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# CONTENTS

<i>Monika Zaviš - Konstantinos A. Diamantopoulos</i> The Interdisciplinary Pictorial Material of Greek Religious Textbooks – A Chance to Meet the Otherness	1
<i>Matthew Metzgar</i> Revised Bloom’s Taxonomy in a Principles of Economics Textbook	15
<i>Alexander Bilčík - Jana Bilčíková - Daniel Lajčín - Silvia Barnová</i> Information and Material Support to Environmental Education in Slovakia in the Times of Crisis	29
<i>Ajda Şenol Sakin</i> Opinions of Music Education Department Students on Web 2.0 Tools: The Case of Bursa Uludag University	42
<i>Abraham Gyamfi - Rosemary Acquaye</i> Parameters and Models of Item Response Theory (IRT): A Review of Literature	68
<i>Mária Strenáčiková</i> Musical Art Distance Education after Pandemic	79
<i>Mustafa Kerim Şimşek</i> Investigating the Relationships between Obsessive Compulsive Symptoms (OCS) and Depression Symptoms and Intolerance of Uncertainty in Turkish Adolescents during Covid-19	98
<i>Mkhumbulo Ndlovu - Gawie Schlebusch - Solomon Makola</i> A Framework for Implementing Positive Learner Discipline in Public Secondary Schools from the Context of the Mpumalanga Province	115



# FOREWORD

*Dear Readers, Authors, and Researchers!*

*Our scientific journal - Acta Educationis Generalis - closes its thirteenth volume with a series of inspiring and internationally focused studies. The scientific scope of the papers is topical, diverse, broad, but also specific. The specificity of the included studies is given by their diversity. Finally, judge for yourself.*

*A Slovak - Greek pair of authors, Monika Zaviš and Konstantinos A. Diamantopoulos, in their study “The Interdisciplinary Pictorial Material of Greek Religious Textbooks - A Chance to Meet the Otherness”, focus on the visual structure of Greek secondary religious textbooks (in the three grades) and answers the following questions: What kinds of visuals are used in the textbooks? What exactly does the substance of these things consist of? Where can they go exactly? Moreover, how do linguistic and visual structures relate to one another? The definition of otherness provided in the study follows two main paths: one of an interdisciplinary approach during the learning process, and another concerning the personal stimulation of all students through an inter-social and interreligious level. In the final part of the paper, the authors claim that the modern and abstract tendencies and options of Grade A and B's religious textbooks consist of a pole of appealing of the otherness in an individualistic and spiritualistic level of discussion. In the study, the readers can learn about how important high-quality textbooks are in the didactic process from the aspect of students.*

*Matthew Metzgar from the USA, in the study “Revised Bloom’s Taxonomy in a Principles of Economics Textbook” emphasizes that among the contemporary models developed, the updated Bloom’s taxonomy has become the most widely used cognitive process model for gauging learning questions. This model emphasizes the cognitive levels starting from remembering information and progresses to advanced levels such as producing knowledge. As the Author points out, even though students use a variety of strategies to synthesize information and learn, there is an urgent need for teachers to adopt better pedagogies to facilitate meaningful learning. The research findings show that most of the questions utilized the apply level of Bloom’s cognitive domain. There were few questions regarding evaluation or creating. Based on the obtained results, the Author suggests focusing more on the higher levels of Bloom's taxonomy by faculty.*

*A topical global issue is dealt with by authors from the Slovak university environment - Alexander Bilčík, Jana Bilčíková, Daniel Lajčín, and Silvia Barnová in the study entitled “Information and Material Support to Environmental Education in Slovakia in the Times of Crisis”. The study is based on the presumption that the undergoing globalization brings epidemiological, economical, energetical, and environmental security risks. The current task in the field of improving the quality of the environment is educating students in schools for adaptation to the climate change and mitigating its impact on the life and health of living organisms. They carried out a research study in 54 schools and based on its results, it can be assumed that in education, it is important to introduce measures and to prepare graduates for the future as a reaction to the climate emergency situation and the planetary crisis. Therefore, teachers should have expertise, possess objective information, and suitable teaching aids.*

*Ajda Senol Sakin from Turkey, in the paper “Opinions of Music Education Department Students on Web 2.0 Tools: The Case of Bursa Uludag University” presents musically oriented university students’ opinions about using Web2.0 in education. Especially in 2020, with the Covid-19 pandemic worldwide, distance education was implemented for a while thanks to technology, and this situation brought teachers and students closer to technology and improved their usage skills. Although Web 2.0 tools have not yet been used effectively by music students, the importance of these tools in terms of the active role of students in the course has been understood, which can be considered a positive phenomenon from a future perspective.*

*Researchers from Ghana are represented by a pair of authors - Abraham Gyamfi and Rosemary Acquaye. They elaborated the methodological questions associated with validating a measuring instrument. Their literature review is entitled “Parameters and Models of Item Response Theory (IRT)”. This paper reviews the parameters that are estimated using IRT and the models available in IRT. Also, the paper highlights the difference between parameter and models and the various models under each set of data. IRT allows the difficulty and discrimination levels of each item on the test to be estimated. In the framework of IRT, item characteristics are independent of the sample and latent traits of the person are independent of the test on the account that the selected models perfectly fit the data. In the final part of the study, the authors declare that there are not four models of IRT, but there are four parameters estimated with IRT.*

*The changes in music education following the pandemics in Slovakia are dealt with by Mária Strenáčiková in her research study “Musical Art Distance Education after Pandemic”. The aim of the research study was to monitor*

*distance education in the vocational music school environment, describe the main difficulties in vocational music online classes, and identify the elements of distance learning that can be implemented in music education after pandemics. The Author claims that although distance education has shown considerable improvement since 2019, and has undeniable advantages, students pursuing performing arts and composition maintain rather sceptical attitudes towards it. They strongly believe that in practical courses, online teaching cannot fully replace face-to-face instructions. However, teachers often incorporate certain online teaching elements into their regular classes. This is the current reality and practice.*

*The outbreak of the COVID-19 pandemic brought increased risks of mental disorders in adolescents (aged between 14 and 18 years). Mustafa Kerim Şimşek focused on them in the study “Investigating the Relationships between Obsessive Compulsive Symptoms (OCS) and Depression Symptoms and Intolerance of Uncertainty in Turkish Adolescents during Covid-19”. This study aims at examining the direct and indirect mediating role of the intolerance of uncertainty (IU) variable in the relationship between COVID-19-induced OCS and depression in a Turkish adolescent sample. The findings show, as highlighted by the Author, that COVID-19-induced OCS have strong predictive effects on depression symptoms. The findings also revealed that IU directly and indirectly mediates the relationship between COVID-19 OCD and depression symptoms, as well as its negative predictive effect for depression symptoms. The current study just used scales to evaluate the students' self-report, which can be considered a limiting factor, and therefore, there is space for developing a different perspective by working with parents' opinions. Knowledge about parents' opinions about their children's ways of experiencing adverse situations is extremely important.*

*The final paper in the third issue of Acta Educationis Generalis this year is from the field of positive pedagogy. Three Authors from South Africa - Mkhumbulo Ndlovu, Gawie Schlebusch, and Solomon Makola, focused on the field of students' indiscipline in the 21st century. Their study is entitled “A Framework for Implementing Positive Learner Discipline in Public Secondary Schools from the Context of the Mpumalanga Province”. The findings revealed that learner indiscipline is affected by several contributing factors such as family situation, community setting, human rights, peer pressure, educators, and learners themselves. Lack of stakeholder engagement, absence of training, overemphasis on learners' rights and conditioning of educators and parents on corporal punishment are the factors that have led to the ineffective implementation of positive discipline. Effective implementation requires regular monitoring,*

*evaluation and reviewing of the positive discipline approach. The study proposed an Afrocentric framework for the implementation of positive discipline. Although it is a study examining the situation in one province, it can serve as a source of inspiration for international studies.*

*Dear Readers, the Editorial Office of Acta Educationis Generalis has selected interesting and topical studies. The content of each study is original and brings research results by experts from several continents. We appreciate that the papers are diverse, specific, and offer a variety of approaches to the educational reality. Our intention was to catch your attention by this diversity and the presented otherness in several educational issues. We hope we have succeeded.*

*On behalf of the Editorial Office,*

*Viola Tamášová  
Editor-in-Chief*





## **The Interdisciplinary Pictorial Material of Greek Religious Textbooks - A Chance to Meet the Otherness**

*Monika Zaviš - Konstantinos A. Diamantopoulos\**

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### **Abstract:**

**Introduction:** Religious textbooks are always at the front of the Greek educational reality, following the broader tendency of a school study grounded on textbook culture. The present paper focuses on the visual structure of the Greek secondary religious textbooks (in the three grades) and answers the following questions: What kinds of visuals are used in the textbooks? What exactly does the substance of these things consist of? Where can they go, exactly? Moreover, how do linguistic and visual structures relate to one another?

On the other hand, the "otherness" problem is also analyzed through the results provided by the implication of the mixed method used. The latter is accumulated in the assumption of the dynamics of the visuals and their capacity to stimulate the participation of the students through their content. The otherness definition follows two main paths: one of an interdisciplinary approach during the learning process and another concerning the personal stimulation of all students through an inter-social and interreligious level. The hypothesis is confirmed through the interesting results of the present research.

**Methods:** For research purposes, it has been used Atlas ti. The software was available for the qualitative type of research. However, there are various accounts of interesting quantitative magnitudes for comparisons.

**Results:** The primary outcome focuses on a frequency balance among the grades using traditional and more modern visuals in their textbooks.

**Discussion:** Pictures could offer an outstanding pedagogical service when used creatively and effectively. The latter means that the meanings of the day's lesson could be conveyed through visuals to all the students (international students included). Then the religion teacher could initiate a debate in class or assign a

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

related artful thinking activity (providing motivation and inflaming students' participation).

**Limitations:** The first twenty pages of each religious textbook have been used for research. The above restriction consisted of a research choice to avoid a broader statistical data account, which was not the primary goal to achieve.

**Conclusions:** Disregarding the dominant research frequencies and locations and going further from the correlations issues between textual and visual formations as depicted, it might be interestingly argued that the modern and abstract tendencies and options of Grade A and B's religious textbooks consist of a pole of appealing of the otherness in an individualistic and spiritualistic level of discussion.

**Key words:** visuals, interdisciplinary approach, otherness, connection, correlation.

## **Introduction**

Education Textbooks are a critical helping tool for students, especially in (upper)secondary education worldwide (Kumar, 1986, pp. 1309-1311). A similar situation occurs in the Greek educational system as well; for the last fifty years, textbooks have been the leading education basis and the primary source of material for students to help them approach the requirements of their final semester exams (Issitt, 2004, p. 683). The former could not be the only aspect of the education dream for advanced education and learning prospect. Final exams and learning could not be considered as similar parameters or magnitudes disposing of the exact measurement and critique. On the contrary, rich literature is on the run about the matter (Efu, 2018, p. 73). The academic negotiation in the current situation is centered on the learning issue, paying particular attention to the visualization tools utilized in the religious textbooks used within the framework of the Greek educational system (Aisami, 2015, p. 539). The interaction between text and visuals is intriguing, influencing students' learning.

In the last ten years, Greek religious textbooks have adopted a visual approach to the textual theological material, harmonizing text and images (Aisami, 2015) and using several religious image themes and topics for the cause of learning through visual experience. Nevertheless, the visual material may differ in content, location, dimension, and relation or accordance with the text. The questions asked and answered in the appropriate academic research manner were: What kind of visual material was used throughout the twenty pages of each textbook examined? What is the central frequency of development of the referred visuals? Is their textbook location a critical issue? Is there any relationship between the textual and the visual schemes?

All of the inquiries mentioned above were examined via the prism of research in the context of a more comprehensive approach to the Greek educational system. The titles of each researched textbook per grade are: a) A Grade: A Trip of a Lifetime - The Meeting of God and Man through the Biblical Narratives, b) B Grade: The Church's Course of Life through History, and c) C Grade: The Testimony of the Orthodox Church in the Modern World.

## **1 Methodology**

The pictorial school material is considered pedagogically significant (Carney & Levin, 2002, pp. 5-6). However, its deep process is still skipped, mainly prioritizing the textual context analysis and formation in the school praxis. The prior reality of the Greek religious textbooks was considered under severe account in the present review's academic attention. Either way, visuals serve the purpose above by cultivating a dynamic task series grounded on critical thinking, motivation, participation, abstract mentality, imagination, and collaboration occasioned by a picture. The present research is grounded on a mixed methodology. It examines seminal frequencies of the religious textbooks' illustrations, their captions as their content, and their content relevance with their neighbour chapter as well.

Specifically, the present analysis focuses on the religious textbooks of the three secondary school grades (A, B, and C) and the first twenty pages of each one. Rather than focusing on each textbook's specifics, the idea for a bloated database sprang from examining a tiny but representative sample of each one and then having the opportunity for an intergrade comparison. However, still, only the most significant outcomes are presented. The three religious textbooks were uploaded to the ATLAS ti suite, a qualitative analysis software. The first twenty pages of each textbook were marked for review. Consequently, according to the book's content, every visual element was selected and identified by its kind and subject using a particular coding system (Williams & Moser, 2019, p. 47). The latter means that every code retrieved a sum of Information concerning the visual elements, including the primary index, for further adherences.

