .747 |
| self-concept | .457 | .013 | 35.597 | .000 | .432 | .482 |
| parent-child relationship | .412 | .01 | 39.262 | .000 | .391 | .432 |

**Figure 1.**
*The structural model (children)*




To determine whether the mediating effect of the parent-child relationship is statistically significant in terms of the effect size in the relationship between the self-concept and career maturity of children, we repeated bootstrapping 5,000 times. Table 4 presents the results. It was found that the mediating effect of the parent-child relationship was significant because it did not include 0 between the upper and lower limits of bootstrapping (β = .291, CI [.271-.310]).

| effect | β | *se* | *t* | *p* | LLCI | ULCI |
|---|---|---|---|---|---|---|
| total effect | .747 | .012 | 62.709 | .000 | .724 | .771 |
| direct effect | .457 | .013 | 35.597 | .000 | .432 | .482 |
| | β | BootSE | | | BootLLCI | BootULCI |
| indirect effect | .291 | .010 | | | .271 | .310 |

Even though the results show that the influential relationship is significant, the direct effect of a child's self-concept on career maturity is greater when the parent-child relationship is a mediator. This indicates the need for a thorough analysis of what type of parent-child relationship should be formed and how a child's self-concept regarding parents should look. Therefore, Hypothesis 2 was confirmed.

Mediating effect of the parent-child relationship in the relationship between self-concept and career maturity in adolescents

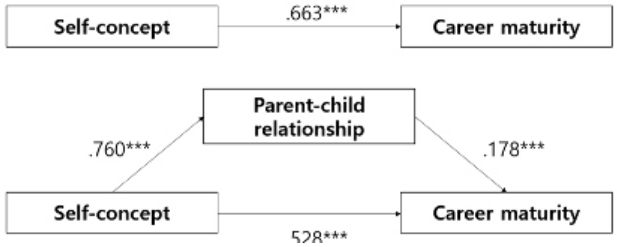
We verified the mediating effect of the parent-child relationship in the relationship between self-concept and career maturity of adolescents. As shown in Table 5 and Figure 2, self-concept exerted a significant positive effect on the parent-child relationship (β = .760, $p$ < .001), and the parent-child relationship also exerted a statistically significant effect on career maturity (β = .178, $p$ < .001); thus, it can be said that the parent-child relationship mediates the relationship between self-concept and career maturity.

The total effect of self-concept on the career maturity of adolescents was β = .663 ($p$ < .001), and even when the mediator variable (parent-child relationship) was applied, the direct effect of self-concept on career maturity was significant, β = .528 ($p$ < .001), which showed that the parent-child relationship partially mediated the relationship between self-concept and career maturity.

**Table 5.**
*Mediating effect of parent-child relationship in the relationship between the self-concept and career maturity of adolescents*

| variable | β | *se* | *t* | *p* | LLCI | ULCI |
|---|---|---|---|---|---|---|
| mediator variable model (criterion variable: parent-child relationship) | | | | | | |
| constant | .467 | .054 | 8.663 | .000 | .361 | .573 |
| self-concept | .760 | .014 | 55.818 | .000 | .734 | .787 |
| criterion variable model (criterion variable: career maturity) | | | | | | |
| constant | 1.198 | .048 | 24.736 | .000 | 1.103 | 1.293 |
| self-concept | .528 | .015 | 34.424 | .000 | .498 | .558 |
| parent-child relationship | .178 | .012 | 14.432 | .000 | .153 | .202 |

**Figure 2.**
*The structural model (adolescents)*




To determine whether the mediating effect of the parent-child relationship is statistically significant in terms of effect size in the relationship between self-concept and career maturity of adolescents, we repeated bootstrapping 5,000 times. Table 6 presents the results. The results showed that the mediating effect of the parent-child relationship was significant because it did not include 0 between the upper and lower limits of bootstrapping (β = .135, CI [.114-.157]).

**Table 6.**
*The tests of mediating effects(adolescents)*

| effect | β | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| total effect | .663 | .012 | 53.505 | .000 | .639 | .687 |
| direct effect | .528 | .015 | 34.424 | .000 | .498 | .558 |
| | β | BootSE | | | BootLLCI | BootULCI |
| indirect effect | .135 | .011 | | | .114 | .157 |

Although the direct effect of an adolescent's self-concept on career maturity was as significant as the mediating effect, the direct effect was greater than the mediating effect. This poses the need for a thorough analysis of qualitative issues regarding parent-child relationships among adolescents. Therefore, Hypothesis 3 was confirmed.

Differences between the group of children and adolescents in terms of self-concept, career maturity, and parent-child relationship

To examine the differences between the groups of children and adolescents in terms of self-concept, career maturity, and parent-child relationship, we conducted a paired t-test. The results showed a statistically significant difference ($p < .001$) in terms of self-concept ($t = 9.946$) and parent-child relationship ($t = -6.565$). There were no statistically significant results for career maturity ($t = .029$, $p > .05$), as shown in Table 7. However, there were statistically significant differences in the subfactors, such as self-understanding ($t = 11.176$) and career planning ($t = -10.286$) ($p < .001$). This is because the average scores for self-understanding and career planning showed contradictory results. Based on this, we can infer that self-concept, career maturity, and parent-child relationships change over time as children become adolescents. Therefore, Hypothesis 4 was confirmed.

## Discussion and Conclusion

### Discussion

In this study, the mediating effect of the parent-child relationship on the relationship between self-concept and career maturity was identified. Therefore, discuss the results as follows. First, based on background variables (gender and city size), the groups differed in terms of self-concept, career maturity, and parent-child relationship. Students from major cities scored higher than those from small cities, and male students had higher average scores than female students did. This result is like the findings of previous research that explored gender differences in self-concept, such as Kang (2012) and Kim and Lee (2015). Because there is statistical deviation in self-concept depending on the area of the adolescent's residence, it is necessary to provide career guidance that takes differences in region and gender into consideration.

Second, the parent-child relationship functioned as a mediator in the relationship between children's self-concept and career maturity was identified in this study. In other words, a clear understanding of social, familial, physical, and academic self-concepts in childhood can influence career maturity in terms of self-understanding and career planning through positive parent-child interaction and academic support. This finding is also supported by Lee and Song (2017) and Liable et al. (2004), who found that the role of parents as social beings can play a key role in the effective formation of self-concepts among individual students. The finding that parents' academic support and interaction with their child can exert a positive effect on career maturity is similar to that of Lim (2016). Thus, parents play a crucial role in improving career maturity by providing their children with academic support and spending sufficient time interacting with them.

Third, it was found that the parent-child relationship partially mediated the relationship between adolescents' self-concept and career maturity. This finding indicates that self-concept and parent-child relationships during adolescence affect career maturity and that self-concept or general perception of self affects career maturity or career preparedness and decision-making through parents' academic and emotional support. This finding is similar to An and Chung's (2015) finding that self-concept affects career maturity, as well as to the findings of other studies (Ju et al., 2020; Kim & Na, 2020; Lee & Song, 2017) that parent-child relationships affect career maturity.

Fourth, there was a significant difference between the group of children (fifth and sixth graders) and the group of adolescents (seventh through ninth graders)

**Table 7.**
*Paired sample t test of the two groups*

| variable | children *M(SD)* | adolescents *M(SD)* | paired difference *M(SD)* | t | p |
|---|---|---|---|---|---|
| social self-concept | 4.194(.562) | 4.173(.558) | .021(.492) | 3.103 | .002 |
| family self-concept | 4.388(.606) | 4.311(.618) | .077(.545) | 10.238 | .000 |
| physical self-concept | 3.507(.713) | 3.535(.702) | -.028(.621) | -3.250 | .001 |
| academic self-concept | 3.841(.693) | 3.672(.698) | .169(.632) | 19.443 | .000 |
| self-concept | 3.983(.521) | 3.923(.524) | .060(.437) | 9.946 | .000 |
| self-understanding | 4.041(.635) | 3.945(.618) | .096(.620) | 11.176 | .000 |
| career planning | 3.722(.661) | 3.817(.627) | -.095(.670) | -10.286 | .000 |
| career maturity | 3.882(.595) | 3.881(.585) | .000(.567) | .029 | .977 |
| interaction | 3.450(.753) | 3.619(.726) | -.168(.697) | -17.523 | .000 |
| academic support | 3.348(.713) | 3.281(.730) | .067(.627) | 7.799 | .000 |
| parent-child relationship | 3.399(.637) | 3.450(.654) | -.051(.558) | -6.565 | .000 |

in terms of self-concept and parent-child relationship. The finding that the group of children had a higher average score in self-concept than the group of adolescents is similar to Cho and Lee's (2018) finding that academic self-concept steadily decreased from fifth to eighth grade. Students manifest a tendency toward a lower level of self-concept as they transition from childhood to adolescence. This can be seen as a phenomenon that occurs in the process of building more relationships and adjusting in a new environment as they become members of a larger social group. Unlike Cho and Lee (2018), who indicated that career maturity decreased the most between the sixth and seventh grades, the present study did not find any changes in career maturity. The group of children had a higher average score for self-understanding than the group of adolescents, while they had a lower average score for career planning. Nonetheless, the differences were found to be insignificant for career maturity because the results were contradictory.

## Conclusion

The findings of this study suggest that during childhood, positive parent-child interactions influence self-concept and career maturity. In adolescence, it is possible that parents can increase their understanding of the social, family, physical, and academic world around them, and support them through their interactions with their children and academic support, which in turn can increase adolescents' self-concept and career planning for their careers. On the other hand, the finding of a direct effect that does not account for the parent-child relationship suggests that careful consideration should be given to how parents interact with and support their children. This is especially important in adolescence.

In the field of child and adolescent education, it is necessary to introduce educational programs to increase students' perceived self-concept to improve career maturity so that students can understand themselves and plan for their careers. In addition, in order to improve the parent-child relationship, which has been shown to mediate the relationship between self-concept and career maturity, parent education should be provided to facilitate parent-child interaction and develop parents' perceptions and behaviors to support their children academically.

## Limitations and Recommendations

The results of this study revealed the following research limitations, so recommendations are suggested based on each limitation.

First, the study found differences in self-concept based on where adolescents lived. This suggests that the living environment has an important influence on the development of self-concept. Nevertheless, since this study was not able to cover all areas of Korea, it would be more meaningful to conduct a nationwide survey in the next study to find out more specifically the differences between regions and the reasons for the differences.

Second, the study found that the parent-child relationship mediated self-concept and career maturity. However, it was not possible to determine how parent-child relationships differentially mediate these effects for children and adolescents, and it would be valuable for future research to focus on this aspect of developmental research.

The results of this study are expected to contribute to the development of educational programs to cultivate children and adolescents' self-concept and career maturity and improve parent-child relationships.