## **2 Results**

The textbooks research took place from April 5th to April 15th, 2023, and the first twenty pages of each textbook (per grade) were taken under the research lens. The objectives of the research conducted were: a) to define the kind of visuals used, b) the existence of the correlation between visuals and text, c) their textbook location and the possible significance of it, and d) the visualizing stimulation involvement and the possibility of creating a broader engagement of

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

all the members of the classroom if possible. The findings of the research, in brief, are the following:

Concerning the Grade A religion textbook results, photographic material (31.25%), hagiographical material (25.00%), and codex scanning photos (18.75%) are the most prominent visual data, according to the findings. On the other hand, there is an absolute percentage similarity between the drawing map and sketch visuals (6.25%).

Hagiography covers the most significant part (64.29%) compared to photo visuals (14.29%). The traditional way of visualizing is the most prominent in the first twenty pages of the grade B textbook.

The photo-visual objects dispose of a prominent position in the context of Grade C's religion textbook (38.89%). This means that the modern illustration tendency is quite vivid and highly positioned in contrast to the hagiographic-visuals, estimated at 18.27%. The difference between them both is approximately 10%, which is significant. It is also observed that modern hagiographic visuals are statistically quite close to the latter (16.67%), which messages that modern art depiction tendency is strongly preferable. Kids in Grade C may seem more mature and better familiarized with stylish art visuals than their younger classmates. Furthermore, an illustration contradiction emerges between Grade B and C optical frequencies since there is a massive contradiction between the hagiographic tendency of Grade B (64.29%) and photo-visuals (38,89%) of Grade C. Grade B religion textbooks seem to encapsulate hagiographic primarily material.

In contrast, the Grade C textbook includes a significant quantity of photo illustrations. Concerning the frequency matter among the three textbooks, an illustration peculiarity frames the preferable visual philosophy.

### *2.1 Captions' correlation results*

The next step of the present research was to discover the possible dynamical correlations between the three religious textbooks' visual materials and their textual chapters (Unsworth, 2001, p. 3). Therefore, the statistical results of the established qualitative correlations between captions and chapters will provide a noteworthy overview of the qualitative linkage between images and textual formations throughout the religious textbooks.

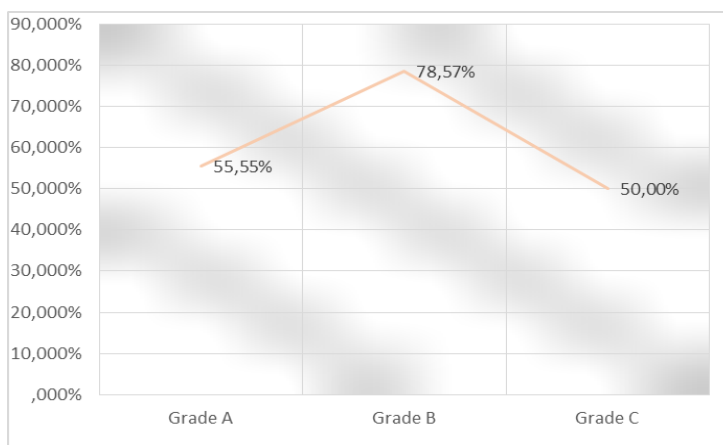
The methodology was simple and focused on finding any correlation between the visual and the chapter title. If there was no caption, there was no connection to discuss. Direct connectivity between them both attested to a direct correlation, and a consequence pattern was characterized as a consequent correlation between them. Moral and ethical relationships were also used as links between comparable notions. Researching a relationship is a multi-dimensional work (Atkinson, Bauer, & Gaskell, 2000, p. 71) for someone to obtain since

objectivity and subjectivity are mixed in various ways. The latter was the path of the present research regarding the quantitative estimation after the qualitative one as a pointer of the existing linkages' magnitude. The results are below:

Table 1

*Caption's correlations*

<u>Grades</u>	<u>Total number of items</u>	<u>Number of correlations</u>	<u>%</u>
Grade A	9	5	55.55%
Grade B	14	11	78.57%
Grade C	18	9	50.00%
Total	41	25	60.97%



*Figure 1. Caption's correlations.*

Grade B reaches the maximum correlation point (pictures with textual formations) at 78.57%; on the contrary, Grade A and B religion textbooks dispose of 50% accumulatively at their first twenty pages. Abstract picture themes, the unsuccessful content relationship between text and images, lack of captions, or inaccurate topics of images are the main reasons which frame a low correlation index. However, the above sample generates a general idea about the illustration technique used. On the other hand, their pedagogical utility might dispose of a few different functionalities concerning the reception issue. The latter could be pointed out directly below in the conclusions section.

### **3 Discussion**

The argument that *"There is not only one way of seeing things around, and a better knowledge-building is enhanced through a broader learning experience"* knocks on the door of the modern learner and studentship, and a wide variety of learning approaches support the current school curriculum trends. A similar occasion tends to be implicated in the Greek (upper)secondary curriculum, although other exterior social (at the most) limitations seem to activate negative educative results (for example, school board extensive opinion diversions, education political union interventions, or significant management decisions). When persisting monolithically to one kind of teaching approach while a new one is not thoroughly examined, the education system needs a great magnitude of truthfulness. It is like a little kid being allergic to something, and its parents look after treating the allergy but not avoiding the cause creating it. In some way, the same occurs in the Greek educational reality since learning is a multi-dimensional process grounded in many discipline inter-relationships. The latter is called the interdisciplinary approach (Deneme & Ada, 2012, p. 885). Religious subject could be included in this necessary educational process.

It concludes the core rendezvous point of various cognitive realms like history, archeology, sociology, law, physics, philosophy, and more (Deneme & Ada, 2012). As referred to in this context, knowledge is connected to other cognitive areas, in contrast to the old-fashioned scientific and teaching approach based on interpreting the world through the lens of only one discipline each time. The above scientific exclusion ensured several consequences: a) psychological ones, since the advocates of a view fanatically insist on their point, mostly connecting persistence with selfishness; b) communicational ones, since the advocates of a view unfairly interrupt a fruitful communication with other scientific or philosophical cultures' representatives c) scientific ones since the advocates of a viewpoint do not allow themselves to see other aspects of truth and d) sociological ones, since the advocates of a viewpoint exclude themselves for the socialization processes.

The latter point provides much food for thought. Knowledge is not an absolute item ready to be known as a product for direct consumption but the method of introducing an unknown object to the subject for research to find additional possible aspects of life. That is called conceptual learning to most authors (Duit & Treagust, 2003, pp. 25-62). In that concept, cognition is based on a direct epistemological or realistic philosophy like Bernard Russel's concerning the immediate awareness and concentration on the object and natural facts expressed by language (Russell, 2013, p. 1) for interpreting the world. On the other hand, cognition is bridged now with Relativism from a sociological point of view. Philosophical Relativism is not only the tool through which object-given relationships are under the lens of research, but even more, human is the

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

protagonist in making relationships happen to produce actual consequences and knowledge (Lave, 2018, p. 201). A human conversation or a scientific debate might be the crossroad of exchanging not only ideas and methodologies in a technical way of speech but an intercultural meeting through which a way of thinking probably emerges as an exchanging cultural currency. The intercultural currency is framed and supported through pictorial material in the context of religious textbooks. Furthermore, a question emerges: How can that occur?

Firstly, religious discipline disposes of the advantage of combining and using diverse scientific areas and information fields through which a comparative approach to the reality of God is supported. The contemporary religious curriculum in (upper)secondary schools is no longer based on strictly memorizing dogmatic principles but on applying them in free discussion to benefit the pupils as individuals and as future members of an organized and democratic society (Mercer & Littleton, 2007, p. 1). Learning the object itself is not prohibited, but it seems more beneficial to understand the studying object in light of its broader context. Therefore, illustration strategies in religious textbooks support contextual knowledge (Levin et al., 1993) in combination with classroom groups or interactive creative tasks. Educational textbooks of most scientific fields provide many illustrations enhancing contextual knowledge in science and humanities. Simultaneously are consonant with the pedagogical directives that have been formulated by a group of educational textbook specialists tending to make the textual material more approachable and appealing.

Besides the fact that illustrations may help students resolve inquiries of theirs (Bodrova & Leong, 1996, p. 56), the former might turn out to be a proper stimulation for the more weakened students and students with special needs to (re)activate their hidden skills and participate equally in the educational activities (Bodrova & Leong, 1996, pp. 26-27). Indeed, modern classrooms include students of various backgrounds and unequal capacities, and the teacher should find the balance point to institute the classroom dynamics by adding more capabilities or enhancing existing ones. Individual teaching is not feasible in the frame of a systemic classroom<sup>1</sup>. For that reason, simultaneous educational help is provided under certain legal and pedagogical circumstances in Greece to help needy students trail the rest of their classmates following the general learning stream. On the other hand, another ready-to-be-used solution is at hand. The textbook illustrations could be used as the vantage point for making simple

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<sup>1</sup> Systemic classroom is the one that involves many interactive students from different cultures (Mercer, 2010, p. 2).



*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

learning tasks for all students to participate in and to build a prior non existed learning background for the class (Bodrova & Leong, 1996).

A vivid example might be the didactic usage of the miraculous biblical cure of the blind man by Christ. When the deepening learning process of the current biblical account might lead to boring situations (even though miracles of Christ are never dull to say in class), religion teachers could take the lead and initiate a diversified didactic strategy by proposing to their students to search the Internet for a photo based on that miracle or more, if they are able to, and make a collage in their religious notebook keeping their comments underneath. They could even sketch that alternatively or even make a poster with all their work done included. Theoretically, in such a case, contextualization takes the place of textualization, which is precisely what might occur during similar circumstances when an image is employed pedagogically. Students can connect themselves with each unit's content and broaden their knowledge experience creatively and productively (Johnson, 2002, p. 12).

The connection with the art discipline was more than evident in the above case. There are also many other cases in which textbook pictures cite other essential and appealing to-use subjects (Jewitt, 2008, pp. 252-253). For instance, a picture of a protestant, catholic, or Orthodox mission endeavor could demonstrate the possible relation with the materialistic and, therefore, medical needs of the third-world populations, starting a debate concerning the best social-world politics could be adapted and implemented and how the whole process could be realized. The poverty, famine, illnesses, lack of medicine and education, the need for clean water provision, and other requirements could easily make a case for a sociological discussion regarding the religious subject in class in the context of a democratic classroom (Darder, 2017).

A textbook picture of space, earth, and other planets also consists of a beautiful motive for a profound didactic connection between the biblical creation process and the future perspective of humankind with the help of science. In that frame, the conquering of space and the vision of space travels could inflame students' curiosity, fantasy, and argumentation moods and nourish the class climate for starting to make group presentations on peculiar scientific topics. In such a way, religion class could be grandly opened to different argumentation and scientific debate enriching students' experience and skills.

The point of creating a diversified didactical ground is not only the link between religious discipline and others of the school curriculum. The interdisciplinary methodology, of course, aids a great deal in the didactic and learning process and multiplies the methods and approaches of the reference topics. One can learn from one another, and several mistakes could also be avoided among teammates. There is also an additional essential concept adherent to visual stimulation and learning. Older textbooks were based on textual formation, and their

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

visualizations were limited enough, especially in (upper)secondary education; consequently, students were obliged to work independently and deliver their homework on a fixed time. Individual learning was the only one planning blocking students to themselves.

On the contrary, when textbooks introduced several illustrations, their content was enriched, and their size grew thicker. Firstly, students needed to familiarize themselves with what to do with the illustrations to some point, and only some questions might emerge about their content on behalf of the RE teachers. Gradually, teachers were instructed to use visual material and broaden the textbook learning content even more (Johnson, 2002). Students then start making links and additions to their existing notes or knowledge. Note-taking simultaneously with listening and participating formatted the new style of didactic approach (Sahlström, 2002, pp. 51-52). In that situation, a strong initialization was required to support the students' arguments, and the latter was successful thanks to the graphics and illustrations. A more exciting advancement was observed through oral communication and debate-making in the classroom cause of the new approach (Sahlström, 2002). Students used to make their stand and participate more energetically in the learning process, while the character of learning was converted from passive to active. The connection of the pictures with the texts inflamed a new connection among the students. It is necessary to be mentioned that social connections are a complicated social situation depending on several factors and variables like human character, social environment, circumstances, social theme chat and chemistry, mood, health, way of thinking, mental condition, ethics, social views, and many more. A similar frame holds in education as well. However, the educational system and didactic strategies could advance themselves and create processes and presuppositions of cultural, social, and scientific interest and poles of appeal (Bryk & Schneider, 2004, p. 4); textbook illustrations are part of such a concept. Students are not expected to be converted to social or scientific learners through methods and books; their intention and attitude are the first-class mechanisms to link them with knowledge (Scardamalia & Bereiter, 2014).