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# Supervision of Early Intensive Behavioral Intervention Onsite or via Videoconference; Outcomes in a Randomized Controlled Trial Pilot

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## Abstract

This study compared the outcome of Early Intensive Behavioral Intervention when supervision was given over videoconference for half of the meetings. This started after 3 months of intervention. The participating children were diagnosed with autism spectrum disorder and were randomly placed in either the videoconference group or in the onsite group. The dependent variables were autism severity, preferences for socially mediated stimuli and problematic behaviors. The independent variable was supervision onsite or by videoconference. The results showed no significant differences between the groups on any of the outcome measures. A limitation of this study was the small group sizes, which limits generalization of the results to other children and settings. Furthermore, the onsite group received some supervision sessions via videoconference due to the COVID-19 pandemic. Nevertheless, our tentative conclusion is that supervision via videoconference has the potential to replace onsite supervision at least partially, but that larger scale research in a variety of settings is needed.

**Keywords:**

Autism, Early Intensive Behavioral Intervention, supervision, videoconference

## Introduction

Autism Spectrum Disorder (ASD) is marked by challenges in communication, social interaction, repetitive behaviors, and narrow interests. Worldwide, it is estimated that over 1% of children receive an ASD diagnosis (Zeidan et al., 2022; Talantseva et al., 2023). The severity of ASD varies and includes a spectrum of intellectual and adaptive functioning levels, with some individuals living independent lives while others require lifelong care.

Early Intensive Behavior Intervention (EIBI) is an empirically supported provision for children with ASD. Numerous systematic reviews have demonstrated significantly more positive outcomes with EIBI compared to control and comparison groups (Makrygianni et al., 2018; Rodgers et al., 2021, According to Green et al. (2002) service models differ, but there are several elements that are in common. (a) The treatment is broad, which means it includes all development

KURA group

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areas and goals are individualized; (b) to reduce disruptive behaviors and shape a functional repertoire, many different behavior analytic procedures are used, such as discrete-trial training, prompting and differential reinforcement; (c) individuals in charge of the treatment have advanced training in behavior analysis and experience working with children diagnosed with ASD; (d) intervention manuals and normal development guides the intervention; (e) the parents are actively engaged in the treatment; (f) the treatment starts in a one-to one format and gradually shifts to a group or classroom format; (g) the treatment is conducted in the child's home in the beginning phase, and later be generalized to other settings (supervisors) the program is comprehensive, usually at least 20 hours of structured teaching every week as well as instructions and practice in unstructured daily settings; (i) the treatment, in most cases, lasts for two years or more; and (j) the children will start with the treatment in preschool age.

In Norway, EIBI is most often provided in the child's local mainstream preschool. Either specialist health services such as the Habilitation Services or the local educational authorities are responsible for oversight and training to the preschool personnel involved in EIBI programs. However, not every municipality or special health service are able to offer such supervision and training (Eldevik et al., 2020). One of the reasons is the lack of EIBI-trained professionals along with the increase in the prevalence of ASD (Baio et al., 2018)

This raises concerns regarding the scalability of EIBI. Often a significant portion of the supervisors time, is spent on travel (Hay-Hanson et al., 2023). Considering these challenges, it is important to explore alternative ways of supervising EIBI programs, such as videoconference. Several studies report successfully using telehealth for training personnel and parents to implement a wide range of behavior analytic procedures such as functional analyses (Benson et al., 2017; Machalicek, et al., 2009; Machalicek, et al., 2010; Wacker et al., 2013), functional communication training (Simacek et al., 2017; Suess et al., 2016), preference assessments (Higgins et al., 2017; Machalicek, et al., 2009); and procedures often embedded in EIBI such as discrete trail teaching (Barkaia et al., 2017; Subramaniam et al., 2016). Hay-Hansson et al., (2013) compared a videoconference group and an onsite group when teaching staff to do discrete trial training (DTT), They included staff from one preschool and one special school. The participants worked with six children, between 5 and 14 years og age. Four of the children had an ASD diagnosis and the other two were diagnosed with moderate developmental disability. The participants were randomly placed in two different groups, one group received training by videoconference and the other group received onsite training. Both groups received the same type of training in DTT with three different programs (matching to sample, receptive- and expressive labeling). The results showed no significant differences between the groups following training. Craig et al. (2021) used telehealth when training paraprofessionals, (e.g., preschool teachers) to teach functional living skills to autistic children.

The increasing number of children diagnosed with ASD and the scarcity of professionals trained in EIBI pose a significant challenge. Moreover, travel time further aggravates this challenge. The adoption of videoconferencing may to some degree mitigate these issues. This study aims to assess the impact of replacing some of the onsite supervision with videoconference-based supervision on EIBI outcomes.

## Method

### *Participants*

The participants were 13 boys and 3 girls between 23 and 48 months of age (mean age 36.9 months) all diagnosed with ASD according to ICD-10 criteria (ICD-10; 2022b). The diagnostic assessments were conducted by professionals independent of this study using the ADI-R and the ADOS (Lord, Rutter, & Le Couteur, 1994; Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012).). The children were referred to the Child Habilitation Services by their general practitioner and their local Educational Psychology Service. Participants were then randomly assigned to either an onsite or a videoconference group drawn as a lottery by an independent individual. Initially, both groups had eight children, but due to technical difficulties, one child was moved from the videoconference group to the onsite group. Another child was withdrawn from preschool due to concerns about the coronavirus. As a result, the onsite group ended up with eight children, while the videoconference group had seven children.

### *Design*

The dependent variable in this study was child outcome. The independent variable was the type of supervision. Both groups began with onsite supervision for a period of 3 months. Subsequently, every second supervision session for the experimental group was replaced with video-based supervision. The onsite group received onsite supervision throughout the entire period. Before the treatment program commenced, an independent t-test was conducted to check for significant differences between the two groups. The t-test indicated no significant differences between the groups on any of the intake variables, suggesting that the groups were similar, see Table 1.

**Table 1:**
*Participant characteristics at intake. Age in months, Autism Diagnostic Observation Scale (ADOS) and Autism Diagnostic Interview-Revised (ADI-R) scores. No significant differences between groups were found.*

| | Onsite (n=8) | | Videoconference (*n*=7) | | |
|---|---|---|---|---|---|
| Characteristics | Mean | *SD* (range) | Mean | *SD* (range) | p |
| Age at intake | 35.6 | 6.6 (23-41) | 39.9 | 3.9 (35-47) | .17 |
| ADOS (Social Affect) | 16.9 | 3.2 (12-22) | 17.4 | 2.9 (12-20) | .73 |
| ADOS (Repetative) | 2.0 | 1.5 (0-4) | 2.9 | 1.3 (0-4) | .27 |
| ADOS (Total) | 18.9 | 3.8 (12-24) | 20.3 | 4.1 (12-24) | .50 |
| ADI-R | 21.5 | 10.4 (6-38) | 26.9 | 14.4 (5-46) | .42 |

**Setting**

The setting was the same for both groups. As is common in Norway all participants received their intervention in their local mainstream preschool. Each preschool had a designated work room, which was equipped with all the necessary materials for EIBI sessions Materials for the sessions was readily available, including the day's training schedule, individualized training plans for the children, and reinforcement items such as toys.

The participating preschool and families received information about both the study and the treatment. The videoconference group were provided with seven-inch iPads with 4G connectivity. These iPads came preconfigured with an Apple ID user account and a Gmail account. Furthermore, the required videoconferencing software, known as "JOIN," had already been pre-installed on the iPads.

*Outcome measures*

The Childhood Autism Rating Scale-Second Edition (CARS2; Schopler et al., 2010; Vaughan, 2011). CARS2 is a screening tool based on observations of the child. It also yields three categories of severity. It measures behavior across fifteen items that typically can be related to ASD and has been validated (Vaughan, 2011). For example, imitation, emotional response, or relations to other people. The scoring ranges from one to four, where one indicates that the child's behavior is as expected in a child without ASD. A score of four indicates that the child's behavior is abnormal. The scores from each item are added together to achieve a total raw score. The CARS2 was completed by the EIBI supervisor in collaboration with the preschool staff at intake and after 12 to18 months of intervention.

Aberrant Behavior Checklist (ABC; Aman et al., 1985; Kaat et al., 2013). Aberrant Behavior Checklist (ABC) is a questionnaire consisting of 58-items that assesses problem behavior. These items are distributed on five subscales; (a) irritability: (b) lethargy; (c) stereotypy; (d) hyperactivity and (e) inappropriate speech. Behaviors are rated from 0 to 3. A score of 0 indicates no problem behavior, while a score 3 indicates severe problem behavior. The Aberrant Behavior Checklist was first published by Aman et al., (1985), and has later been validated specifically for children with an ASD (Kaat et al., 2013). The parents scored this questionnaire at intake and after 12 to 18 months of intervention.

The Socially Mediated and Automatic Reinforcer Questionnaire (SMARQ; Klintwall & Eikeseth, 2012). The SMARQ is a questionnaire developed to assess the children's preference for socially mediated and non-social stimuli. The first part of the questionnaire lists behaviors commonly observed in children with ASD, and that are often considered maintained through automatic reinforcement contingencies. These include body rocking, maintaining a distance from others, or frequently toggling a light switch. Staff members assess whether these behaviors are present or absent during a typical day. The second part of the questionnaire assess behaviors maintained by reinforcers that are socially mediated. These may include receiving fruit, listening to a song, or being tickled. The preschool staff completed this questionnaire at intake and after 12 to 18 months of intervention. The SMARQ has not yet been validated.

*Procedure*

The intervention involved parents, preschool teachers, assistants, and supervisors from the child habilitation services. All 8 supervisors had a minimum of a bachelor's degree, all but one had completed an extra year of study in special education or were working either on their master's degree or had completed a master's degree in an area relevant to this type of work. The supervisors had an average of 20.9 years of experience with EIBI (range 8 to 27 years).

The Child Habilitation Services followed the national guidelines for implementation of EIBI (Vea et al., 2015). The intervention started with a 2-day workshop, where the staff-members were given more detailed information about autism and EIBI. The child was present for parts of the workshop for assessments and demonstrations of teaching programs. The supervisors demonstrated teaching programs and procedures and then observed and gave feedback to staff and parents doing the programs.

Due to the COVID-19 restrictions the children were placed in small groups with 2-5 teachers or assistants. The participating supervisors had two children participating in the study, one in each group. Intervention was provided between 10 and 20 hours per week, averaging about 15 hours. During the first three months the training program was organized and implemented by using the same principles. The

supervision meetings usually included modeling, coaching, feedback, discussion, and documentation. In modeling, the supervisor demonstrated the teaching procedures for new teaching programs. A description of the teaching program was provided. During coaching, the staff-members and parents were coached in the implementation of the modeled training strategies and how to make individual adjustments for each child. The staff received feedback from the supervisor while doing the teaching. Feedback on the teaching was given until each staff member had reached an acceptable level of proficiency. The discussion and the documentation parts are closely related since both focused on the child's progression and making plans for how to progress further. The documentation made it possible to evaluate the intervention and for staff to write a detailed plan for the next training session. For example, planning new training goals, training strategies and what the team should focus on. After three months with supervision onsite both groups were responsible for the content in the training plans.

After the initial three months the videoconference group had every second meeting on videoconference, i.e., every fourth week. In between these videoconferences they had one onsite supervision meeting. The onsite group continued to have supervision onsite every second week. The videoconference group received an iPad with access to the Norwegian Health Network's video meeting platform where the staff-meetings, between the preschools and supervisors, would be organized. The meetings for both groups included an evaluation of the children's progress, changes that needed to be made and agreeing on new goals. The supervision meetings lasted for approximately two hours regardless of if it was onsite or on videoconference.

*Treatment integrity*

The supervisors and the preschool staff members monitored the intervention using a checklist that represented the national EIBI standards. In addition, the supervisors followed a plan for the implementation of the treatment in the project, including which tests and assessments that should be done when and by whom.

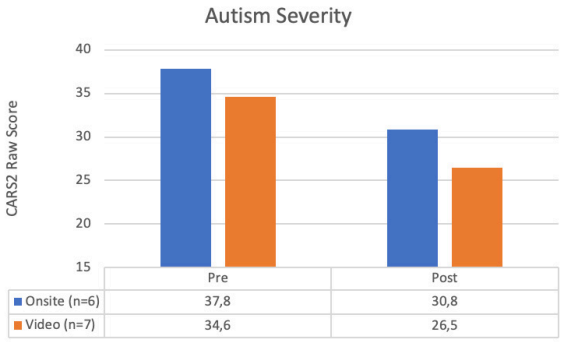
**Data analysis**

All the t-tests were conducted using SPSS version 28. The degrees of freedom, t-value, p-value, and effect size were measured and retrieved from the SPSS files. Due to the small groups and the different number of participants in the groups, the effect size (ES) was computed using the Hedges g. The effect size (ES) shows the differences from pre-test to post-test within each of the two groups. According to Bobbit (2021), and effect size of .2 is low, an effect size of .5 is medium and an effect size of .8 is large. Negative values indicate that the mean of the post-test scores is lower than the mean of the pre-test scores.

**Results**

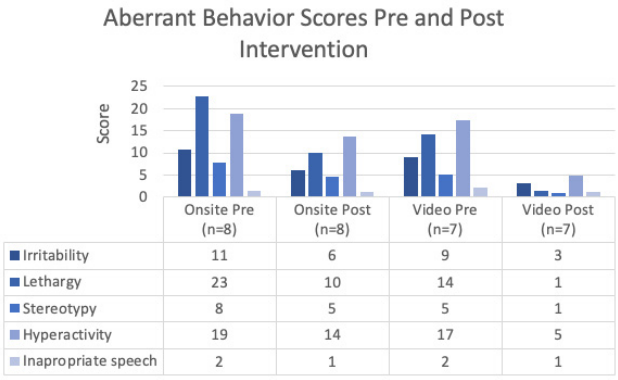
An independent t-test was conducted to see if there were any differences between the videoconference group and the onsite group at intake and in how much the CARS2 scores changed from pre-test to post-test. The test showed no significant difference between the two groups, ($t$ (11) = -.299, $p$ > .05). The ES for the videoconference group showed -.835, with 95% confidence interval (CI) (-1,650, .030) from pre-test to post-test. For the onsite group, the ES was -1.187, with 95% CI (-2.084, -.247) from pre-test to post-test. See figure 1 for scores pre and post for each group. One child from the videoconference group and one child from the onsite group were not available for the post-test. For the pre-test, four of the children had their CARS2 scores transformed based on their ADOS scores. In the post-test this was the case for six of the children. One child had both pre-test scores and post-test scores on the CARS2 calculated based on matching items from the ADI-R and ADOS.

**Figure 1:**
*CARS2 autism severity raw scores, pre and post intervention for onsite and video conference groups.*



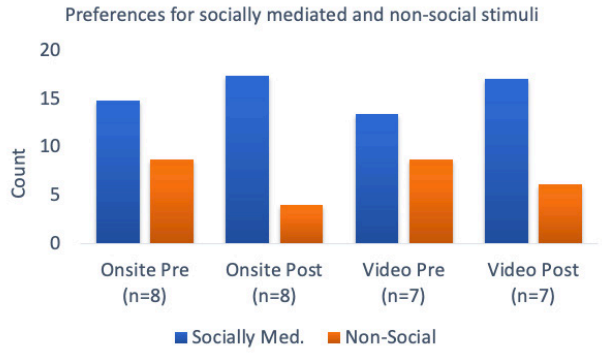

The independent t-test for all each category on the ABC showed no significant differences between the two groups from pre-test to post-test. Irritability was ($t$ (13) = -1.369, $p$ > .05) and the (ES) was -.667, with 95% CI (-1.643, .333). Lethargy was ($t$ (13) = -1.096, $p$ > .05) and the (ES) was -.534, with 95% CI (-1.500, .452). For stereotypy, the test showed ($t$ (13) = -1.188, $p$ > .05) and (ES) was -.579, with 95% CI (-1.548, .411). Hyperactivity showed ($t$ (13) = -.410, $p$ >.05) and (ES) was -.199, with 95% CI (-1.153, .762). For Inappropriate speech, the test showed ($t$ (13) = -1.206, $p$ > .05) and the (ES) was -.587, with 95% CI (-1.557, .404), see x. The pre-test scores for the onsite group were lower than the videoconference group, on all the categories except hyperactivity. The post-test showed a decrease from pre-test for both groups in all categories except for inappropriate speech for the videoconference group. The onsite group had a greater decrease in all the five categories. See figure 2 for scores on each category pre and post intervention.

**Figure 2:**
*Aberrant behavior scores on each of the five areas measured, pre and post intervention for the onsite and video conferences groups.*




The independent t-test for changes in the number of socially mediated reinforcers showed no significant difference between the two groups from pre-test to post-test, ($t$ (13) = -.387, $p$ > .05). The ES for the videoconference group was 1.052, with 95% CI (.085, 1.968). For the onsite group, the ES was .511, with 95% CI (-.173, 1.165). For socially mediated reinforcers the onsite group had a higher count on the pre-test, however the post-tests scores were almost the same.

**Figure 3:**
*Preferences for socially mediated and non-social stimuli, pre and post intervention for onsite and video conference groups.*




There was no significant difference between the two groups from pre-test to post-test in the number of non-social reinforcers, ($t$ (13) = -1.249, $p$ > .05). The ES for the videoconference group was -.865, with 95% CI (-1.644, -.041). While the ES for the onsite group was -1.216, with 95% CI (-2.072, -.319). In SMARQ non-social both groups preferred approximately the same number of non-social reinforcers in the pre-test. The post-test showed a decrease in the preferences of non-social reinforcers in both groups, but the decrease was greater for the onsite group. See figure 3 for scores pre and post intervention for each group.

## Discussion

Our results suggest that video-based supervision of EIBI programs can at least partly replace onsite supervision. Outcome data in this pilot study suggest that this will not affect children outcome negatively. Our analysis shows no significant differences between the two groups from pre-test to post-test on any of the outcome measures employed. We may add however that there is a small but not statistically significant difference in favor of the onsite group on all three measures compared to the videoconference group. Our small sample size means that we don't have the statistical power to draw any conclusions at this point. Hence, studies with more participants and greater statistical power are needed.

The use of videoconference might make it easier to restructure the resources and use them more effectively. The number of qualified supervisors is small compared to the number of cases of children with ASD. And the number of cases is increasing in Norway as it is in the rest of the world (Surén et al., 2019). If videoconference can replace at least some of the onsite supervision it will reduce the time spent on traveling, making it possible to serve more children without compromising quality and outcome. Indeed, a recent study found that the EIBI supervision done via videoconference were more efficient in the sense that the meetings tended to be shorter and staff better prepared than supervision meetings onsite. Furthermore, videoconference supervision was considered by both supervisors and preschool staff to be acceptable and sometimes even a preferred replacement for onsite supervision (Hay-Hansson et al., 2023)

This is in line with several other studies show that videoconferencing can be used for training school staff and parents to do behavior analytic procedures. Several studies show that teaching and supervision of staff and parents based on videoconference can have about the same results as onsite training for number of interventions targeting a wide variety of outcome raging from improving daily living skills to reducing problem behavior (Benson et al., 2017; Machalicek, et al., 2010; Wacker et al., 2013; Simacek et al., 2017; Suess et al., 2016; Higgins et al., 2017; Machalicek, et al., 2009; Barkaia et al., 2017; Subramaniam et al., 2016)

While we conducted the present study the preschools had to close for a period of six to eight weeks due to the COVID-19 outbreak. This resulted in a reduced intervention program for both the staff and the children. The closed preschools might have influenced the results since they did not receive the intervention as planned. Moreover, when the preschools opened, they had to do minor adjustments to comply with the corona restrictions given by the government. The preschools reduced the number of staff members

so there were 2-5 staff members working with each child. Also, we had to provide supervision via videoconference to the onsite group as well. This meant that the staff members from both groups received the same type of supervision for three to four months. This is of course a significant threat to the internal validity of the present study. Nevertheless, there was still a significant difference in the number of onsite supervision meetings between the groups.

Another threat to the validity is the missing data for two of the children on the CARS2 measure of autism severity. One child in the videoconference group, and one child in the onsite group were not available for the post-test. Also, several of the CARS2 scores were based on the ADOS and ADI-R assessment. There appears however to be some literature that suggest that this can be done without compromising the data (Molnar et al., 2017)

One notable strength of this study is the random assignment of participants to either the videoconference group or the onsite group. The impartial allocation of individuals was performed by an independent party who was not affiliated with the research project. This rigorous process can in theory help ensure that both groups are as similar as possible. However, a significant limitation of this study pertains to the small number of participants. For the randomization process to be truly effective a larger sample size would be needed.

The limited group sizes also represent a significant challenge particularly in terms of generalizability. With only eight and seven children in the two groups, it is hard to extend the study's findings to the broader population.

One if the studies strengths is in the use of reliable and validated assessment tools. Two of the three measures employed in this study have undergone prior validation and have been utilized in similar research on ASD treatment programs, enhancing the credibility of the outcomes. The fact that both groups had reduced scores in autism severity and problem behavior suggest that the intervention itself was effective and may add to the growing evidence base for the use of EIBI and applied behavior analysis as intervention for ASD. We also added a novel measure of preference for socially mediated reinforcers. This appeared to increase somewhat in both groups while preference for non-social stimuli was somewhat reduced. This measure is yet not properly validated so care need to be shown in the interpretation of these results. If indeed preferences can be changed to include more socially mediated reinforcers this can in theory have large downstream effects on language and social skills development.

Future research should consider increasing the number of participants. Increasing the sample size will facilitate generalization of the study's findings to the wider population. Additional recommendations are to look at the impact of further reducing the onsite supervision. Is there a limit for how much of the supervision and training that can be done using videoconference before it impacts child outcome? Furthermore, other outcome measures could be included such as a measure of adaptive behavior and intellectual functioning. Also, measures of acceptability and social validity can be conducted.