Bond enhancement in class is one branch of the case, while the other accepts students of different nationalities (Kirova & Prochner, 2015, p. 382). In religious education, social bond broadening and enhancement of social relationships for advancing school life are included in the calling of all educators, especially those of humanities and theology disciplines. The biblical message of Christ for people to love one another seems undisputed (Ferrini, 2021, p. 27). While everyday practice and social logic cultivate individualistic rituals and cynical viewpoints for life methods and human beings' attitudes and usage, their teachers and parents make the difference in a new formation to teach them otherwise. Even said, the practice appears to be much more problematic given that social cruelty

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

can occasionally come from within families. However, the current school philosophy develops a systematic approach to intercultural issues through integration classes or cultural school projects throughout the school year in the context of an accumulative logic. In every case, during religion classes, students from different cultures should be motivated to participate in the whole learning dynamics of the classroom (Francis, 1992). The same principle should be a part of every school discipline throughout the school curriculum. Nevertheless, the language communication problem hinders the achievement of the learning and socialization goals.

Pictures could offer an outstanding pedagogical service when used creatively and effectively. The latter means that the meanings of the day's lesson could be conveyed through visuals to all the students (international students included). Then the religion teacher could initiate a debate in class or assign a related artful thinking activity (Chemi, 2014, pp. 370-383), providing motivation and inflaming students' participation. The above concept includes only the outline meaning of the visual methodology since a whole new communicational and pedagogical philosophy is developed beneath it. Visual elements of the textbooks include particles of general communicational planning through which every picture may function as a language tube. The architecture of an image is a hidden narration that emerges via its drawn elements (Hullman & Diakopoulos, 2011, p. 2231). The latter may be the letters or the phrases structuring the picture narration. In the first reading, conceptual sketching includes several autonomous features, but still, in the context of a drawn canvas, autonomy could easily be considered a part of their secret or bizarre relationship. The game of the visual elements could be transmitted in class as a pedagogical game or a communicational challenge (Hullman & Diakopoulos, 2011) since the visual alphabet has generated new modes of thinking in the kid's brain, ready to provide new stimulations and responses in the classroom. The concept is the conversion of the textual alphabet into a visual one or vice versa, depending on the didactic occasion. Consequently, astray students with a low-class participation index gradually grasp a more dynamic learning approach in class. In addition, international students are increasingly linked with the rest of the class members (Dursun & Sevim, 2022, pp. 141-142), advancing their communication interactions and social capacities and making their class work even better.

The old accounts about prehistoric humankind using the first visual imprints for communication are a practical example of how visuals had been used through the deep human past as a communicational or a reminiscent coin. That was the first pedagogy through which primordial survival and messaging were served. Complicated situations demanded creative methods to be handled. The same principle could work for a modern-day classroom coping with the current demands.

#### **4 Limitations**

The present research analysis thoroughly examines the first twenty pages of the visual content in each religious textbook of Greek secondary education is A, B, and C grades only, willing to provide a significant sampling of the structure philosophy of the Greek religious textbooks. This selection was made for two reasons: a) to grasp a representative sample of the visuals provided from the three textbooks' grades and b) to have greater time flexibility regarding the process of the results.

#### **Conclusions**

After analyzing the twenty pages of visual material included in each of the three secondary religion textbooks referred to, some critical conclusions emerged, which are displayed below:

- a) Connectivity is the primary sense in which knowledge and cognitive functions in the central education system in Greece work. The connectivity philosophy concerns how notions and optical displays may present themselves as connected to the human mind. Understanding is grounded on connectivity.
- b) Visual textbook stimulations are considered a primary element in the educational context. They are divided into two basic categories: those that add educational information to the current textual material and those that appeal to students' attention and aesthetics.
- c) Visual religion textbook location is seminal; every image position serves different pedagogical functions. Right, and left side locations to enhance connectivity functions, either encouraging students to add knowledge to their existing cognitive background or to simplify or consolidate their current textual material. Moreover, connectivity disposes of an abstract learning character since it stimulates the brain to do additional personal thinking or cultivate its critical potential. That is the point of textbooks' low index visual correlation (50-55%) embracing  $\frac{1}{2}$  of the twenty pages examined, which might serve the above abstract learning purpose. Simply put, a picture of conceptual content might distract attention and generate thoughts or extract memories. The latter function is legitimate in the context of religious education.
- d) In addition, the center location serves as a supplementary or an emphasizing learning tool. Texts are interrupted via higher or lower-page central visuals enhancing the main messaging of the text provided. Lower-central visuals could serve low-content text significance, while higher leveled page visuals serve high-content purporting. Still, the latter argument is not a direct scope

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

of the present analysis and illustrates an assumption that may need to be studied in another research context.

- e) Concerning the frequency results, it is regarded as seminal to be referred to in Grade A, modern photo visuals cover 31,25%; in Grade B, traditional Orthodox hagiography covers 64,29%; and in Grade C, photo illustrations cover 38,89%. It is also noticeable that there is almost a balance between Grade B (Traditional Orthodox hagiography illustration) and Grade A and C (modern photo-illustration).
- f) Regarding the frequency of textbook location results, it is noticeable that Grade A's favorite visual location is a central position (56,25%), Grade B's favorite location is the left position (42,86%), and Grade C's is the center location (50,00%). Therefore, the preferable and dominant locations regarding the three religion textbooks are the center and left spots of the books.
- g) The correlation issue being developed between visuals and textual formations was examined thoroughly. Abstract picture themes, the unsuccessful content relationship between text and images, lack of captions, or inaccurate topics of images are the main reasons which frame a low correlation index. However, the above sample generates a general idea about the illustration technique used. On the other hand, their pedagogical utility might dispose of a few different functionalities regarding the reception issue, the stimulation of the brain, and the generating ideas enhancing the students' capability.
- h) Disregarding the dominant research frequencies and locations and going further from the correlations issues between textual and visual formations as depicted, it might be interestingly argued that the modern and abstract tendencies and options of Grade A and B's religious textbooks consist of a pole of appealing of the otherness in an individualistic and spiritualistic level of discussion.
- i) Finally, the "otherness" idea could also be embraced in educational activities of the Greek (upper)secondary schooling by linking the religious visual textbook's stimulations with other school disciplines structuring a whole new mindset for the students, including all their background knowledge in the same cognitive package. The latter demands multi-level individual work on behalf of the Greek teacher and working in groups among teachers of different disciplines, finding new areas of pedagogical communication and interaction.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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## **Revised Bloom’s Taxonomy in a Principles of Economics Textbook**

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### **Abstract:**

**Introduction:** Among the contemporary models developed, the updated Bloom’s taxonomy has become the most widely used cognitive process model for gauging learning questions. This model emphasizes the cognitive levels starting from remembering information and progresses to advanced levels such as producing knowledge. Even though students use a variety of strategies to synthesize information and learn, there is an urgent need for teachers to adopt better pedagogies to facilitate meaningful learning. Adams (2015) established that Bloom’s taxonomy places emphasis on student’s ability to acquire prior knowledge before interpreting or applying it into a real-world scenario. It is of interest then to determine the Bloom’s levels in principles of economics textbooks.

**Methods:** This study utilized qualitative research to determine whether the aspects of Bloom’s revised taxonomy were utilized in end of chapter questions. The questions at the end of the chapters of the “Principles of Economics” by Gregory Mankiw (2021) were classified based on Bloom’s revised taxonomy.

**Results:** The study revealed that most of the questions utilized the apply level of Bloom’s cognitive domain. There were few questions regarding evaluation or creating.

**Discussion:** Faculty need to be aware of the different Bloom’s levels available to them and potentially focus more on the higher levels of Bloom’s revised taxonomy.

**Limitations:** One limitation is that only the leading Principles of Economics textbook was surveyed. Other textbooks may produce different results.

**Conclusions:** The leading Principles of Economics textbook had many end-of-chapter questions at the apply level of the revised Bloom’s taxonomy. There may

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be opportunities to develop more questions at the higher levels of the revised Bloom's taxonomy.

**Key words:** Bloom's taxonomy, principles of economics, undergraduate education.

## **Introduction**

The classification of information into a precise sequence which is durable in an individual's memory allows learners to effectively store, retrieve and apply facts. It is essential for students to acquire fundamental knowledge before applying it in the real-world scenario. Measuring the updated Bloom's taxonomy cognitive levels utilized by learners in textbook questions allows curriculum developers and authors to formulate information that facilitate meaningful learning. Storing knowledge in long-term memory requires the involvement of higher cognitive processes (Forehand, 2005). Köksal, Ulum, and Yürük (2023) established that teachers, researchers, and textbook writers should use Bloom's innovative cognitive abilities to enable the learners to enrich texts based on vocabulary, structure, and context. They should also consider using strategies that enable learners to develop their low cognitive skills, standard memory tests, including ability to express themselves in appropriate language and content.

The principles of economics course is often the only economics course that business or general students take. Often the course is broken into two different semesters, one for microeconomics and one for macroeconomics. Other options include a compressed one-semester course in the essentials of economics. Whatever the approach, the principles course is the most important opportunity to reach general students and expose them to economic thinking. Therefore, the effectiveness of the textbook selected is of vital importance.

The leading textbook for introductory economics is "Principles of Economics" by Gregory Mankiw (2021). For the purposes of this paper, the 9th edition is used for analysis. This textbook has been used for decades and continues to dominate the market. As such, it is of interest to check the effectiveness of the end-of-chapter questions in terms of their learning potential. One approach is to classify the questions in terms of Bloom's taxonomy (Bloom et al., 1956). The original Bloom's taxonomy had six levels of ascending difficulty which were knowledge, comprehension, application, analysis, synthesis, and evaluation. Over time, Bloom's taxonomy has been revised by several authors (Darwazeh, 2017; Krathwohl, 2002).

## **1 Literature review**

The value of Bloom's taxonomy generally lies in creating the learning objectives and goals which address the student's abilities. Forehand (2005) established that the theory is based on the ideology that there are several levels of observable actions which indicate the presence or absence of cognitive abilities and the amount of cognitive ability utilized. Teachers can indicate explicitly what the students must engage in to demonstrate meaningful learning by achieving the learning goals established through the measurable verbs (Wilson, 2016). Learning, teaching, and identifying educational goals are interwoven complicated concepts which must be done correctly to improve the quality of the education systems around the world.

Bloom spearheaded a group of educators who classified the educational objectives to demystify these concepts. The primary intent was to establish and formulate a model of classification of thinking behaviours which they believed were key processes of learning. The framework evolved to become a taxonomy which encompassed three major domains, such as cognitive, affective, and psychomotor. Forehand (2005) established that in 1956, Bloom's taxonomy was first published with its major focus on the cognitive domain. While there have been several hierarchical systems developed, Bloom's taxonomy remained as the de facto standard for more than fifty years.

Due to its long-standing endurance among other systems, Bloom's taxonomy has been reinterpreted and reconstructed in a variety of ways. Forehand (2005) established that in 1990s, a new assembly to update the taxonomy to increase its preference for 21 century teachers and students occurred. This assembly involved representatives from the three domains, curriculum and instructional theorists, assessment specialists and cognitive psychologists. Krathwohl (2002) postulated that following the consensus, Bloom's lowest level of pyramid, which was originally knowledge, was changed to remembering.

The new terms formulated were remembering, understanding, applying, analyzing, evaluating and creating which metamorphosed from knowledge, comprehension, application, analysis, synthesis and evaluation (Gul, Kanwal, & Khan, 2020; Bertucio, 2017; Sarfraz, 2017). Psychomotor domains include body movement, coordination, and the use of motor abilities. The development of these skills must be done and measured by speed, accuracy and efficiency (Abidin et al., 2013). The Simpson's and Harrow's psychological areas are important for the development of children and adolescents and for adults to develop skills (Keeling & Major, 2018). Bloom's taxonomy holds critical importance in curriculum because it helps teachers and curriculum developers make effective decisions on helping students make meaningful learning. It also allowed teachers to develop lessons and learning objectives that allow students to achieve optimum learning.

### *1.1 Cognitive domain*

Cognitive domain holds critical importance in Bloom's taxonomy as it establishes the basic cognitive processes that outline students' understanding. Huit (2011) established that Lorraine Anderson also looked at the cognitive aspect of the classification of education and perhaps the two most prominent aspects being the renaming of six categories from nouns to verbs. This new classification represents a more powerful and potentially more accurate way of thinking. Students have varied levels of cognitive understanding and their process skills are diverse (Özgelen, 2012). The key aspects of the cognitive domains are elaborated below.

- Remembering: It is the ability of the individual to remember the information memorized before.
- Understanding: It is the ability to understand the meaning and interpret instructions and problems.
- Applying: It is the ability to use ideas in new ways (Abidin et al., 2013). In the learning environment, students are expected to apply what they learn in the classroom to new workplace situations.
- Analyzing: It is the process of breaking down material or ideas into parts to define an organizational structure.
- Evaluating: It involves expressing a judgment about the value of an idea or thing.
- Creating: A structure or model has several parts. Creating is the process of combining parts as a whole to create new behaviours or structures.

### *1.2 Affective domain*

- Receiving phenomena: This indicates the active student's participation and the learning outcomes that are response-oriented.
- Valuing: The aspect denotes the values or morals that a person has about an object, situation or behaviour. Morality is based on a specific set of values, and evidence of these values can be seen in the general behaviour of students, which is often observed.
- Organization: It involves prioritizing values by comparing different values, resolving conflicts between them, and creating a unified value system. Emphasis is placed on comparison, cooperation, and convergence of values.
- Internalizing values: It is the value system that governs a person's behaviour. The behaviour is positive, stable and predictable, especially the personality of the student. Learning goals relate to students' general coping mechanisms characterized as personal, social, and emotional.