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# Enhancing Grapheme-Phoneme Correspondence Learning: A Single-Case Study Using Picture Mnemonics

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## Abstract

The ability to recognize and name the sounds of alphabet letters is a crucial prerequisite for students as they embark on their journey to learn how to read. Regrettably, some children face significant challenges in this area. In this single-case multiple baseline study, we utilized mnemonic pictures to facilitate the memorization of the grapheme-phoneme correspondence of ten target letters. Our aim was to empower four struggling first-grade students to quickly and confidently retrieve this information. The results reveal that the students significantly benefited from the intervention. Furthermore, the approach was perceived as attractive and helpful by both the four children and their teacher. The study concludes by reflecting on its limitations and discussing potential implications and future avenues of research.

**Keywords:**

Early Reading Skills, Grapheme Phoneme Correspondence, First Graders, Picture Mnemonics, Multiple Baseline Design

## Introduction

Reading is a crucial skill, both academically and beyond. To develop proficient decoding abilities, letter recognition and knowledge of letter sounds form the building blocks for future success. According to the National Early Literacy Panel (NELP, 2008), they are the key predictors of later literacy skills and fundamental components of phonics development. Without the ability to identify letters and their corresponding sounds, words on a page remain a mystery (Ehri, 2005).

While children naturally learn to speak, connecting spoken to written language often requires explicit instruction (Vaughn & Fletcher, 2022). Difficulties in letter recognition and knowledge of letter sounds can persist into the school-age years if effective strategies are not implemented during early education. These deficits become more apparent as students enter school and can significantly impact their reading abilities (Clayton et al., 2020). However, mastering letter recognition and knowledge of letter sounds empowers children to decipher the reading code. Therefore, early intervention for students struggling with these skills is imperative (Bowman & Treiman, 2004).

Most studies on teaching letter recognition and letter sound knowledge have focused on English-speaking students. The writing system in this language is more complex and variable than in many other widely spoken languages like Spanish, Italian, or German. It is relatively difficult to learn because children will have problems figuring out the system on their own (Ehri, 2003). Systematic phonics instruction seems to be the ideal approach for laying the groundwork for future literacy skills (Ehri, 2020). However, evidence-based and highly effective programs for teaching prerequisite competencies in languages other than English are scarce. This is unfortunate, especially for countries where the proportion of children with language difficulties is particularly high, such as Germany, for example. There, more refugees were received since the so-called "long summer of migration" than in any other Western nation (Jacobi, 2021; Ward-Glenton, 2023). This means that in this country, there are now relatively many children who are not proficient in the national language. In the most populous federal state (North Rhine-Westphalia), the proportion of students with a migration background is over 40%. The rate is especially high in the entry classes (Landesbetrieb IT.NRW, 2022). There is a great need for effective and easily applicable interventions that are feasible under the conditions of everyday school life.

However, in their widely received meta-analysis, Wolf, Schroeders, and Kriegbaum (2016) point out: "Overall, the meta-analytical training effects of the German programs were lower than in the international meta-analyses" (p. 9). This indicates a significant need to address the risk posed by the presence of many young students with different language barriers in Germany and to attend to their needs to help them establish a strong foundation for successful literacy development.

One set of approaches that consistently shows very high effect sizes in relevant primary research and meta-analyses are mnemonic techniques. These strategies have been used for centuries to enhance memory, and numerous studies have explored their effectiveness (e.g. Fontana et al., 2007; Mastropieri & Scruggs, 1998; Mastropieri et al., 2000; Scruggs & Mastropieri, 2000). Mnemonic techniques, such as the keyword method, pegword method, letter method, and reconstructive elaboration, involve associating unfamiliar information with familiar knowledge to strengthen memory retention and recall. Their use improves memory for concrete verbal information, particularly when paired with imagery. While mnemonics should not replace comprehensive instruction, they can supplement teaching to enhance memory. The Dual Coding Theory supports the effectiveness of mnemonic strategies by emphasizing the importance of integrating verbal and nonverbal information, which enhances memory encoding and retrieval (Paivio, 1991).

In the context of helping struggling students acquire letter recognition and letter sound knowledge, embedded picture mnemonics appear to be a very promising option. In this approach, a letter is embedded in a mnemonic picture representing the corresponding initial letter and sound (e.g., the letter 's' embedded in a picture of a snake), which can strengthen the connection between letter shapes, names, sounds, and familiar images (Ehri, 2022). Previous studies have demonstrated the efficacy of embedded letter and mnemonic picture cards in teaching letter recognition and letter sound knowledge across diverse student populations (Argramonte & Belfiore, 2002; Ehri, Deffner & Wilce, 1984; Sener & Belfiore, 2005).

However, research on students at the beginning of school is limited. An electronic search of five databases (Academic Search Complete, Education Full Text, ERIC, Psychology and Behavioral Sciences Collection, and PsycINFO) using the keyword "picture mnemo*" in the title, conducted on October 1, 2023, yielded 16 hits. Among these, only three were empirical studies that focused on teaching basic letter recognition and letter sound knowledge to early readers.

The first study was conducted by Fulk et al. (1997). It found that using integrated picture mnemonics effectively improved letter-sound acquisition and recognition in three first-grade students with special needs. The positive effects were sustained over time, as confirmed by follow-up data collected at two-week and four-week intervals. The second study was by Shmidman and Ehri (2010). It tested whether embedded mnemonics help preschoolers learn 10 Hebrew letter-sound relations. Children using embedded mnemonics mastered letters faster, made fewer mistakes, and showed better retention after a week. The last study was carried out by Dilorenzo et al. in 2011 and tested the effectiveness of "Itchy's Alphabet", a multisensory program that stresses letter-sound patterns, sound-symbol relationships, and logical letter formations. It not only uses pictures as a mnemonic but also plush figures and board games. The authors tested the approach in three kindergarten classrooms and found that it significantly improved sub-lexical skills for all children, including those at risk and receiving special education services.

The current evaluations on this topic are indeed promising. However, their quantity is very limited. Moreover, all of them were conducted more than 10 years ago. Hence, the objective of this research was to test the benefits of using picture mnemonics to aid struggling beginning readers in acquiring letter recognition and letter sound knowledge with a novel focus on the German context, given its unique linguistic challenges and high need for such interventions:

1. Does a simple short-term picture mnemonic intervention lead to an improved ability to rapidly and correctly name letters?

2. How do the students and their teacher perceive the treatment?

**Methods**

*Participants and Setting*

Participants consisted of four children attending their first year of formal education at an inclusive elementary school located in a major metropolitan city in Western Germany. These students, having completed three months of preliminary reading instruction before the study began, struggled significantly with letter recognition, unlike their peers who could identify all alphabet letters. They had three months of initial reading instruction but struggled significantly with letter recognition, unlike their peers who could identify all alphabet letters. To be eligible for the study, the children had to fulfil the following criteria: (1) low phonological awareness, (2) inability to name more than 15 of the 25 most commonly used letters of the German language, (3) close to perfect attendance over the last three months, (4) sufficient motivation to participate in the study.

The classroom teacher of the four participants first suggested ten students that met criterion 3, which she viewed as having low literacy skills. We conducted an informal phonological awareness test with them (available from the first author) in which they were shown pictures of different objects. They were then asked to pronounce the initial sounds of the things they saw. The objects either started with a long vowel, a short vowel, an isolated long consonant, an isolated short consonant, or a consonant cluster. According to Born and Oheler (2017), it is progressively more difficult to identify these initial sounds in this order. Students who were not able to recognize consonant or consonant clusters were viewed as potential candidates of the study.

Moreover, we presented the children with an 8.30x11.70-inch chart containing the 25 most commonly used letters of the German language printed on it: E, N, I, S, R, A, T, D, H, U, L, C, G, M, O, B, W, F, K, Z, V, P, Ü, Ä, and Ö (Plume & Schneider, 2004). We determined which letters they were not familiar with. Children who could not name 10 or more of these letters were included in the closer selection. There were four students remaining. It turned out that among all the letters the participants were unable to name, the letters B, D, F, G, H, K, R, S, U, and W were always among them. Thus, these constituted our target letters. We asked the students if they were interested in working with us and becoming familiar with some of the letters they still had trouble with. All of them expressed their willingness to engage in our training. Subsequently, informed consent was obtained from the parents or guardians of the children.

The four students who were ultimately selected for the study were Amir, Brianna, Cedric, and Daniel (names were changed to ensure confidentiality). Amir was an 8-year-old boy of Turkish descent, and his parents mostly spoke Turkish at home. Brianna was 7 years old at the time of the study, and her parents had immigrated from Jamaica when she was a toddler. Cedric, who was 6 years old, did not have an immigrant background. However, according to his class teacher, he came from a socially disadvantaged home with very little learning stimulation. As a result, his language development was far below the normal level. Although Cedric grew up speaking German, he was not clearly advantaged in language compared to the other three students. Daniel, also 6 years old, was born to Polish guest workers. According to their teacher, all of them experienced considerable difficulty in learning new information and skills. Despite diligently attending almost every early reading instruction lesson since they started school, they were unable to keep up with the rest of the class.

*Interventionist*

A 25-year-old female graduate student in special education served as the interventionist. She had practicum experience working with special needs students and received four 1-hour online training sessions from the first author on conducting the training. Additionally, she was provided with a detailed five-page script to guide the session conduct (available upon request from the first author).

*Experimental Design*

The study used a multiple baseline design across students to determine the effectiveness of the intervention (Ledford & Gast, 2018). We planned for 17 daily probes with the first participant starting out with 3, the second with 4, the third with 5, and the fourth with 6 baseline measurements. The order in which the four students began with the intervention was determined by chance.

*Dependent Variable*

The relative number of correctly named capital letters per minute served as dependent variable. For each probe, we designed an individual 8.30x11.70-inch chart on which the 10 target letters for each child were printed eight times in random order (with the limitation that each of the letters had to be mentioned once in each line) (see Figure 1 for an example).

**Figure 1**

*Letter Naming Chart*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R | G | U | B | K | S | W | H | D | F |
| B | W | H | R | F | G | U | K | S | D |
| K | G | R | D | S | W | H | F | U | B |
| S | B | W | U | F | G | D | K | H | R |
| U | H | D | F | K | R | W | G | B | S |
| D | K | F | R | U | S | G | B | H | W |
| G | S | D | F | W | B | K | R | U | H |
| W | U | K | G | R | H | F | B | S | D |

At each measurement point, the students were asked to name the letters line by line. Even though they were not corrected when making a mistake, they hardly ever misnamed a letter. After a minute, it was determined and recorded how many letters they went through altogether. At the beginning, they were often only able to name one correctly and read it whenever it came up, while skipping the rest. For example, if they made it to the end of the third row in Figure 1 and only named the B's, they looked at 30 letters, but got only 3 of them right. The ratio of correctly read letters thus equaled 3/30 = 0.10. We calculated the relative performance of the participants by multiplying the absolute number of accurately named letters by the given ratio. In our example, the product would be 3 x 0.10 = 0.30. Towards the end of the intervention, the students hardly committed any mistakes. If they again made it to the end of the third row, but this time got every single letter right, the index would be (30/30 = 1) x 30 = 30.

This approach is fundamentally akin to that employed by the well-known d2 Test of Attention by Brickenkamp (2002). This instrument displays d and p letters in 14 rows, each with 57 characters marked with one to four dashes. Participants must cross out as many ds with two dashes as they can within 20 seconds per row, minimizing omissions and errors. Performance is judged by the number of correctly crossed-out ds relative to the total letters presented.

To estimate the interrater-reliability, the relative number of correctly named capital letters per minute was determined independently by the interventionist and the first author. Both calculated the respective indices on the basis of the charts where it was recorded, how many letters a participant went through and how many she or he got right. Ultimately, the interrater agreement turned out to be 100%.

*Procedures*

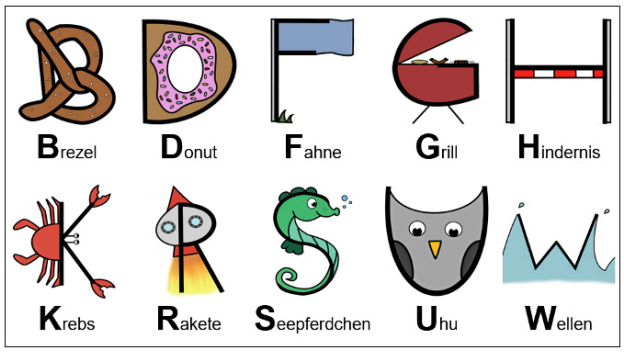
During the baseline phase, the interventionist took the participants consecutively to a resource room in the school, providing a quiet and undisturbed environment for their work. The order in which they received their daily lessons varied. At the beginning of each session, the interventionist played the game "Crazy Eights" with the children to control for any potential attention bias. After 20 minutes, she administered the performance test. Subsequently, the students returned to their classroom.

During the intervention phase, the game was replaced with the treatment. To ensure proper implementation of the training, the aforementioned script was used; it contained all the steps and instructions crucial to the training. This was done to enhance treatment fidelity. Each session started with the presentation of an 8.27 x 11.69-inch line diagram depicting a particular student's progress in terms of the relative number of correctly named capital letters per minute over the course of the study. Participants were praised for any improvements and reminded that enhancements were due to their effort in applying the mnemonic strategy. If there was no increase in performance compared to the previous session, the interventionist provided feedback, encouraging the idea that everyone can have a bad day and that the following day would be better.

In line with Paivio's Dual Coding Theory (1991), it is recommended to integrate verbal expressions, such as the letters in our study, with visual representations, specifically, pictorial depictions that correspond to the initial letters of associated words. This integration of verbal and non-verbal modalities is suggested to deepen cognitive processing, thus enhancing the learning effect. With this approach, the ten target letters and their associated picture mnemonics were introduced sequentially, following their order in the alphabet. For this purpose, 5.83 x 8.27-inch cards with each symbol depicted in Figure 2 were presented. For example, when introducing the letter 'S', the brief script used to instruct each letter sound read as follows: "This is the letter 's'. 'S' makes the sound in 'seahorse'. Look at the letter 's' in this picture of a seahorse. What is the letter? What sound does it make?" The student was asked to look at the integrated picture mnemonic and repeat the information. Prompts were provided, if needed, to facilitate a student response. The first lesson provided enough time to go over the ten letters at least three times, and it ended with the performance measurement following the procedures during baseline.

**Figure 2**

*Mnemonic Pictures for the 10 Target Letters*




As indicated, each subsequent session began with the presentation of a line diagram showing the performance curve up to that point and ended with a test of the student's knowledge on letter sound-correspondence. During the second lessons, the interventionist went through the mnemonic pictures once more, scaffolding the memorization and retrieval process, and prompting the participants to name the corresponding graphemes. As indicated, each subsequent session began with the presentation of a line diagram showing the performance curve up to that point and ended with a test of the student's knowledge on letter-sound correspondence. During the second lessons, the interventionist revisited the mnemonic pictures, scaffolding the memorization and retrieval process, and prompting the participants to name the corresponding graphemes. However, the order was now varied randomly. The children were praised for correct responses, and immediate corrections were provided for any mistakes. Throughout the following sessions, efforts were made to increase the students' retrieval speed to achieve automation. Starting from the fifth session, the interventionist gradually introduced 5.83 x 8.27-inch cards without mnemonic pictures, depicting only one of the ten target letters each. In cases where the children made errors, immediate corrections were made, and the corresponding mnemonic picture was referred to.

The classroom teacher was thoroughly briefed about the entire undertaking and was acquainted with all the materials. Furthermore, the interventionist provided daily updates at the end of each school day, allowing the teacher to stay abreast of the proceedings. Additionally, the classroom teacher had the opportunity to observe the progress made by the participants during her lessons, which ensured a well-informed understanding of the developments at hand.

### Social Validity

To assess the social validity of the study, the interventionist conducted a survey with the students and their classroom teacher after the final session to ascertain their reception of the training. The primary focus was on discerning the perceived benefits of the treatment for the participants and determining whether they found the experience enjoyable. The interventionist personally interviewed each student and the teacher, asking the following questions:

1. Did you like the picture mnemonics?
2. Do you think that the picture mnemonics were beneficial?
3. Would you recommend the picture mnemonics to other students?

Naturally, the wording of the questions was adjusted during the interview with the teacher. For example, "Did you like the picture mnemonics?" was modified to inquire if she believed the students enjoyed the picture mnemonics. The responses were audio-recorded and later transcribed.

### Results

Figure 3 displays the relative number of correctly named capital letters per minute during baseline and intervention. Unfortunately, Amir, Brianna and Cedric missed a couple of sessions due to illness. However, examining the graphs, it becomes obvious that all four students in this study showed an increase in performance over the course of the intervention. The scores towards the end of the treatment were considerably higher than at the beginning or during baseline.

**Figure 3**

*Ratio of Correctly Read Letters in 1 Minute for the Participants*

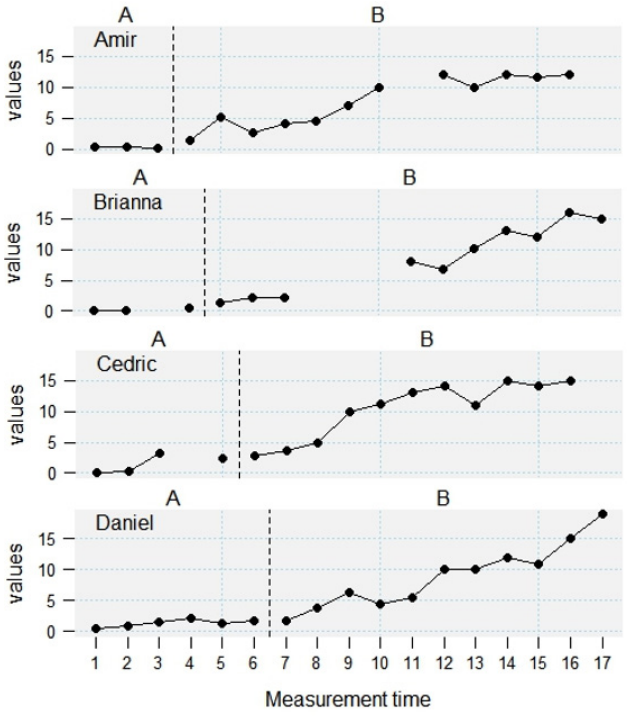



Table 1 provides an overview over some descriptive data.

**Table 1.**
*Descriptive statistics for the three participants*

| | | Baseline | Intervention |
|---|---|---|---|
| Amir | *N* (Probes) | 3 | 14 |
| | *N* (Missing) | 0 | 2 |
| | *M* | 0.30 | 17.70 |
| | *SD* | 0.11 | 4.00 |
| | Range | 0.20–0.42 | 1.33-12.00 |
| Brianna | *N* (Probes) | 4 | 13 |
| | *N* (Missing) | 1 | 3 |
| | *M* | 0.21 | 8.69 |
| | *SD* | 0.26 | 5.43 |
| | Range | 0.00–0.50 | 1.33–16.00 |
| Cedric | *N* (Probes) | 5 | 12 |
| | *N* (Missing) | 1 | 1 |
| | *M* | 1.51 | 10.41 |
| | *SD* | 1.60 | 4.57 |
| | Range | 0.00–3.27 | 2.88–15.00 |
| Daniel | *N* (Probes) | 6 | 11 |
| | *N* (Missing) | 0 | 0 |
| | *M* | 1.34 | 8.98 |
| | *SD* | 0.61 | 5.21 |
| | Range | 0.44-2.12 | 1.79–19.00 |

We calculated three overlap indices to acquire further information on the benefits of the intervention beyond the descriptive analysis. For this, we used the Non-overlap of All Pairs (NAP; Parker et al., 2011), the Percentage of Non-overlapping Data (PND; Scruggs et al., 1987) and Tau-U (Parker et al., 2011). The p-value for the NAP and the PND were calculated on the basis of two web tools, retrievable under http://singlecaseresearch.org/ and https://ktarlow.com/stats/pnd/ respectively. For the Tau-U, we used the SCAN Package by Wilbert (2021) and applied the formula that takes an A phase trend into account (A vs. B + trendB – trendA). Strong and significant effects were identified for all overlap indices ($p < .001$) across all students.

**Table 2.**
*Overlap indices for the dependent variable across all participants*

| Name | NAP | *p* | PND | *p* | Tau-U | *p* |
|---|---|---|---|---|---|---|
| Amir | 100 | <.001 | 100 | <.001 | 0.86 | <.001 |
| Brianna | 100 | <.001 | 100 | <.001 | 0.85 | <.001 |
| Cedric | 98 | <.001 | 91 | <.001 | 0.80 | <.001 |
| Daniel | 97 | <.001 | 91 | <.001 | 0.75 | <.001 |

Note. NAP = Non-overlap of all pairs; PND = Percentage of Non-overlapping Data

To finalize the visual and quantitative analyses, we explored the possibility of integrating a hierarchical piecewise linear regression model, which incorporates data from all participants - this is referred to as a level 2 analysis. This approach was proposed to potentially identify shifts in the rate of performance improvement between phase A and phase B. While ratios, specifically the relative count of correctly identified capital letters per minute, were used as our dependent variable, we applied this statistical method with an awareness of its limitations. A crucial point to consider is our inability to confirm definitively that the data follows a normal distribution, which necessitates a cautious approach when interpreting the results of our analysis.

There was a notable baseline trend and a statistically significant slope-effect ($p < .01$) with an average increase of 0.71 scale points per intervention session.

**Table 3.**
*Piecewise regression model for the dependent variable across all participants*

| | *B* | *SE* | *df* | *t* | *p* |
|---|---|---|---|---|---|
| Intercept | -0.52 | 0.87 | 54 | -0.60 | .55 |
| Trend | 0.43 | 0.19 | 54 | 2.25 | .03* |
| Slope | 0.71 | 0.22 | 54 | 3.18 | <.01** |

Note: *significant at the .05 level; **significant at the .01 level

The outcomes of the social validity inquiry, conducted with students and their teacher regarding the utilization of picture mnemonics, yielded uniformly positive responses. All participants held a favorable opinion of the picture mnemonics, finding them helpful and advocating their adoption for use by other students. All three questions were answered affirmatively and with conviction. Children shared their enjoyment experienced during the sessions. The classroom teacher closely monitored the students' progress and unequivocally observed that participation in the interventions not only led to a noticeable improvement in performance but also triggered a significant increase in motivation. These findings support the promising potential of incorporating picture mnemonics as an effective educational tool in teaching environments.