## **2 Method**

The approach of this study involved analyzing the end of chapter questions in the identified textbook and classifying them based on the levels of revised Bloom's taxonomy. The textbook provides a variety of low and high reading cognitive level questions which students are ready to answer. Bloom's new rule was only used to ask reading questions in this study. There is an increased need to establish the theoretical basis for teachers to determine which strategies related to the use of textbooks can enhance student's reading comprehension skills. In the study, a qualitative research approach that uses descriptive analysis was utilized. The reading questions at the end of the selected chapters identified the cognitive levels in Bloom's taxonomy.

The key words and verbs that make up the assessment sections, sample questions, and targeted activities at each chapter were used to indicate the level of conceptual organization and how each aspect of Bloom's taxonomy was utilized. The data obtained were reviewed and analyzed. Frequencies have also been presented in research as a quantitative research design, but reading comprehension questions show similar examples in qualitative research. Low-level cognitive skills include memory, comprehension and practice while advanced cognitive skills include analysis, evaluation and reasoning. The frequency and proportion of each cognitive level were calculated. Bloom's taxonomy has been modified to examine assessment tools related to the cognitive fields of memory, cognition, and related psychology.

The textbook utilized for this study is the "Principles of Economics" by Gregory Mankiw (2021) which provides extensive information about economics. Mankiw uses a clear and engaging writing style to present information, useful facts and real-life scenarios. The economics concepts presented in the book have a significant role in the decisions made by practitioners in the field. Since the book is widely used in the field of economics and utilized in this course study, it was selected for review in this study. Each of the chapters was analyzed with each question at the end of the chapter being classified to determine cognitive levels utilized.

To clearly present the data in this study, the ratio and frequency of individual information levels are presented in a table. In summary, Bloom's taxonomy was developed as the theoretical basis for this study. Based on this, points were calculated for the relevant examples to reflect each level of Bloom's new perspective. The chapters analyzed for this research study are Chapters 1 through 12. This represents the first four major sections of the textbook: Introduction, How Markets Work, Markets and Welfare, and The Economics of the Public Sector. The specific chapters analyzed are listed below for each major section:

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

Introduction

Chapter 1 – Ten Principles of Economics

Chapter 2 – Thinking Like an Economist

Chapter 3 – Interdependence and the Gains from Trade

How Markets Work

Chapter 4 – The Market Forces of Supply and Demand

Chapter 5 – Elasticity and Its Application

Chapter 6 – Supply, Demand, and Government Policies

Markets and Welfare

Chapter 7 – Consumers, Producers, and the Efficiency of Markets

Chapter 8 – Application: The Costs of Taxation

Chapter 9 – Application: International Trade

The Economics of the Public Sector

Chapter 10 – Externalities

Chapter 11 – Public Goods and Common Resources

Chapter 12 – The Design of the Tax System

### **3 Data analysis and results**

Referring to Bloom's new taxonomy, this study attempts to determine whether reading questions have low or high comprehension and classify these questions based on Bloom's revised taxonomy. The findings will help teachers improve end-of-chapter problems at the appropriate cognitive level. The results of this seminal study will help teachers and curriculum developers to choose the appropriate books. It will also provide a better understanding of the level of information that should be included in the textbook. The results of the research will be of great value to participants with national and international interests in achieving the objectives of the course.

The tables below show the frequency of how the textbook questions studied reflected on remembering, understanding, applying, analyzing, evaluating, and creating aspects of revised Bloom's taxonomy. The questions at the end of the chapters identified were classified based on Bloom's revised taxonomy. The questions selected were the open-ended "Problems and Applications" questions, not multiple-choice questions.

The tables which are used to represent the data contain all the aspects of revised Bloom's taxonomy and their frequency. Several similar works using the old version of Bloom's taxonomy have been used by different researchers, but this study employs the use the new version of Bloom's taxonomy. This number of questions and percentages for each area and skill level were calculated for the questions in the textbook used. The data obtained indicate that while remembering aspect was not utilized in all the chapter questions selected, the

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

majority of the questions reflected the applying aspect followed by the analyzing aspects.

Questions are an important part of effective learning. Nappi (2017) established that every day, experts use questions to stimulate students' thinking and imagination which also tests students' memorization and application of knowledge. Effective questions reflect the educational goals to be achieved which makes it an effective instrument used in the classroom environment. Effective questions include narrative or problem-solving questions, as well as more complex questions that stimulate students' intellectual activity. The questions selected in this case were not vague or ambiguous and did not contain complex vocabulary, complex grammar or unclear punctuation.

Table 1

*Classification of textbook questions for Section 1 Introduction (Chapters 1 - 3)*

<u>Level</u>	<u>#</u>	<u>%</u>
Remembering	0	0.00%
Understanding	1	0.00%
Applying	16	62.96%
Analyzing	7	25.93%
Evaluating	3	11.11%
Creating	0	0.00%
<i>Total</i>	<i>27</i>	<i>100.00%</i>

The data in Table 1 reveal that number of text book questions which utilized the remembering aspect of revised Bloom's Taxonomy were none, those that utilized understanding was 1, those that utilized applying were 16 (62.96%) while which utilized analyzing were 7 (25.93%), those that utilized evaluating were 3 (11.11%) while those that utilized creating were none.

Sample questions from the text illustrating these levels are listed below:

“Describe some of the trade-offs faced by each of the following:”  
(Understanding level, p. 14)

“Draw a circular-flow diagram.” (Apply level, p. 34)

“How can you compare the benefits to the costs?” (Analyze level, p. 14)

“Are the following statements true or false? Explain in each case.” (Evaluate level, p. 59)

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

Table 2

*Classification of textbook questions for Section 1 Introduction (Chapters 4 - 6)*

<u>Level</u>	<u>#</u>	<u>%</u>
Remembering	0	0.00%
Understanding	4	12.12%
Applying	21	63.64%
Analyzing	6	18.18%
Evaluating	2	6.06%
Creating	0	0.00%
<i>Total</i>	33	100.00%

The data in Table 2 reveal that number of textbook questions which utilized the remembering aspect of revised Bloom’s Taxonomy were none, those that utilized understanding were 4 (12.12%), those that utilized applying were 21 (63.64%) while which utilized analyzing were 6 (18.18%), those that utilized evaluating were 2 (6.06%) while those that utilized creating were none. It is evident that the majority of the questions reflected the applying aspect followed by the analyzing aspects.

Sample questions from the text illustrating these levels are listed below:

“Is the demand curve elastic or inelastic?” (Understanding level, p. 107)

“What is each driver’s price elasticity of demand?” (Apply level, p. 108)

“What happens to the price of donuts?” (Analyze level, p. 108)

“Should you increase or decrease the price of admission?” (Evaluate level, p. 108)

Table 3

*Classification of textbook questions for Section 1 Introduction (Chapters 7 - 9)*

<u>Level</u>	<u>#</u>	<u>%</u>
Remembering	0	0.00%
Understanding	3	10.00%
Applying	14	46.67%
Analyzing	6	20.00%
Evaluating	6	20.00%
Creating	1	3.33%
<i>Total</i>	30	100.00%

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

The data in Table 3 revealed that number of textbook questions which utilized the remembering aspect of revised Bloom’s Taxonomy were none, those that utilized understanding were 3 (10.00%), those that utilized applying were 14 (46.67%) while which utilized analyzing were 6 (20.00%), those that utilized evaluating were 6 (20.00%) while those that utilized creating were 1(3.33%). It is evident that most of the questions reflected the applying aspect followed by the evaluating and analyzing aspects.

Sample questions from the text illustrating these levels are listed below:

“Would the deadweight loss from this tax likely be greater in the first year after it is imposed or in the fifth year? Explain.” (Understanding level, p. 164)

“Calculate the amount of revenue this tax raises for Smalltown and the deadweight loss of the tax.” (Apply level, p. 165)

“Does a subsidy lead to a deadweight loss?” (Analyze level, p. 165)

“Evaluate the following two statements.” (Evaluate level, p. 164)

“Can you propose a better policy?” (Create level, p. 165)

Table 4

*Classification of textbook questions for Section 1 Introduction (Chapters 10 - 12)*

<u>Level</u>	<u>#</u>	<u>%</u>
Remembering	0	0.00%
Understanding	4	15.38%
Applying	8	30.77%
Analyzing	8	30.77%
Evaluating	5	19.23%
Creating	1	3.85%
<i>Total</i>	26	100.00%

The data in Table 4 reveal that number of textbook questions which utilized the remembering aspect of revised Bloom’s Taxonomy were none, those that utilized understanding were 4 (15.38%), those that utilized applying were 8 (30.77%) while which utilized analyzing were also 8 (30.77%), those that utilized evaluating were 5 (19.23%) while those that utilized creating were 1 (3.85%). It is evident that most of the questions reflected the applying and analyzing aspects both at 30.77% followed by the evaluating aspect at 19.23%.

Sample questions from the text illustrating these levels are listed below:

“On your graph, shade the area corresponding to the deadweight loss of the market equilibrium.” (Understanding level, p. 206)

“Who sells permits and how many do they sell?” (Apply level, p. 207)

“What does this example teach you about the optimal provision of public goods?” (Analyze level, p. 223)



“Based on your calculations, would you support the mayor’s policy?” (Evaluate level, p. 207)

“Can you think of ways the private market can solve this problem?” (Create level, p. 223)

#### **4 Discussion**

The purpose of this study was to investigate the low and high levels of reading comprehension in textbook questions and characterize it based on Bloom’s revised taxonomy. The data revealed that the text questions examined did not focus on the remembering aspect of Bloom’s taxonomy. It is also evident that most of the questions reflected the applying aspect followed by the analyzing aspects. In general, the reading questions measured a moderate level of cognitive ability rather than a high level. Memorization, comprehension, and application are the most assessed processes in this case; advanced skills have not been carefully evaluated. The data showed that the essay questions did not show a high level of reading proficiency. The results of the study also revealed that the level of cognition and the cognitive processes that are undertaken when the different types of questions are presented vary significantly. This is because some of the questions require deeper understanding, memory, and comprehension before it can be stored which means that the level of cognition required for such tasks is higher. The textbook questions presented in this study required varying cognitive levels.

While some of the questions required the students to use a small portion of their cognitive abilities, others required the student to utilize a large proportion of their cognitive ability. Most of the questions presented, however, did not target the students to exhibit higher cognitive levels. Köksal, Ulum and Yürük (2023) established that it was ubiquitous that learners rarely reinforced their lexical, contextual, and syntactical knowledge unless the information provided in the reading text required so. Due to limited time and heavy workload, some teachers cannot prepare adequate teaching materials for the class. Therefore, most of them use textbooks in their classes and mention these books as their main teaching tools (Ulum, 2016).

Disciplines, such as teaching and learning methods, research studies and psychology, show that the brain uses various cognitive processes to process, interpret, store, and retrieve information. These cognitive processes include memory, perception, sensation, and analysis. According to Smith and Kelly (2015) cognition involves complex operations, such as learning, problem solving, reasoning, critical thinking, and intelligence. All of these processes have sub-tasks which can occur simultaneously or sequentially depending on the activities of the person. The complexity of these thought processes also varies, with some having low, medium, or high complexity. To correctly obtain the

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

intellectual scores for the learners and measure these cognitive processes, complexity is considered part of the psychological rating system.

Unlike the first taxonomy developed in 1956, the new Bloom's taxonomy allows the combination of different levels defined as a function. Both original and revised taxonomy refers to a hierarchical structure that identifies cognitive levels from simple memory to more complex operations (Adams, 2015). Forehand (2010) established that Bloom's Taxonomy of Learning Objectives plays an important role in the development of higher and lower knowledge learning activities, assessment tools, and learning materials because of the importance of assessing whether students have engaged in meaningful learning.

Bloom's assessment of educational goals was first proposed by educational psychologist Benjamin Bloom and later by Anderson et al. (2001) and Krathwohl (2002). The basic classification measures the difficulty of thinking in 6 classification levels, classified into subgroups of cognitive skills (Rahman & Manaf, 2017). In the first edition, three objectives were clearly defined: types of learning objectives, curriculum development models and facilitating communication between teachers when administering learning assessment. Hierarchy states that the ability to succeed at one level of Bloom's hierarchy is the result of success at the previous level (Rahayu, 2018). Therefore, it is ubiquitous that the level of knowledge and understanding is important. Verenna et al. (2018) established that if students are not sufficiently successful at basic levels of general understanding, they are less likely to succeed at higher levels, including application, analysis, synthesis and evaluation which require more explanation and complex understanding.

Design, instruction, and assessment are among the most important steps in determining whether students' conceptual development is consistent with learning objectives. Jones et al. (2009) established that assessment is used to identify and determine student and teacher effectiveness. It also determines the curriculum content and is an important way to assess students' knowledge. Bloom's taxonomy is a system for ranking educational goals according to the level of knowledge students need to succeed (Poluakan et al., 2019). There are six levels and the rule is that the strength at the highest level is an accurate indication of meaningful understanding.

At the lowest level, which is remembering, students can repeat facts when asked without understanding their meaning. The next level is "understanding" which is higher because the student has reached the level of knowledge to understand the meaning of the truth (Akib & Muhsin, 2020). When students are challenged to deviate from prior learning, students demonstrate that understanding through knowledge transfer. At the advanced level of collaboration and evaluation, students are expected to demonstrate exceptional ability to set and achieve goals, some academic support, and exceptional ability to evaluate material.