## Discussion

### *Main Findings*

The purpose of this study was to assess the impact of a picture mnemonics intervention on the ability of four struggling first graders to rapidly and accurately name letters. We selected 10 target graphemes that the participants were unfamiliar with before the treatment. The results indicate that the training had a significant impact on the students' skill level, as all of them showed remarkable improvements.

During the baseline phase, the mean relative number of correctly named capital letters per minute for the participants was 0.30, 0.21, 1.51, and 1.34, respectively. In the treatment phase, the average performance increased significantly to 17.70, 8.69, 10.41, and 8.98, indicating a steep rise of 5,800.00%, 4,038.10%, 589.40%, and 570.15%, respectively. The four participants exhibited large to very large effect sizes (NAP, PND, and TAU-U), representing positive changes in the dependent variable over the course of the training. An overall piecewise regression analysis revealed a significant slope effect, indicating considerable

performance improvement at the beginning of the treatment.

The measures across phases suggest that all students benefited from using picture mnemonics to link verbal and non-verbal representations as suggested by the Dual Code Theory (Paivio, 1991). Moreover, both the teacher and the children reported viewing the training as extremely positive.

**Limitations**

This study acknowledges several limitations that must be considered. Initially, the intervention involved only four students from a single classroom, which constrains the broader applicability of our conclusions. Subsequent research should aim to validate or challenge our findings across diverse demographics. Furthermore, the absence of follow-up data collection due to time constraints precludes the determination of the intervention's enduring effects. Later studies should include long-term follow-ups to evaluate the sustained impact of the intervention.

Another constraint arises from the individualized nature of the training, which differs from the more common group instruction setting in classrooms, thus potentially affecting the experiment's real-world applicability. It would be beneficial for future research to examine the effectiveness of our approach in typical classroom environments, where one teacher manages a group of students.

A notable limitation that must also be addressed is the significant amount of absenteeism: Brianna missed 4 of the 17 sessions due to illness, while Amir and Cedric were each absent twice. Although their absences were within reasonable limits, such missed sessions undoubtedly detract from the study's quality.

It is also important to critically acknowledge that a university graduate student facilitated all sessions in this study. Although appropriate for our experimental framework, future applications would benefit from engaging a more diverse cohort of educators proficient in the picture mnemonics strategy.

The potential for bias in the social validity interviews is also present, as they were conducted by the same individual who administered the treatment, possibly eliciting responses aimed at pleasing the interventionist rather than providing candid feedback. It might be challenging for participants to express criticisms directly to the person responsible for the training. Future research should involve impartial third parties to gather feedback on the treatment procedures.

**Practical Implications and Conclusion**

In light of the constraints noted, this research still establishes the value of the picture mnemonics strategy in enhancing the association between graphemes and phonemes for four young students experiencing challenges. Mastery in recognizing the alphabet's letters swiftly, without mistakes, and with ease is critical for the development of decoding skills. Thus, implementing powerful teaching strategies for learners struggling with these foundational areas is essential. Picture mnemonics can be effectively employed in individualized instruction or incorporated into classroom activities, such as group recitation. The initial effort required by educators to prepare for this method is reasonable, and its principles can be applied consistently, facilitating its integration into daily educational routines.

Current trends indicate that difficulties with reading foundational skills are prevalent among first-year elementary school students. Teachers need strategies that are straightforward to implement to support those who fall behind. Picture mnemonics fulfill this need. It is the hope of the academic community that further research will expand our understanding of how to effectively employ this approach and that evidence-based recommendations on the most effective practices will permeate numerous classrooms. We can no longer afford to let so many students fall behind at the very start of their educational journey.

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# Building Reading Skills in Junior Schoolchildren with Autism Spectrum Disorders in the Context of Inclusive Education

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## Abstract

The aim of the research is to identify the peculiarities of building reading skills in junior schoolchildren with ASD. The study involved the use of parent questionnaire survey to confirm the diagnosis of ASD (the Social Communication Questionnaire, SCQ), diagnosis of reading skills (the Standardized Assessment of the Reading Skills (SARS), Test of Operational Units of Reading), analysis of statistics from official sources. The study showed that the reading skills of children with ASD range mostly within the normative limits, but there are some children with low values. It was established that there are significant differences between the components of the reading skills of children with ASD and children with normative development for the parameters of reading comprehension ($M$ = 4.2, $SD$ = 1.4, t≤0.01), reading speed ($M$ = 3.7 , $SD$ = 1.6, t≤0.05), the method of reading ($M$ = 6.4, $SD$ = 1.9, t≤0.05) and the index of operational units of reading ($M$ = 5.5, $SD$ = 1 .8, t≤0.01). It was found that there is a correlation between the degree of manifestation of ASD in junior schoolchildren and their reading skills. The higher the manifestations of violations, the lower the indicators of reading skills. The study found that children with ASD have normatively developed reading skills at the level of their peers, but reading speed and reading comprehension are more difficult for them. Severe concomitant manifestations of ASD negatively affect the development of reading skills, which requires special conditions for the development of reading skills in children with ASD. The obtained results can contribute to the development of a programme of support for children with ASD at the level of school inclusive education with the involvement of relevant specialists in order to more fully include them in the educational space and ensure the development of a high level of the reading skills.

**Keywords:**

Inclusion, Autism, Normative Development, Stereotypical Behaviour, Social Communication

## Introduction

The modern development of the educational system is characterized by an active search for ways to optimize and harmonize the educational process of children. First of all, this applies to children who have certain developmental peculiarities and need special support and the availability of technical teaching and learning aids. Inclusive education is designed to achieve this goal, which provides for non-discrimination of schoolchildren and the provision of appropriate conditions in the process of obtaining a quality education by children. The main idea of inclusive education is that all children, without exception, have equal opportunities and can get a full education in educational institutions (UNICEF, 2019). Children with ASD, who have specific disorders of speech and communicative interaction, are no exception.

According to the Centers for Disease Control and Prevention (CDC), ASD occurs in all racial, ethnic, and socioeconomic groups and is 4 times more common in boys than in girls (Aguiar et al., 2020). Such data confirm that autism is widespread throughout the world and requires a special approach to the education and development of individuals with ASD (Rybchenko, 2015). According to the World Health Organization (2023), ASD is a group of different conditions characterized by certain difficulties in social interaction and communication with others, atypical behaviour patterns, difficulties in changing the type of activity, non-standard reactions (APA, 2013). Manifestations of ASD are variable and have a different degree of expression in a single individual (Åsberg et al., 2008). Some people can live with autism on their own without help. However, there are cases when ASD takes on severe forms and requires active external support.

The majority of children diagnosed with ASD can be included in the main general education system and have all the prerequisites for learning educational material (Fleury et al., 2014; Semenets-Orlova et al. 2022), including reading skills (Davidson et al., 2018). Reading is a key skill in a child's speech activity, which lays the foundations for understanding the received information. Children with ASD show an active interest in the reading process, but sometimes have problems with reading comprehension (Smith et al., 2021).

According to the 2022 study conducted by the INGO Foundation "Child with a Future", the assessment of the state of support for children with ASD is unsatisfactory. Only 8.4% of parents and 17.2% of specialists are satisfied with support for junior grades. Such data indicate the relevance of identifying the peculiarities of the education of children with ASD, including the acquisition of reading skills, and the implementation of more effective methods of inclusive education of children with ASD ("Child with a Future" Fund for Helping Children with Autism Syndrome, 2022).

Therefore, the aim of the study is to identify the peculiarities of building reading skills in junior schoolchildren with autistic spectrum disorders in the context of inclusive education. The aim involved the fulfilment of the following research objectives:

1) carry out a diagnostics of the reliability of the diagnosed ASD in junior schoolchildren by the method of parent questionnaire survey;

2) determine the level of reading skills of children with ASD;

3) identify the differences in the indicators of reading skills of junior schoolchildren with ASD and children with normative development;

4) establish a relationship between the degree of manifestation of disorders of children with ASD and the level of their reading skills.

The research hypothesis is the assumption that there is a relationship between the degree of manifestation of ASD and the reading skills of junior schoolchildren, therefore, the formation of their reading skills should be built according to the degree of derangements caused by ASD.

### *Literature Review*

According to the Ministry of Health of Ukraine, the number of children with ASD increases annually by 30% (Ministry of Education and Science of Ukraine, 2023). At the same time, inclusive education is a priority direction of the modern Ukrainian school education system. Therefore, the problem of realizing the rights to a full school education of children with ASD is quite urgent. According to World Health Organization (2023), ASD is a group of different conditions based on difficulties in social and communicative interaction. The National Institute of Mental Health (2023) defines autism spectrum disorder (ASD) as a neurological disorder that affects relationships with others, communication, and human behaviour (Vale et al., 2022). The American Psychiatric Association (APA) defines autism as a complex developmental condition that includes persistent problems with social communication, restricted interests, and stereotyped behaviours (APA, 2021).

Children with ASD are considered the most difficult category to include in the education system (Höfer et al., 2017). However, schooling is very relevant for them, as it contributes to developing their speech, communication, and behavioural skills (Accardo & Finnegan, 2019). The primary school age is the most valuable in this process, when self-awareness, the

drive to study is formed, and self-control and self-regulation skills are developed (Arciuli & Bailey, 2021).

In the learning process, children with ASD perceive and learn educational material differently depending on the degree of manifestation of autistic disorder and individual peculiarities of the child. Acquiring speech and communication skills of children with ASD is the basis of their interaction with others (Nikonova & Pavlova, 2020). Reading is one of the key speaking competencies that contribute to the understanding of information, the ability to filter it, and its application in everyday life. Children with ASD, in most cases, show a certain interest in reading and can quickly remember what they read but do not understand its content. The strengths of children with ASD are visual perception and good mechanical memory, excessive attention to details (Kljajevic, 2022). At the same time, if teachers use an individual approach to each child with ASD in combination with effective teaching methods and techniques, this ensures the successful development of reading skills in children with ASD (Nally et al., 2018).

When acquiring reading skills, such children have difficulties in the process of combining letters into syllables. Children with ASD can skip letters, replace them, distort them against the background of deficit of attention, spatial thinking, and visual perception (Carlsson, 2019). Increased fatigue and lack of control are also one of the reasons for this type of mistakes. The peculiarities and causes of difficulties in learning to read in children with ASD include omissions of endings, distortion of words or their replacement (Cerga-Pashoja et al., 2019). Children mostly do not understand what they read, their intonation does not correspond to the content of the text, they cannot correlate what they read with the image. Such difficulties lead to a fragmentary understanding of what is read and the inability to outline the main idea (Paynter et al., 2023).

Children with ASD may experience particular difficulties in acquiring reading skills. Given the unique nature of ASD and the associated deficits in social communication, reading performance may vary depending on the level of autism symptoms (Knight et al., 2018). The researchers prove that difficulties in acquiring reading skills in children with ASD, particularly in understanding the material which was read, are associated with limitations in oral language (Ricketts et al., 2013; Davidson et al., 2018). On this ground, many researchers suggest that children with ASD have a hyperlexical profile (Macdonald et al., 2022). That is, they mostly do not understand what they read, despite high reading technique indicators.

To more deeply evaluate the reading skills of children with ASD, it is necessary to better study the features of the manifestations of ASD and the development of the components of reading skills.

## Methods

### *Research Design*

The study was organized in several stages from February 2023 to May 2023, during which the optimal empirical base, the sample of children with ASD, was selected following the set aim and research objectives. The first stage involved selecting diagnostic tools according to the criteria of reliability and compliance with the age periodization of the respondents. The second stage involved the parents' survey to confirm the ASD, reading skills of children with ASD were diagnosed. The third stage provided for the processing of the obtained results, their qualitative and quantitative analysis. The fourth stage involved drawing conclusions and outlining prospects for further research.

An individual approach was used for data collection and analysis, ensuring respondents' maximum openness and voluntary testing. Children with ASD are usually withdrawn and socially inactive. It is possible to diagnose such a child only in a natural, relaxed environment. This involved a joint meeting between the teacher, the parents, and the child. Under such circumstances, children could freely demonstrate their reading skills and pass the proposed tests.

### *Sampling*

The study involved 212 people, including 106 schoolchildren of grades 2-3, aged from 7 to 10 years, among whom 52 have diagnosed ASD and 54 schoolchildren — without ASD. Another part was their parents (106 people), including 88 women and 18 men. In the studied children, autistic spectrum disorder was diagnosed in the period of 3-6 years by specialists according to the International Classification of Diseases (ICD-10). The parents of children with ASD were invited to confirm the diagnosis of ASD. The inclusion criteria for the group of children with ASD were a previous clinically diagnosed ASD, and the exclusion criteria were any other disorders. The criteria for inclusion in the group of children with normative development were the absence of any physical or psychological disorders in the child's development, and the exclusion criteria were, accordingly, certain abnormalities of normative development. Information about children's development was obtained during a conversation with the teacher and parents.

The research was conducted at Kamianets-Podilskyi Lyceum No. 2 named after T.G. Shevchenko, Kamianets-Podilskyi Special School, Kamianets-Podilskyi Lyceum

No. 16, Slavic Secondary School of I-III Levels No. 12, Slavic Special School No. 23.

*Methods*

The following methods were used for the research. The Social Communication Questionnaire (SCQ) screening diagnostic technique aims to detect and confirm the diagnosis of ASD. SCQ consists of 40 questions. The questionnaire shall be filled out by a parent or guardian and can be used to diagnose people 4 years and older. The obtained results make it possible to confirm the signs of ASD according to the following parameters: stereotypical patterns of behaviour, qualitative communication disorders, qualitative disorders of reciprocal social interaction.

The SMONCH and TOPOCH techniques by O. Kornev and O. Ishimova, adapted by Kiparenko to Ukrainian (Kiparenko & Kremenchutska, 2021), were used to diagnose disorders of reading skills. The Standardized Method of Examination of Reading Skills (SMONCH) determines quantitative and qualitative assessment of reading skills. It is used for children in the age range from 2nd to 6th grade. The number of correctly read words in the first minute is recorded during the study. If the child independently corrects the mistake, the word is considered to be read correctly. Children are invited to read two texts. After reading, the reading technique coefficient of each text is determined (KTCH1 and KTCH2). The method of reading is evaluated: 1 — reading mainly by letters, 2 — gradual transition to reading in syllables, 3 — reading mainly in syllables, 4 — transition to reading in whole words, 5 — reading in whole words, 6 — reading in groups of words. Reading comprehension is determined by 10 questions on the content of the text. The test also assesses reading speed (number of correctly read words in one minute) and assessment of the way of reading (1 — whisper reading, 2 — articulate reading, 3 — silent reading, 4 — automated reading to oneself).

The Test of Operational Units of Reading (TOPOCH) is designed to identify marginal operational units of children's reading. The methodology consists of 6 lists (numbers, letters, syllables consonant-vowel (CV), vowel-consonant (VC), syllables consonant-vowel-consonant (CVC), syllables consonant-consonant-vowel (CCV), words). Each list includes 100 units. The obtained results were compared with normative values, based on which a conclusion was made about the level of development of operational reading units of children with ASD.

For the convenience of calculations, in particular, statistical analysis, the data obtained by the methods of reading diagnostics were recoded into columns on a 10-point scale. Accordingly, 0-3 indicators are below the norm, from 4 to 7 normative values, from 8 to 10 — above the norm. The parametric Student's t-test for independent samples and the Pearson linear correlation coefficient were used for the purpose of statistical analysis.

*Ethical criteria of the research*

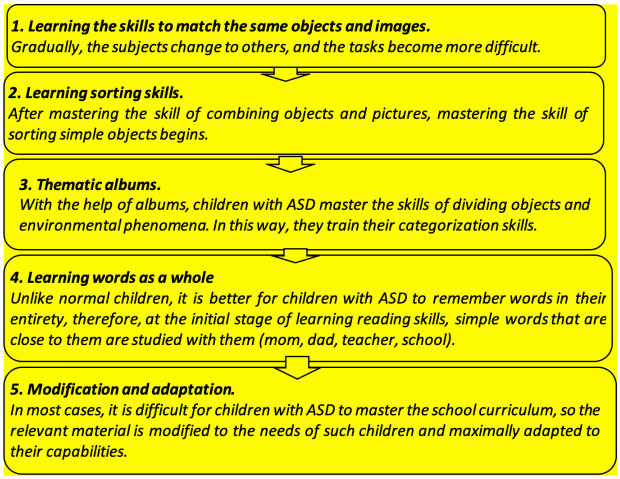
The research was conducted in accordance with the ethical criteria of the research. Parents of children with ASD were informed about the confidentiality of the test data and the anonymity of the study.

## Results

In the institutions selected for the research base, the algorithm for forming reading skills in younger schoolchildren has the following sequential steps (Fig. 1).

**Figure 1**

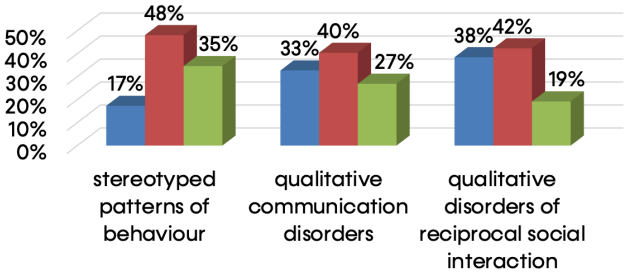
*Algorithm of formation of reading skills in younger schoolchildren*




According to the results of the SQR reading comprehension method, it was established that the diagnosis was confirmed among the examined children with ASD (Figure 2).

**Figure 2**

*The indicators of the signs of ASD in the studied junior schoolchildren*



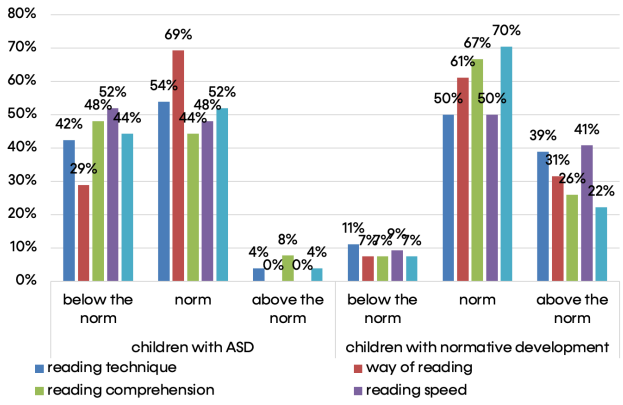

According to Figure 2, 17% of children with ASD have a low level of stereotypical behaviour patterns, 48% have a medium level, and 35% have a high level. Patterns of repetitive behaviour have a negative impact on

learning and social opportunities of children with ASD, their emotional well-being. Repetitive movements or movement disorders prevent the acquisition of writing and speaking skills, make it difficult to move in space. A low level of qualitative communication disorders were found in 33% of children, a medium level — in 40%, and a high level – in 27%. This suggests that almost half of children have communication disorders that negatively affect their interaction with others, reduce educational opportunities, and prevent full adaptive development and inclusion into the educational environment. A low level of qualitative abnormalities of reciprocal social interaction were found in 38%, a medium level — in 42%, and a high level in 19% of children with ASD. Children with a high level are characterized by the inability to make eye contact, adequate facial expressions and gestures in the process of social interaction. This negatively affects the establishment of relationships with peers and educational activities, when the child cannot productively interact with teachers. They need a special approach and longer training than children with a low level.

The next stage was the identification of reading skills in junior schoolchildren with ASD and in junior schoolchildren with normative development. The obtained results indicate certain differences in the development of reading skills of junior schoolchildren (Figure 3).

**Figure 3**

*Indicators of reading skills of junior schoolchildren*

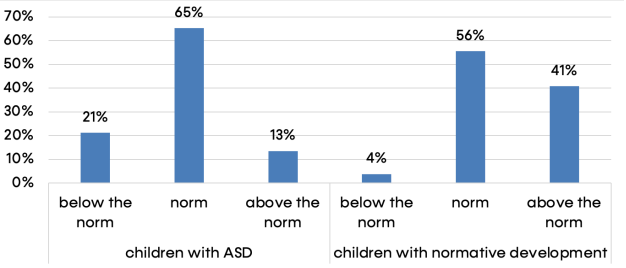



The figure shows that junior schoolchildren with ASD have normative values of reading technique (54%) and the way of reading (69%), while reading comprehension (48%) and reading speed (52%) are below the norm. In children with normative development, all indicators of reading skills are expressed as normative indicators with a tendency towards indicators above the norm. The obtained results indicate that children with ASD have somewhat less developed reading skills due to the specifics of ASD.

Diagnostics of operational units of reading of junior schoolchildren revealed the predominance of the normative level in both groups of children (Figure 4).

**Figure 4**

*Indicators of operational units of reading of junior schoolchildren*




It was found that normative values of operational units of reading prevail in both groups of children. However, in the group of junior schoolchildren with normative development, there are more children with a level above the norm (41%), which indicates a large number of signs that the schoolchildren recognize instantly when reading. This ensures reading speed and understanding of the content of the read text.

The statistical analysis established that there are certain reliable differences in the reading performance of children with ASD and children with normative development (Table 1).