## **5 Future research and recommendations**

Future research should incorporate Bloom's new taxonomy. While hierarchical thinking increases students' flexibility, integrating reading materials and activities is a major concern for writers. Limiting students below proficiency levels is a major challenge for language teaching and learning. Therefore, many economics textbook questions are limited to low levels of recognition and characteristics that need to be developed to improve the level of recognition. Köksal, Ulum, and Yürük (2023) also maintained that Bloom's taxonomy can include the integration of many methods and approaches, such as to language learning. Textbook questions are a good way for learners to reflect as they read and study the material. Furthermore, by incorporating high levels of information, the cognition performance of the student can increase. This research has shown that students can be more motivated when they believe they can acquire certain skills.

Curriculum developers and educators are strongly encouraged to use the revised version of Bloom's Taxonomy for reading comprehension questions. However, textbook assessment questions need to be adapted to higher cognitive levels. There is also a clear need that learners should be encouraged to engage in reading comprehension activities that transcend lower cognitive levels and develop higher cognitive levels. This optimistic view can be achieved through collaboration between teachers, curriculum developers, writers, and students.

## **Conclusion**

Updated Bloom's taxonomy provides useful and effective features that allow learners to be creative when studying. It is a creative approach to writing questions and learning which requires synthesis, creation, planning and application. The increased need to use advanced reasoning skills for textbook questions indicates that aspects of Bloom revised taxonomy are key for learning. To improve the effectiveness of principles of economics courses, the primary textbook used holds critical importance. The questions formulated at the end of each reading or chapter also have a significant effect on whether the students gain meaningful learning. End-of-chapter textbook questions can be potentially improved to reach higher levels of Bloom's revised taxonomy.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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## **Information and Material Support to Environmental Education in Slovakia in the Times of Crisis**

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Silvia Barnová\**

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### **Abstract:**

**Introduction:** The undergoing globalization brings epidemiological, economical, energetical, and environmental security risks. The current task in the field of improving the quality of the environment is educating students in schools for adaptation to the climate change and mitigating its impact on the life and health of living organisms.

**Methods:** The authors carried out a research study on the sample of teachers in 57 schools in the Slovak Republic focusing on particular themes of environmental security, teachers' knowledge in the field and the availability of material didactic means.

**Results:** Particular themes of environmental security were identified and teachers' knowledge in the field was examined. Special attention was paid to the availability of material didactic means to be used for the purposes of environmental education. Statistically significant differences were found between their availability in towns and villages.

**Discussion:** Human activities have significantly changed the quality of the environment and now, the necessary to start applying a more environmentally responsible approach is clear. In the Slovak school system, the cross-cutting theme environmental education provides space for it.

**Limitations:** Limitations are given by the size and the composition of the sample, which do not allow to generalize the obtained findings to the entire population.

**Conclusions:** In education, it is important to introduce measures and to prepare graduates for the future as a reaction to the climate emergency situation and the planetary crisis. So, teachers should have expertise, possess objective information, as well as appropriate didactic means for educating students.

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**Key words:** environmental education, environmental security, environmental sustainability, cross-cutting theme, didactic means.

## **Introduction**

The undergoing globalization of the world, as well as the scientific and technical progress are associated with new opportunities for using human and material resources, overcoming cultural differences, geographical distance, or speeding information access, but on the other hand, it represents a serious threat for the sustainability of the environment. Human activities have significantly changed the quality of the biosphere, hydrosphere, atmosphere, and pedosphere. The climate change has increased the average yearly temperature in the atmosphere and melting glaciers leading to rising ocean levels can be observed. Polluted rivers, seas full of waste, decreasing acreage of quality agricultural land, microplastics found in remote mountains, as well as in the deepest place on our planet both freely in the environment and in animals' bodies are a proof of not the best condition of the environment. Decreased biodiversity of organisms, instability of burdened ecosystems, expansion of monocultures, extensive forest fires in diverse parts of the world on one hand, and large flash floods in other parts of the world on the other hand can be observed. Many of the above phenomena are the consequences of human activities and have a significant impact on the quality of the environment and also on human health and life.

It is important to realize that the undergoing processes in the nature are not isolated phenomena, but - as stated by Liba (2016) - they create a continuous chain of mutual causal, spontaneously applying relationships and each negative change in the nature - environment - has a negative impact on the quality of human life. Váňa (2013) divided individual interactions between material objects according to the duration of their impact, the environment, in which they are present, and their effects (Figure 1).

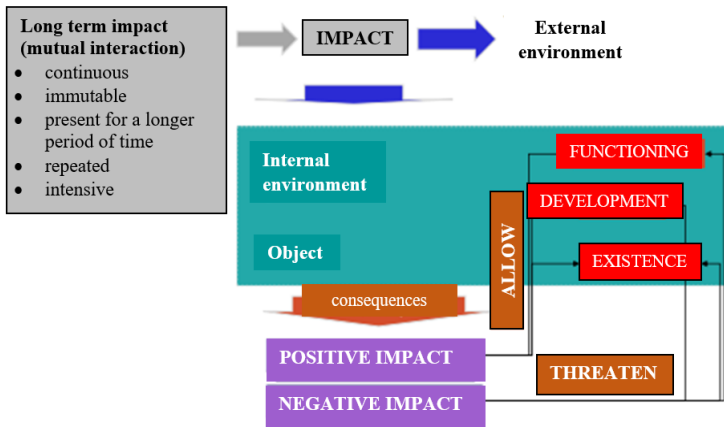


Figure 1. Mutual impact of objects in the geographical space of the Earth (Váňa, 2013).

Krajhanzl (2010) confirms that individuals are in a permanent interaction with their environments, therefore, almost all human behaviour can be considered environmental behaviour. In the times characterized by changes in the environment, ecosystems, biosphere, and climate that are caused by human activities, experts' attention is focused mainly on such environmental behaviour, which is connected with resource and energy consumption, producing waste, and polluting.

There are many examples from the past when inappropriate human activities disturbed and polluted the environment and endangered the health and lives of living organisms. They resulted in environmental burden, territories contaminated by transport, industrial, agricultural, mining, and military activities, but also by inappropriate waste management, representing a serious risk for human health or rock environment, underground water, and soil. In Slovakia, they are registered in the Information System of Environmental Burden (Ministerstvo životného prostredia, 2022), which is a part of the information system of public administration.

Mitigating the negative impact and its prevention require creative solutions and involvement of the general public, which depends on the societies' environmental awareness. Široký et al. (2020) claim that Slovak citizens' environmental awareness is insufficient and therefore, it cannot lead to a change in behaviour, nor to setting values for sustainable development.



Krajhanzl (2015) accentuates that individuals with a higher level of environmental awareness are internally motivated to protect the environment. They are aware of environmental issues and they perceive pollution, extinction of species, and threatening the natural cycles on the planet as serious threats. They understand the environmental context of life and try to find more nature-friendly behaviour patterns, develop a whole range of pro-environmental habits, support environmentally sustainable policies, and are engaged in activities focused on nature and environment protection. They also realize that environmental awareness can only be increased by quality environmental education and education, and by education for sustainable development. These also promote an active approach to the environment by means of developing skills necessary for sustainable development, such as systemic thinking, foresight, strategic thinking, critical thinking, normative competence, or an integrated approach to problem solving (Široký et al., 2020).

Information about the environment form an important part of environmental education and education, but Krajhanzl (2015) points out that they alone only rarely lead to a change in environmental behaviour. He also adds that environmental awareness cannot be increased by means of threatening as it can result in creating a block against open reasoning about environmental issues in a person.

## **1 Environmental education and education**

The fact that schools, as well as all other segments, must adopt their own measures as a reaction to the climate emergency situation and the planetary crisis, and to prepare school graduates for future, is emphasized in the Council Recommendation on Learning for Environmental Sustainability (European Commission, 2022) as well and so, taking effective measures in the field is a necessity.

There is research evidence that environmental education and increasing ecological literacy in the population have an impact on individuals' behaviour, which means that targeted education and education can contribute to improving the quality of the environment. Activities in this field can encourage people to adopt "greener" attitudes and motivate them to recycle, reduce litter, conserve energy, and improve water sanitation (Wals & Benavot, 2017). Education for sustainable development is defined by Anderson (2012) as an approach to teaching and learning influenced by the ideals and principles promoting sustainability, which can be considered a priority in the modern society. As Mogren, Gericke, and Sherp (2019) claim, in the framework of environmental education, specific issues, such as climate, poverty, and biodiversity, are addressed and space for the application of appropriate methods, approaches, as well as developing skills, abilities, visions, and practices is provided.

Undoubtedly, implementing environmental education in school curricula promotes school quality development and its advantage is that education for sustainable development can be applied regardless the type, level, or settings of education. Furthermore, properly selected activities of environmental education encourage active citizenship, especially pro-environmental political behaviour, e.g. involvement in environmental activism, supporting environment-friendly policies, voting for “green” parties, etc. (Meyer, 2015; Coan & Holman, 2008).

## **2 Environmental education in the Slovak school system**

There are several advantages of implementing environmental education in schools and increasing students’ environmental awareness. As available research findings indicate, if sufficient attention is paid to environmental education, it frequently comes to an improvement in students’ academic performance, development of their critical thinking processes and soft skills, and also personal growth can be observed (Natural England, 2012). In the Slovak Republic, as stated in the national curricula for different types and levels of schools, there are four ways of the realization of environmental education: 1. as a cross-cutting theme; 2. as a school subject; 3. as a theme included in the educational content of any school subject; or 4. in the form of a course or a project. As experience shows, schools most frequently opt for implementing the content of environmental education in teaching school subjects included in the school curriculum and, alongside with that, participate in a range of environmental projects on school, regional, national, or international levels. One of the problems that schools have to face is that currently, there are only educational standards for individual school subjects, but not for cross-cutting themes, such as environmental education.

For teaching about environmental sustainability, teachers in schools need appropriate and targeted education and training, sufficient amount of information, and didactic means. Unfortunately, in Slovakia, similarly to other countries, the currently offered teacher training programmes do not sufficiently prepare pre-service teachers for teaching about and for the green and digital transformation. As findings by Seikkula-Leino et al. (2021) show, even in Nordic countries, where the situation in the field of environmental sustainability is much better and the citizens’ environmental awareness is a lot higher than in Slovakia, the formulated goals and the specified contents in curricula related to the climate change and sustainable development are limited, which means that there is a need to promote environmental/sustainable education more explicitly.

### **3 Teachers' preparedness for environmental education**

In the context of practicing teachers' expertise for preparing their students for the twin transition green and digital, the results of a survey focused on education about climate change available on the European online platform School Education Gateway (2020) are interesting. 1,101 respondents participated in the survey, from among which 89% were formed by teachers or school directors from 36 countries, but mainly from Spain, Turkey, and Romania. Almost all respondents agreed that education in the field of climate change is each school's responsibility. From among the reasons for not including education in the field of climate change in the school or national curriculum, teachers most frequently indicated a lack of professional knowledge/training (66.3%) and a lack of teaching resources (50.5%). This indicates, that in-service teachers need learning opportunities in the field of environmental education, which can result in developing their competencies. These competencies can be also well-developed within undergraduate teacher training programmes, especially when considering that for all stakeholders, it is a time and cost saving solution as universities can prepare all future teachers for environmental education regardless their specialization.

As mentioned above, in Slovakia, various issues of environmental education are most frequently implemented in a variety of school subjects. It can be explained by the fact that in Slovakia, the content of undergraduate teacher training programmes does not allow to introduce the subject environmental education in schools. What is alarming, teachers do not feel prepared for teaching environmental topics or introducing environmental activities in the classroom within their subjects - as a cross-cutting theme - either. Therefore, there is an urgent need to develop an "environmental minimum" to be included in undergraduate teacher training programmes. It should contain indispensable thematic content, and should be targeted on developing necessary skills and habits in teachers with the aim to gain competencies for developing students' environmental literacy and increasing their environmental awareness. Moreover, examples of good practice, recommended activities, and verified teaching methods should be focused on (Bilčík, Bilčíková, & Geršicová, 2021).

In the above-mentioned context, the present study introduces the results of an investigation aimed at revealing whether teachers in Slovak schools possess sufficient information and material didactic means for teaching environmental themes.

#### **4 Methodology**

In Slovakia, on the level of the school system, in the national curricula, environmental themes are included in the cross-cutting theme 'Environmental Education', which can be realized in the form of an independent school subject, courses, or – as it is in the case of most schools - it can be implemented in the educational content of individual school subjects. In the presented survey, we examined whether Technics teachers in lower secondary schools implement environmental themes in their teaching process and whether they have sufficient information and appropriate didactic means at their disposal (Bilčíková, 2022). Alongside with that, the differences in the availability of didactic means for teaching environmental themes by teachers in towns and cities on one hand, and in villages on the other hand were investigated into. These categories were created based on the list of schools available at the Slovak Centre of Scientific and Technical Information website.