The statistical analysis established that there are reliable differences at a high level of significance in the reading skills of primary schoolchildren with ASD and those with normative development. It was found that children with ASD have lower values of reading comprehension ($M$ = 4.2, $SD$ = 1.4, $t \leq 0.01$), reading speed ($M$ = 3.7, $SD$ = 1.6, $t \leq 0.05$), the way of reading ($M$ = 6.4, $SD$ = 1.9, $t \leq 0.05$) and the index of operational units of reading ($M$ = 5.5, $SD$ = 1.8, $t \leq 0.01$). The obtained values indicate more developed reading skills in junior schoolchildren with normative development than in children with ASD. At the same time, the reading technique of children with ASD is quite normatively developed, as well as the way of reading, but they read more slowly, understand the read information less well, and have lower indicators of reading to oneself than reading aloud.

A correlation analysis was conducted to identify the relationship between the degree of ASD in junior schoolchildren and their reading skills (Table 2).

According to the obtained data, an inverse relationship was found between stereotypical patterns of behaviour of children with ASD and reading technique ($r$ = -0.503, $p \leq 0.01$), the way of reading ($r$ = -0.255, $p \leq 0.05$), reading speed ($r$ = -0.732, $p \leq 0.01$), by the evaluation of the method of reading to oneself ($r$ = -0.718, $p \leq 0.01$), as well as a direct relationship with the indicator of operational units of reading ($r$ = 0.357, $p \leq$

**Table 1**

*Comparison of reading skills of children with ASD and children with normative development*

| Reading performance | Children with ASD (*M+SD*) | Children with normative development (M+SD) | *t* |
|---|---|---|---|
| reading technique | 5.2±1.2 | 7.1±2.3 | 1.3 |
| way of reading | 6.2±1.8 | 6.2±1.8 | 0.9 |
| reading comprehension | 4.2±1.4 | 7.2±1.9 | 2.88** |
| reading speed | 3.7±1.6 | 7.8±1.7 | 2.55* |
| assessment of the way of reading | 6.4±1.9 | 6.1±1.1 | 2.15* |
| Index of the operational units of reading | 5.5±1.8 | 7.3±1.5 | 2.91** |
| Index of the operational units of reading | 5.5±1.8 | 7.3±1.5 | 2.91** |

**Table 2**

*Correlational analysis of the relationship between the degree of manifestation of ASD in junior schoolchildren and their reading skills*

| Components of reading skills | Degree of manifestation of ASD | | |
|---|---|---|---|
| | stereotyped patterns of behaviour | qualitative communication disorders | qualitative violations of reciprocal social interaction |
| reading technique | -0.503** | -0.590** | |
| way of reading | -0.255* | | -0.287* |
| reading comprehension | | -0.523** | -0.455** |
| reading speed | -0.732** | -0.479** | |
| assessment of the way of reading | -0.718** | -0.674** | |
| Index of the operational units of reading | 0.357** | -0.261* | -0.381* |

**. The correlation is significant at the level of 0.01, *. The correlation is significant at the level of 0.05

0.01). Such relationship indicate that the stereotypical forms of behaviour in children with ASD negatively affects their reading skills, hinders the development of speech activity, prevents them from concentrating on the task.

Qualitative communication disorders negatively correlate with reading technique ($r$ = -0.590, $p \leq 0.01$), assessment of reading comprehension ($r$ = -0.523, $p \leq 0.01$), the way of reading ($r$ = -0.255, $p \leq 0$ .05), reading speed ($r$ = -0.732, $p \leq 0.01$), assessment of the method of oral reading ($r$=-0.674, $p \leq 0.01$), as well as a direct relationship with the index of operational units of reading ($r$ = 0.357, $p \leq 0.01$), reading speed ($r$ = -0.479, $p \leq 0.01$), assessment of the method of reading to oneself ($r$ = -0.479, $p \leq 0.01$), index of operational units of reading ($r$ = -0.261 , $p \leq 0.05$).

Such coefficients indicate that qualitative communication disorders do not allow them to fully acquire reading skills (both aloud and to themselves), it is difficult for children to read the text, it is difficult to retell it, to identify its main idea. The number of operational units of reading in such children is significantly reduced, which worsens the reading process.

Qualitative disorders of reciprocal social interaction have a negative relationship with the way of reading ($r$ = -0.287, $p \leq 0.05$), the assessment of reading comprehension ($r$ = -0.455, $p \leq 0.01$), the indicator of operational units of reading (r =-0.381, $p \leq 0.05$). The inability of children with ASD to establish relationships with others negatively affects the level of reading skills in the form of mostly alphabetic reading, the incomprehensibility of the read text, and the low level of operational units of reading.

The study showed that there are differences between the level of reading skills of younger schoolchildren with ASD and children with normative development. It was found that the more severe the manifestation of ASD, the lower the level of reading skills, which requires not only individual pedagogical support, but also active inclusive support.

Since there are currently no specially developed programs for teaching children with ASD in Ukraine, in particular, teaching reading, younger schoolchildren study in inclusive classes according to regular programs. The acquisition of reading skills occurs with the parallel addition or replacement of program tasks with more suitable and effective tasks for each child. Such an inclusive approach ensures a simultaneous

combination of the child's personal development and the assimilation of program standards.

In modern conditions of active digitalization in society, Internet technologies and gadgets are actively used in Ukrainian schools to teach children. Therefore, based on the studied schools, various software products are actively introduced into the work of inclusive classes. They contribute to the more effective formation of reading skills of younger schoolchildren with ASD. Yes, all-inclusive classes are equipped with interactive whiteboards, projectors and laptops. With their help, teachers can use the maximum amount of visualization when teaching reading. Programs such as "Boardmaker" and "Picture communication system", which contain many images for memorization, are also actively used. Pictures, in combination with the name, form the process of memorizing objects and environmental phenomena. Teachers use the Ukrainian-language applications "Leeloo" and "Digital Inclusion". They provide for developing and restoring speech and learning the words of children with ASD. SMART technologies are used, in particular, the "SMART Notebook" editor allows you to create frames with pictures and texts that change shape, which ensures the activation of cognitive activity and the development of reading skills.

Also, teachers use virtual and augmented reality programs (virtual reality, augmented reality, mixed reality), which contribute to the development of impressive speech, a prerequisite for reading skills. Augmented reality programs aim to master reading skills with the help of visualization of the learning process.

Digital and software support of the educational process facilitates the acquisition of reading skills by younger schoolchildren with ASD, making this process interesting, simple and effective.

**Discussion**

The study found that the majority of children with ASD have medium indicators of stereotypic behaviour patterns, qualitative communication disorders, and reciprocal interaction disorders. On this ground, it can be concluded that children do not have deep disorders due to ASD, they can be integrated into the general education school environment. However, they have expressed difficulties in communication and interaction with others to a certain extent, which prevents them from building relationships with their peers. Junior schoolchildren with ASD have a normative level of the reading technique and the way of reading, which indicates the compliance of these parameters with the normative criteria of the school curriculum.

However, such indicators as reading comprehension and reading speed are below the normative level. Statistically lower indicators of reading comprehension, reading speed, method of reading and the index of operational units of reading were found in children with ASD compared to children with normative development. It was established that children with more severe disorders have lower values on all indicators of reading skills. All this indicates that children with high manifestations of ASD find it difficult to read whole words, they do not have a sufficient number of operative signs, which does not allow realizing the reading process fully. And the more severe the concomitant disorders, the more difficulties may arise in the reading process.

The obtained data correspond to previous studies, which found that children with ASD can have word reading skills along with their peers (Vale et al., 2022), have below-normal reading comprehension indicators (Knight et al., 2018). And the greater their manifestations of social interaction and communication disorders, the higher the difficulties in reading comprehension (Ricketts et al., 2013). It is difficult for such children to find relationships in the text, their reading is more mechanical than conscious, the logical structure of what they read is not followed (Davidson et al., 2018). Even with sufficient technique and method of reading that meet the normative requirements of the programme, correct reading is learned much more slowly than children with normative development (Arciuli & Bailey, 2021).

Children with ASD read more slowly (both aloud and to themselves), may hum or whisper when reading to themselves, do not fully understand the material read, and have a low supply of reading units (Accardo & Finnegan, 2019). Such children need more teacher's attention, a longer period for learning reading skills, special methods for developing reading skills. The researchers proved that there are differences in the reading skills of children with ASD and children with normative development (Åsberg et al., 2008; Tsaras et al., 2018), indicators of the ability to tell a story and listening comprehension (Henry & Solari, 2020).

Solari et al. (2019) also proved the influence of the severity of ASD symptoms on reading skills. However, the difference in their results is that this influence changes over time, just as the manifestations of ASD and the manifestations of reading skills change. In general, the authors noted that the trends to improve reading skills over time are positive.

Children with ASD have "weak central coherence", which indicates their focus on separate words. This makes it difficult to understand the read text on a global level (Randi et al., 2010). That is why their

reading technique is high, and operationalization of concepts and understanding of content are low.

Special pedagogical techniques and methods designed to compensate for existing deficits and increase the effectiveness of the educational process can contribute to the development of reading skills (Chen et al., 2019). When teaching children with ASD to read, it is necessary to rely on the use of visual techniques as a supplement to the text. One of the modern effective methods is the "global reading" technique, that is, reading whole words. Having learned to put together letters or syllables, a child with ASD can read "mechanically" for a long time without understanding what he read (Fleury et al., 2021). The use of the "global reading" technique, which can ensure the establishment of a semantic connection between the word and the picture that denotes it, and thus contribute to the development of such a parameter of reading skills as reading comprehension and increase the level of operational units of reading.

## Conclusions

Reading is the basis of communicative interaction, and reading comprehension is an indicator of sustainable development of the individual. Given that children with ASD have speech disorders in many cases, their experience in reading can contribute to consolidation of communication skills, improvement of social interaction, and full inclusion in the educational environment. The obtained data urge the need to implement effective methods of building reading skills of children with ASD developed in accordance with the degree of manifestation of ASD. The results have important consequences for the development of instructions for the development of reading comprehension skills in junior schoolchildren with ASD, which will contribute to the improvement of oral speech and communicative interaction.

For building reading skills of such children in the context of inclusive education, it is recommended to introduce an integrated system that would take into account an individual approach to each student according to his level of manifestation of ASD with the involvement of other specialists. The implementation of the "global reading" method at the level of the main programme of children with normative development will ensure the effectiveness of acquiring the reading skills of junior schoolchildren with ASD.

The presented system of using digital technologies in teaching reading to younger schoolchildren with ASD can be implemented in general school education to form the reading skills of younger schoolchildren with ASD in the conditions of inclusive education. The limitations of the study are the difficulty of combining children with ASD into one research group, as different manifestations of ASD can have an impact on individual indicators of reading skills, as the study showed, which distorts the overall indicator.

The prospects of further research may be the creation of a programme for building reading skills of junior schoolchildren with ASD in accordance with different degrees of ASD manifestation. As well as the development of instructions for teachers with an emphasis on the use of methods of consolidation and understanding of what has been read. The main thing to study in the future is the effectiveness of using different means of teaching reading to younger schoolchildren with ASD in a specific inclusive environment. Developing a model for using digital information technologies in teaching reading to younger schoolchildren with ASD can be a promising direction for optimizing the inclusive educational space.

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