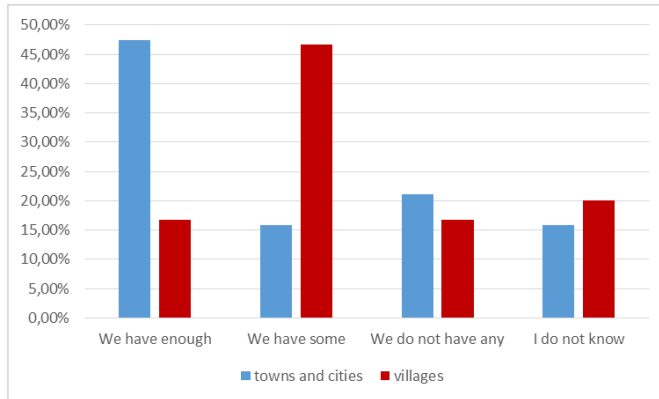
The examined environmental themes were specified based on the educational standards for the subject 'Technics', the cross-cutting theme 'Environmental Education' in the innovated national curricula, recommendations by the Ministry of Education, Science, Research and Sports of the Slovak Republic in the Guide for the School Year, relevant legislation in force, and the Strategy of the Environmental Policy of the Slovak Republic until 2030. The following environmental themes were identified:

- environmental pollution and protection;
- sustainable development;
- climate change;
- alternative sources of energy;
- drinking water, water conservation;
- sustainable construction, green houses;
- waste, separation, recycling;
- landfills, dangerous waste;
- means for household maintenance and cleaning and their impact on the environment;
- environment-friendly products;
- product life cycle;
- circular economy;
- sustainable agriculture.

In the survey (Bilčíková, 2022) carried out in 57 Slovak schools providing lower secondary education - considering the restrictive measures in the context of the COVID-19 pandemic - the combination of semi-structured interviews in schools and a questionnaire administered online using Google Forms, which was distributed via social networks, was used.

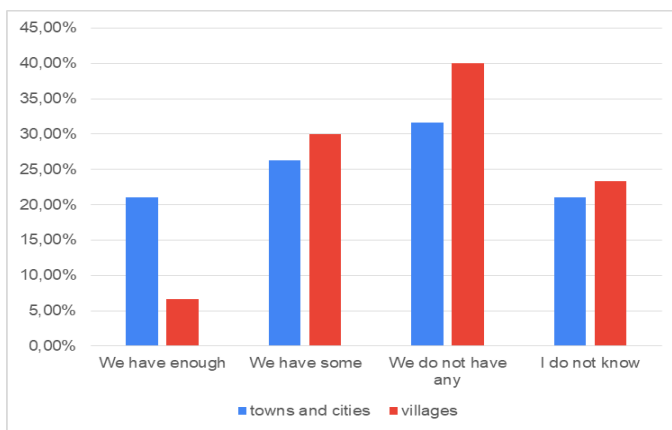
## 5 Results

The participating Technics teachers' responses are displayed in percentages in Figures 2-5, where the responses by teachers working in schools in towns and cities and schools in villages are compared.



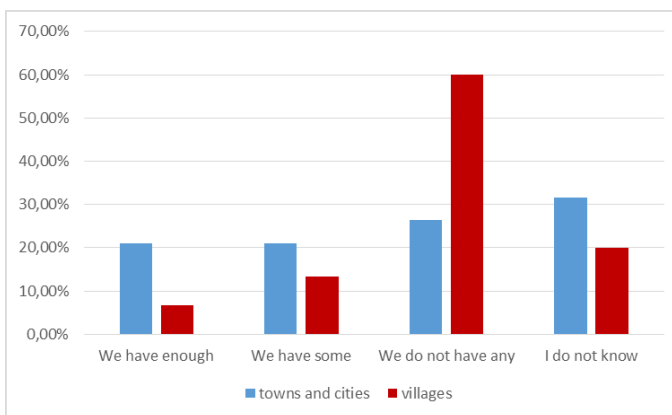
*Figure 2. Waste, separation, recycling.*

As displayed in Figure 2, the most material didactic means are at teachers' disposal for teaching the theme waste, separation, and recycling. As many as 47.4% of Technics teachers working in schools in towns and cities and 16.7% of teachers working in schools in villages indicated that they have sufficient material didactic means for the theme.



*Figure 3.* The theme of environment pollution and protection.

On the other hand, in the context of the theme environment pollution and protection, 31.6% of teachers in towns and cities and 40% of teachers in villages responded that they did not have any material didactic means at all. With other environmental themes, teachers reported an even higher lack of material didactic means.

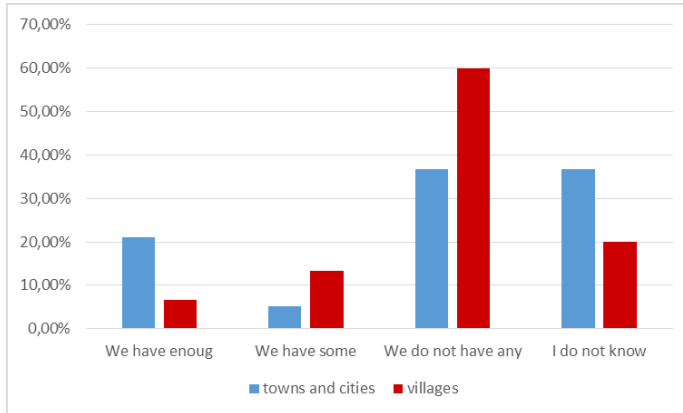


*Figure 4.* The theme of sustainable development.

In the context of the theme of sustainability, 26.3% Technics teachers working in towns and 60% of their colleagues working in villages reported a lack of material

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

didactic means. Similarly, 36.8% of teachers in towns and cities and 60% of teachers in villages reported that they did not have any material didactic means for teaching about climate change.



*Figure 5. The theme of climate change.*

From among all participating lower secondary school Technics teachers working in towns and cities, 21.05% responded that they possessed sufficient information and material didactic means for teaching environmental themes, but only 5.90% of teachers working in schools located in villages reported satisfaction with the availability of material didactic means for this theme. It represents 11.77% of the responses by all participating teachers. More details are displayed in Table 1.

Table 1

*Teachers' responses for the question whether they have sufficient material didactic means for teaching environmental themes*

<u>Teachers working in:</u>		<u>Material didactic means</u>		<u>Other responses</u>	<u>Total</u>
		<u>yes</u>			
Towns and cities	Number of responses	52	195	247	
	%	21.05%	78.95%	100%	
Villages	Number of responses	23	367	390	
	%	5.90%	94.10%	100%	
Total		75	562	637	
Total %		11.77%	88.23%	100%	

The statistical significance of the found differences was tested by chi-square analysis -  $p\text{-value} = 7.36 \cdot 10^{-9}$ . It was confirmed that more material didactic means for teaching environmental themes are available to Technics teachers working in towns and cities than to those working in schools in villages.

During the personal interviews with one part of the participating teachers, they were asked about their sources of information about environmental themes. Their responses varied, but most frequently, they reported using Google. None of the respondents browsed the Central Educational Platform Viki, which was set up by the Ministry of Education, Science, Research and Sport of the Slovak Republic during the pandemic crisis, nor the Ewobox portal operated by the Slovak Environment Agency.

### **Conclusion**

Undoubtedly, education is one of the key determinants on the pathway to sustainable development and environmentally responsible behaviour. The twin transition green and digital has a significant impact on our everyday lives, work, and communication. Promoting circular, digitalized, and climate neutral economy brings new jobs, leads to an effective use of artificial intelligence and robotics. Naturally, schools as institutions preparing students for their future lives must be prepared for changes of such an extent and react to them flexibly. Not only lifelong learning opportunities, but also teachers' characteristics including openness to innovations and using new methods of teaching in the classroom, their willingness to collaborate with their colleagues and share experiences may lead to more environmentally responsible actions in their students in a global context, to developing independent and critical thinking, students' creativity, an ability to find innovative solutions, and using new environment-friendly technologies in order to create a healthier and safer environment.

Also material didactic means and appropriate teaching aids can be considered important tools for creating conditions for developing students' key competencies necessary for living in the 21st century. The twelve 'green' competencies - as defined by the European Commission (Bianchi, Pisiotis, & Giraldez, 2022) - can be divided into four fields:

- Embodying sustainability values;
- Embracing complexity in sustainability;
- Envisioning sustainable futures;
- Acting for sustainability.

In the context of environmental education in Slovakia, the gathered answers indicate that teachers in towns have more material didactic means at their disposal than their colleagues in villages. Teachers in towns and cities have didactic means mainly for teaching the themes waste, separation, recycling,



means for household maintenance and cleaning and their impact on the environment, but they lack resources for the themes landfills, dangerous waste, environment-friendly products, product life cycle, circular economy, and sustainable agriculture. These themes - but the same applies to the issues of sustainable development - are not covered in lower secondary schools in villages.

In the obtained answers (School Educational Gateway, 2022; Bilčíková, 2022), teachers reported a lack of information despite their interest in lifelong learning activities in the field of environmental education. The authors of the paper consider creating favourable conditions for practical activities by all stakeholders of education - not only from schools' internal, but also their external environments - and allowing students' involvement in protecting and creating the environment, in which they live for the benefits of their community important. Only then we can believe that thanks to a holistic approach and understanding the context current students will be able to make environmentally responsible decisions on a daily basis in the future during their productive lives.

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## **Opinions of Music Education Department Students on Web 2.0 Tools: The Case of Bursa Uludag University**

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### **Abstract:**

**Introduction:** Today, thanks to information technologies including Web 2.0 technology, educators can make their lessons more efficient and understandable. In addition, they can encourage active participation of students in this way. With the increase of online education applications during the Covid-19 epidemic in the world, the use of Web 2.0 tools in education has also increased.

**Methods:** Explanatory design, one of the mixed research methods, was used in this research. Within the scope of this research, a questionnaire was applied to the participants to determine their perceptions about Web 2.0 tools, and then interviews were conducted with interview questions created in line with the analysis of quantitative data. 69 pre-service teachers from a large Turkish state university participated in the quantitative stage of the research and five students participated in the qualitative stage.

**Results:** In line with the data obtained, it was concluded that the music teacher candidates' perceptions of Web 2.0 tools were high.

**Discussion:** In the survey application, which forms the basis of the quantitative step of the research, it is seen that the majority of students gave the answer "I agree" or "strongly agree" to survey items. Especially in 2020, with the Covid-19 pandemic worldwide, distance education been implemented for a while thanks to technology, and this situation brought teachers and students closer to technology and improved their usage skills. In addition, these skills are supported by the use of Web 2.0 tools and it is seen that teacher candidates also have a perception towards this.

**Limitations:** The research was limited to 69 students who voluntarily accepted.

**Conclusions:** Although Web 2.0 tools have not yet been used effectively by music students, the importance of these tools in terms of the active role of students in the course has been understood.

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**Key words:** Web 2.0 tools, educational technologies, teaching technologies, music.

## **Introduction**

With the introduction of the internet into our lives, new skills, such as dominantly using digital technology and adapting it to the education process, have been added to the skills aimed at the skills that teachers require. When considering 21st-century skills, teachers need to be able to use information and communication technologies efficiently in the learning-teaching process, choose technology-based applications suitable for the purposes of the course, follow new developments and constantly improve themselves (as cited in Cumhuri & Çam, 2021). Similarly, training teachers who can satisfy the requirements of the digital age in music education is among the goals of music teaching programs. Although Web 3.0 technology is now being discussed, Web 2.0 technology is still widely used in education processes.

Web 2.0 (technology) refers to the second-generation internet that uses the web as a platform to facilitate sharing and collaboration (Faboya & Adamu, 2017; O'Reilly, 2005). Unlike Web 1.0 technology, which aims to present information, Web 2.0 technologies offer users the opportunity to interact online both simultaneously (real-time) and asynchronously (at different times) through text, audio, video and graphics (Rockinson-Szapkiw & Walker, 2009; Rosen & Nelson, 2008). Web 2.0 technology, transformed the online world from the reading environment and created the "Read-Write Web" and offered an environment for people to write without complicated publishing tools (Rosen & Nelson, 2008). Due to the frequent use of these features in social media websites, blogs, wikis and podcasting, Downes (2005) stated that Web 2.0 "is not a technological revolution, it is a social revolution".

According to Hew and Brush (2007), "instructors throughout history have always been concerned with the question of how technology can be used in education to improve education and learning." (Hew & Cheung, 2013). Today, educators often try to find a solution to this question by using Web 2.0 technology in their educational processes.

According to Karadağ and Garip (2021), educators can make their lessons more efficient and more understandable thanks to information technologies including Web 2.0. The revolution in information technology has changed the way, we think about education. Despite the popularity of face-to-face and teacher-based instruction in traditional methods, today's education methods requires an approach in which the student is more active, reinforcing collaborative learning and even enabling content preparation. According to Rosen and Nelson (2008), the greatest strength of Web 2.0 tools is that they can change the nature of

student learning and lead to Education 2.0. "... the multi-way nature of the Web 2.0 platform exemplifies constructivist pedagogy, especially of the social variety." (Rosen & Nelson, 2008, p. 221). When modern technologies such as Web 2.0 tools are planned carefully and integrated into educational environments, they have great potential in terms of providing rich learning opportunities and motivating students (Aytan & Bařal, 2015). These tools, which facilitate the creation of course content, assignments, presentations, videos, games, or digital boards, offer a quick solution to difficult educational issues from different perspectives (Faboya & Adamu, 2017).

Hew and Cheung (2013) stated that "many claims and suggestions have been made about the educational potential or benefits of Web 2.0 technologies, but such claims or recommendations are usually only based on assumptions, not research evidence." However, since 2013, many experimental studies have been carried out, not only explaining the tools but also on the use of Web 2.0 technology in education (Aytan & Bařal, 2015; Bařal & Eryılmaz, 2021; Bugawa & Mirzal, 2018; Can, 2021; Cumhuri & am, 2021; akan Uzunkavak & Gl, 2022; alıřkan et al., 2019; Echeng & Usoro, 2016; Grleroęlu & Yıldıırım, 2022; Jarrah & Alzubi, 2021; Karadaę & Garip, 2021; Parkita, 2021; Sęml & Aslan, 2022; řahin-Topalcengiz, & Yıldıırım, 2020; Tnkler, 2021; Wu, 2022).

In their research, akan Uzunkavak and Gl (2022) aimed to evaluate the contribution of the activities prepared with Web 2.0 technologies for the sound creation unit on the learning levels of students within the scope of the music lesson. As a result of the research, it was determined that the activities prepared with Web 2.0 technologies contributed to the students' self-awareness, self-confidence, voice health, voice change and field expertise, and also facilitated the learning of theoretical knowledge. Consistent with the idea of Web 2.0, where data are created, used and shared by users, Wu (2022) developed and implemented a music teaching resource platform based on fuzzy clustering algorithm knowledge to manage music education in a more scientific and standardized manner. As a result of the research, it is stated that the use of the proposed teaching resource system increases the effectiveness of teaching and reduces students' learning load by increasing the efficiency of learning. A study conducted by Revenko (2021), aimed to determine how new technology and music education can be integrated by accessing the services and opportunities offered by Web 2.0 to mass audiences, and the effect of these opportunities on the quality of music education and psychological education. Sastre et al. (2013) mentioned the Web 2.0 tools they used in music education within the scope of the project they carried out in their research. Crawford (2013) aimed to fill a significant gap in providing music education programmes in regional and distant schools using Web 2.0 tools with a self-developed project. Thus, it enabled

students in rural areas to receive high-quality music education and access performance experiences they could not reach. As a result of their research, Coutinho and Mota (2011) concluded that music lessons conducted by teacher-created podcasts involve students in the learning process and make them aware of the new roles they will play in the global information society.

In the 2020-2021 Academic year, lessons were conducted in a hybrid (online and face-to-face) system due to the worldwide Covid-19 pandemic at Bursa Uludag University Department of Music Education. Apart from individual classes, the collective group lessons also were held online. Faculty members used Web 2.0 tools during the online courses throughout the semester. In this way, the lecturers aimed to ensure students' active participation in classes and collaborative learning environments. For this reason, it is believed that music teacher candidates have a first-hand experiences and ideas about these tools.

Based on this idea, is research mainly aims to answer the question, "What are the perceptions and views of music education department students towards Web 2.0 tools?"

## **1 Methodology**

### *1.1 Research model*

A mixed-method research model was used in this study. According to Johnson et al., mixed-methods research is "a type of research in which the researcher or research team combines components of qualitative and quantitative research approaches for breadth and depth of understanding and validation." (as cited in Creswell & Plano Clark, 2020, p. 4). In this study a questionnaire created by Yuen et al. (2011) and translated into Turkish by Aytan and Bařal, was used and interviews were conducted with the students in line with the results of the questionnaire.

Explanatory Design, one of the mixed-method techniques, was used for the study. In this design, primarily quantitative data were collected and analyzed to collect data for the research question. After this stage, qualitative data were collected using interview questions created in line with quantitative data analysis. Thus, the qualitative results helped to explain the quantitative results.

### *1.2 Study group*

The convenience sampling techniques, one of the purposeful sampling technique, was used in the research. The study sample, in terms of quantitative data, consists of 69 students from the Bursa Uludag University, Faculty of Education, and Department of Music Education, who voluntarily participated in the study. Demographic information of the students is shown in Table 1.

Table 1

*Demographic information of the sample group*

	<u>Gender</u>		<u>Grade</u>				<u>Total</u>
	<u>Female</u>	<u>Male</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	
n	44	25	19	26	12	12	69
%	63.8	36.2	27.5	37.7	17.4	17.4	100

When Table 1 is examined, it is seen that 44 of the students constituting the sample group are female, 25 are male, 19 are in 1st grade, 26 are in 2nd grade, 12 are in 3rd grade and 12 are in 4th grade.

Interviews were conducted to collect qualitative data for the research. The participants of the interviews were some of the students in the sample group. These students used Web 2.0 tools in some of their courses and voluntarily agreed to participation in the study. Accordingly, the study group was formed with five music teacher candidates randomly selected to collect qualitative data for the research. The students in the study group are in the 2nd grade, four of them are female, and one of them is male.

### *1.3 Data collection tools*

In the study, two different data collection tools were used to determine the perceptions and opinions of music education department students about Web 2.0 tools. The questionnaire used to determine the perceptions was developed by Yuen et al. (2011) and later adapted into Turkish by Aytan and Başal. The questionnaire consists of 20 items in a 5-point Likert type (1- Strongly disagree, 2- Disagree, 3- Neither agree nor disagree, 4- Agree, 5- Strongly agree). The questionnaire was used in the study with the permission of the researchers. The validity of the survey conducted by Yuen et al. was ensured by consulting expert opinions, and the reliability coefficient (Cronbach Alpha) was determined as 0.98. To ensure the validity of the questionnaire, which was translated into Turkish; the experts from the Department of English Language Teaching and the Department of Turkish Education were consulted on the clarity of the questionnaire items. The questionnaire was given to the students, and the Cronbach Alpha coefficient was determined as 0.91 (Aytan & Başal, 2015). Also, at the beginning of the questionnaire, there are questions regarding the students' demographic information, whether they have a computer or not, and the use of Web 2.0 tools in the education process.

After analyzing the survey results to collect qualitative data, which is the second stage of the research, interview questions were prepared to examine these results in depth and to determine the opinions on the use of Web 2.0 tools in the teaching profession. There were ten questions in the interviews.

*1.4 Data collection and analysis*

This study was conducted online in the spring semester of the 2020-2021 academic year. Questionnaire items used to collect quantitative data were prepared via “Google Forms” access students more efficiently and were sent to students online. For qualitative data collection, the interview form was designed as a “Word” document and sent to the study group as an e-mail, and the answers were received in written form.

In the study, quantitative data were analyzed as frequency and percentage. Qualitative data were analyzed using the content analysis method, and themes and codes were created. The findings obtained from the quantitative data were discussed by comparing them with the results obtained from the qualitative data. The reliability coefficient calculations of the perceptions survey for Web 2.0 tools, which are quantitative data collection tools, were validated and found to be reliable based on the results obtained. In addition, according to Başkale (2016), it is more appropriate to use terms such as trustworthiness, the accuracy of results, competence of the researcher, credibility, confirmability and transferability instead of validity and reliability in qualitative research. The current study provides a detailed account of the participants and the study group. The study also purports to serve the degrees of reliability with a good literature review, a detailed description of the research methods and an examination of the results of other research. Besides, a triangulation step with direct quotations from the participants was also provided.

**2 Findings**

With the form used as the quantitative data collection tool for the study, we inquire whether the music students have a computer and whether the instructors and students benefit from these tools in the lessons. Table 2 was created from the answers obtained.

Table 2

<i>Questions</i>	<i>Yes</i>		<i>No</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Do you have a computer?	63	91.3	6	8.7
Do your instructors use Web 2.0 tools in their educational processes?	55	79.7	14	20.3
Do you actively use Web 2.0 tools in your education processes?	42	60.8	27	39.2



*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

When Table 2 is examined, it can be seen that most music education department students participating in the study have a computer (91.3 %). According to the result, 79.7 % of the students state that the instructors use Web 2.0 tools in their classes, while only 60.8 % use them for their education.

In addition, the participants were explicitly asked in which courses the instructors used Web 2.0 tools. Table 3 shows the list of courses in which the instructors at Bursa Uludag University Music Education Department use Web 2.0 tools based on the participant's answers.

Table 3

*Opinions of the participants about the courses using Web 2.0 tools*

<u>Courses</u>	<u>n</u>	<u>%</u>
Teaching Technologies	11	7.59
Culture of Music	10	6.9
Curriculum of Music Education	3	2.07
Harmony and Accompaniment	3	2.07
Turkish Folk Music and Applications	3	2.07
Research Methods in Education	2	1.38
Pre-School Music Education	2	1.38
Composing Technics of School Music	2	1.38
Turkish Art Music and Applications	2	1.38
Major Instrument Training	2	1.38
Orchestra - Chamber Music	2	1.38
Baglama Training	2	1.38
General Knowledge Courses	2	1.38
History of Western Music	1	0.69
Western Music Theory and Applications	1	0.69
History of Turkish Music	1	0.69
Polyphonic Choir	1	0.69
Repertoire of School Music	1	0.69
Teaching Practice	1	0.69

When Table 3 is examined, it is seen that Web 2.0 tools are used in many courses, especially in the "Teaching Technologies" and "Culture of Music" courses. In addition, some participants stated that Web 2.0 tools were used in all other classes and all field courses.

During the study, additional questions were asked to the students also enrolled in the School Experience and Teaching Practice course. Accordingly, how often Web 2.0 tools were used was determined while they were observing and teaching

*Acta Educationis Generalis*  
Volume 13, 2023, Issue 3

the lessons. Thirty-five participants answered these questions. The answers obtained from the participants are given in Table 4.

Table 4

*The use of Web 2.0 tools in school experience and teaching practice courses*

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<u>Questions</u>	<u>Yes</u>		<u>No</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
Did the <i>music teachers</i> use Web 2.0 tools in the lessons you observed within the scope of School Experience or Teaching Practice courses?	23	65.7	12	34.3
Did <i>you</i> use Web 2.0 tools in your microteaching or lectures within the scope of your School Experience / Teaching Practice courses?	21	60	14	40

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When Table 4 is examined, it is seen that 65.7% of the music teacher candidates who participated in the study stated that the music teachers used Web 2.0 tools during the lesson observations, and 60% used Web 2.0 tools in their lectures. Table 5 shows the participants' responses to the questionnaire to determine their perceptions of Web 2.0 tools.

Table 5

*Responses of the participants to the survey items*

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<u>Items</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1. Web 2.0 tools help learners develop communication and language skills.	0 (0%)	1 (1.4%)	9 (12.6%)	37 (51.8%)	19 (26.6%)
2. Web 2.0 tools allow learners to work through their ideas and promote critical reflection.	0 (0%)	2 (2.8%)	12 (16.8%)	34 (47.6%)	18 (25.2%)
3. Web 2.0 tools bring learners' work to an authentic and wider audience.	0 (0%)	2 (2.8%)	7 (9.8%)	28 (39.2%)	29 (40.6%)
4. Web 2.0 tools facilitate communication and feedback between learners and teachers.	0 (0%)	3 (4.2%)	5 (7%)	28 (39.2%)	30 (42%)
5. Web 2.0 tools help learners develop a sense of ownership.	0 (0%)	4 (5.6%)	24 (33.6%)	22 (30.8%)	16 (22.6%)

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*Acta Educationis Generalis*  
Volume 13, 2023, Issue 3

6. Web 2.0 tools develop skills needed in today's modern, technological world.	0 (0%)	1 (1.4%)	3 (4.8%)	25 (35%)	37 (51.8%)
7. Web 2.0 tools encourage learners to interact and build a learning community.	0 (0%)	3 (4.8%)	6 (8.4%)	25 (35%)	32 (44.8%)
8. Web 2.0 tools allow learners to express individuality and creativity.	1 (1.4%)	1 (1.4%)	7 (9.8%)	27 (37.8%)	30 (42%)
9. Web 2.0 tools allow learners to pose questions to the community.	0 (0%)	2 (2.8%)	6 (8.4%)	27 (37.8%)	31 (43.4%)
10. Web 2.0 tools allow learners and/or teachers to share photos, music, and videos.	0 (0%)	2 (2.8%)	3 (4.8%)	20 (28%)	41 (57.4%)
11. Web 2.0 tools allow learners and/or teachers to hold forums to discuss topics of interest.	0 (0%)	3 (4.8%)	8 (11.2%)	26 (36.4%)	28 (39.2%)
12. Web 2.0 tools allow learners and/or teachers to find and share educational resources.	0 (0%)	1 (1.4%)	7 (9.8%)	24 (33.6%)	34 (47.6%)
13. Web 2.0 tools provide collaborative learning opportunities.	0 (0%)	1 (1.4%)	10 (14%)	22 (30.8%)	32 (44.8%)
14. Web 2.0 tools promote knowledge sharing.	0 (0%)	1 (1.4%)	4 (5.6%)	27 (37.8%)	33 (46.2%)
15. Web 2.0 tools encourage learners to add value to the applications as they use item.	0 (0%)	1 (1.4%)	11 (15.4%)	29 (40.6%)	25 (35%)
16. Web 2.0 tools allow learners to share their opinions, experiences, and perspectives.	0 (0%)	1 (1.4%)	8 (11.2%)	29 (40.6%)	28 (39.2%)
17. Web 2.0 tools open classroom walls.	2 (2.8%)	5 (7%)	16 (22.6%)	17 (23.8%)	26 (36.4%)
18. Web 2.0 tools appeal to digital native learners.	0 (0%)	6 (8.4%)	17 (23.8%)	23 (32.2%)	21 (29.4%)

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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19. Web 2.0 tools allow learners to become content producers and not just receivers.	2 (2.8%)	1 (1.4%)	5 (8.4%)	26 (36.4%)	31 (43.4%)
20. Web 2.0 tools allow learners to connect content, people, ideas, and conversations.	1 (1.4%)	3 (4.8%)	13 (18.2%)	28 (39.2%)	22 (30.8%)

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When Table 5 is examined, it is seen that the majority of the participants answered “I agree or strongly agree” to all of the items. The item with the highest percentage of respondents that strongly agree 57.4% is “Web 2.0 tools allow learners and/or teachers to share photos, music, and videos.” Today, the fact that photo sharing is widespread on sites, such as Facebook, Instagram, and Twitter that adopt the Web 2.0 approach and students’ frequent use supports this finding.

On the other hand, the item with the highest undecided rate (neither agree nor disagree) of students is “Web 2.0 tools help learners develop a sense of ownership”, with 33.6%. Regarding this item, although 53.4% of the participants think that Web 2.0 tools help to develop a sense of ownership, it is seen that a substantial proportion of the participants do not consider Web 2.0 tools and the sense of ownership/belonging together. In the survey, the item the participants gave the highest rate of disagreement was “Web 2.0 tools appeal to digital native learners” with 8.4%. Similarly, the rate of undecided participants is considerably high for this item (23.8%).

After the quantitative data were obtained through the questionnaire, interviews were held with some students. In these interviews, the students’ views on Web 2.0 tools, the tools they know and use, the use of these tools in classes, the advantages and disadvantages of the tools, the use of these tools in the teaching profession, their self-efficacy, their plans and their views on suggestions on this subject were determined. Themes and codes created from the participants’ opinions on what Web 2.0 tools they know and use are given in Table 6.

Table 6

*Opinions of the participants about Web 2.0 tools*

<u>Theme</u>	<u>Sub-theme</u>	<u>Codes</u>	<u>Participants</u>
Web 2.0 tools	What are Web 2.0 tools?	Tools that enable active participants	P1, P2, P5
		Practical	P2
		Tools that enable participant interaction	P1, P2, P4, P5
		Event platform	P2
		Tools that enable collaborative learning	P3
		Tools that enable distance learning	P4
		Fun tools	P4
		Interesting tools	P4
	Recognizable Web 2.0 tools	Prezi	P1, P3, P5
		Padlet	P1, P2, P3, P4
		Flipgrid	P1, P2, P4, P5
		Google Drive	P1, P5
		Google Meet	P1, P5
		Google Classroom	P1, P3, P5
		Wordwall	P2, P4
		Powtoon	P2, P3, P4
		Kahoot	P3
		Zoom	P5
	Web 2.0 tools that are used	Prezi	P1, P3, P5
		Google Drive	P1, P5
		Google Meet	P1, P5
		Google Classroom	P1, P3, P5
		Padlet	P2, P4
		Powtoon	P3
		Kahoot	P3

When Table 6 is examined, it is seen that the participants define Web 2.0 tools as “tools that enable participant interaction”, as well as “tools that enable active participants”. According to the findings, it is seen that although the participants are familiar with ten different Web 2.0 tools, they only use seven of them. The tools that are most recognized by the participants are Padlet (4) and Flipgrid (4). In addition, the applications that are most used by the participants are Prezi (3)

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

and Google Classroom (3). Participants' views on the question "What are Web 2.0 tools?" are given below.

"Web 2.0 tools are programs that target *active participants* in the technological environment and support the *interaction* of participants with each other." (P1)

Web 2.0 tools are platforms where we can carry out our activities such as homework, presentations, projects and meetings in a *practical and active* way. By active use, we mean applications that allow us to present most of the ideas (sound recording, video, visual, drawing, games, etc.) we plan to exhibit in our project on the program without any trouble, and also allow *simultaneous examination* with other users." (P2)

Unlike the old standard education methods, Web 2.0 tools are tools that play a major role in the application of new methods to new generation students by using technology and *collaborative education*." (P3)

They are digital subject applications that can be used by fellow teachers who want to gather all the work done in a single environment and *interact* with students, and who want to make *distance learning* more *fun* and *interesting*. It offers students the opportunity to work *together simultaneously*." (P4)

It has been integrated into education because technology has entered our lives and the young generation has grown up with it. Web 2.0 tools are the applications that result from this and that users can use by *interacting with each other*. Apart from the teacher, the aim is to include the student in this environment and to perform the education more *actively*." (P5)

When the quantitative data are examined, it is seen that 33.6% of the participants chose the undecided option for the item "Web 2.0 tools help learners develop a sense of ownership". Based on this the participants were asked, "What are your views on the relationship between Web 2.0 tools and the concept of ownership?" The themes and codes in Table 7 were created from the data obtained.

Table 7

*Opinions of the participants on the effect of Web 2.0 tools on ownership*

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<u>Theme</u>	<u>Codes</u>	<u>Participants</u>
Ownership	developing a sense of ownership of lessons and subjects	P1
	develops a sense of ownership	P2, P3, P4
	can create ownership	P5

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When Table 7 is examined, it is seen that the participants stated that Web 2.0 tools would develop or create a sense of ownership. Some of the participants' views on the effect of Web 2.0 tools on ownership are as follows:

"I think that Web 2.0 tools *can improve* the sense of ownership towards lessons and subjects, especially in education, as they will attract students' interest in the lesson and increase their intrinsic motivation towards learning." (P1)

Web 2.0 tools are a much more advanced and remarkable form of traditional presentation methods, with our own unique designs and creative presentations. Its effective use, along with improving our skills, adds originality and ownership. It will be interesting for observers as it is an unusual display method. For this reason, it *develops* a sense of ownership for the creator." (P2)

"... I think these tools will *improve* the sense of ownership." (P3)

"... *contributes to the development* of a sense of belonging." (P4)

"I think *it can create* ownership when used regularly and functionally in the field of education." (P5)

In the survey, in which the quantitative data of the research were obtained, the item with the highest rate of disagreement and undecided (32.2% in total) is "Web 2.0 tools appeal to digital native learners." This situation created a question about how much the participants knew the term of "digital native". Based on this, the participants were asked "Do you have any idea about digital native?" The themes and codes in Table 8 were created from the answers obtained.

Table 8

*Opinions of the participants on digital native*

<u>Theme</u>	<u>Codes</u>	<u>Participants</u>
Digital native	No idea	P1
	Term confusion (confusion of competence and native)	P2, P5
	Born during the time of technological developments	P3
	Individuals who use technology and the internet from the moment they are born	P4

When Table 8 is examined, it is seen that two participants have correct information about the term digital native. In comparison, the other two participants confuse the term "native" with competence, and one participant has no idea about this. The opinions of the participants on the term "Digital native" are as follows:

"I have no idea about this subject." (P1)

"Digital *competence* concept, ..." (P2)

“They are people *born* during the time of technological developments.” (P3)

“They are individuals who start *using* technology and the internet from the moment they are born and can use all areas of the internet effectively. They adapt easily to new technologies and are not forced.” (P4)

“Since everyone lives in the digital world today, I think that even the most remote person is *capable* of simple things.” (P5)

Participants were asked for their opinions on using Web 2.0 tools in lessons. The theme of “Use of Web 2.0 tools in lessons” was created from the answers obtained. The codes for the related theme are given in Table 9.

Table 9

*Opinions of the participants on the use of Web 2.0 tools in lessons*

<u>Theme</u>	<u>Codes</u>	<u>Participants</u>
Use of Web 2.0 tools in lessons	Used in online education	P1
	Efficient	P1
	Problems experienced in applied (performance-based) lessons	P1
	Not used enough / should be used more in face-to-face education	P1, P2, P3, P4, P5
	Useful	P3
	Motivating	P3, P4
	The number of programs/tools for the field of music should be increased	P3

According to Table 9, the participants agree that Web 2.0 tools are not used enough in face-to-face education. In addition, one of the participants stated that there were problems in applied (performance-based) lessons regarding Web 2.0 tools. In contrast, another participant mentioned that the number of programmes/tools for the field of music should be increased. The opinions of the participants on the use of Web 2.0 tools in the lessons are as follows:

“Web 2.0 tools were used in almost every lesson during the *online education* period. In this way, the training was more *efficient*, but there were still some problems during *practical lessons*. I also think that it is *not used enough* in face-to-face education.” (P1)

“Honestly, *I do not think* that these tools are *given priority* in our lessons. ... If an active lesson is carried out with Web 2.0 tools during the lesson, I think that the attention of every listener, regardless of age, will increase. Thus, we can stay in control of the lesson and give an entertaining and informative lesson without boredom. I wish more of our teachers had given us the opportunity to teach with Web 2.0 tools, especially during this online education process.” (P2)



“Web 2.0 tools are *used* as needed in our lessons. Its use is also very *motivating* and provides a great deal of focus on the lesson, as opposed to disconnect from the lesson. Therefore, *it will be good* for both teachers and students to use it in *more lessons*. The use of different applications is also sufficient. The number of *tools and programs* used in the field of music can be increased a little more.” (P3)

“*I do not think* that web 2.0 tools are *used enough* in courses. Its use will improve cooperation and communication. However, these tools are only used in some courses. I also think it is *motivating* because it is easy to use. Using web 2.0 tools in addition to the programs used in the field of music makes learning more meaningful and motivating for students.” (P4)

“*I do not think it is used enough* in music lessons.” (P5)

The participants were asked about their effective use of Web 2.0 tools and their plans for future self-improvement in this regard, and the theme and codes in Table 10 were obtained.

Table 10

*Opinions of the participants on the effective use of Web 2.0 tools*

<i>Theme</i>	<i>Sub-theme</i>	<i>Codes</i>	<i>Participants</i>
Use of Web 2.0 tools	Effective use	Use effectively	P1, P3, P5
		Just Padlet	P2
		Not yet	P4
	Development plans	Learning to use more tools	P1, P3, P4,
			P5
		Use in project presentations	P2

Table 10 shows the participants’ opinions on their effective use of Web 2.0 tools. Accordingly, it was determined that three participants used Web 2.0 tools effectively, one participant only used Padlet, and one participant did not use these tools effectively at all. In addition, it is seen that all participants want to improve their use of Web 2.0 tools effectively and efficiently and are making plans for progress. The opinions of the participants on the effective use of Web 2.0 tools and their development plans are as follows:

“Yes, I can describe myself as someone who uses Web 2.0 tools *effectively*. ... In order to be able to use these tools efficiently in my teaching life, I plan to learn to use *more tools*.” (P1)

“..... At the moment I only know how to use *Padlet*. But if there is an opportunity, when I start my profession, I want to work on these tools and have sufficient experience. In the future, if I take a course that I need to *present a*

*project* for, I plan to start with these tools first. Thus, I will gain experience not only by watching but also by practicing.” (P2)

“Yes, I can describe myself as someone who uses Web 2.0 tools *effectively*. ... *Learning* about these tools, using them and improving myself are among my plans...” (P3)

“Unfortunately, I am *not using* these tools *effectively at the moment* ... I would first start by *broadening my knowledge* on how to use Web 2.0 tools.” (P4)

“Yes, I can use it. I plan to *learn* more tools.” (P5)

Participants were asked about their use of Web 2.0 tools in future (in the teaching profession) and their views on the advantages and disadvantages of these tools in classroom environments. Based on the answers obtained, the themes, sub-themes and codes in Table 11 were retrieved.

Table 11

*Opinions of the participants on the use of Web 2.0 tools in their future teaching life*

<u>Theme</u>	<u>Sub-theme</u>	<u>Codes</u>	<u>Participants</u>
	Using status	I will use	P1, P2, P3, P4, P5
Use of Web 2.0 tools in professional life	Advantages	Active students	P1, P4
		Sharing opportunities for students	P2
		Increasing interest in the lesson	P2, P5
		Increasing technological aptitude	P2, P5
		Collaborative education opportunity	P3, P4
		Opportunity to access different tools & materials	P3
		Diversity of information	P3, P4
		Interaction	P4
		Communication	P4
		Effective	P5
	Opportunity to repeat	P5	
	Disadvantages	Connection lost	P1
		Difficulties in the learning phase	P2
		Incorrect information	P3
Editing feature		P3	
		Anxious, reluctant students	P4

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

When Table 11 is examined, it is seen that all participants want to use Web 2.0 tools in their future teaching professions. Participants listed almost all the features that distinguish Web 2.0 tools from Web 1.0 technology as the advantages of these tools. In addition, the disadvantages of these tools are listed as the problems that can be experienced in the event of an internet outage, the difficulties in learning how to use these tools/applications, easy access to misleading information and students who may hesitate to exhibit their work in the classroom during activities open to the whole class.

The opinions of the participants on the use of Web 2.0 tools in their future teaching life are as follows:

“Yes, I will use.” (P1)

“Yes. Thanks to the Teaching Technologies course I took this year, I learned many programs that I had not experienced before. I saw that we had fun together when we could participate in some practices as a class. It encouraged us to discuss and comment on it. I want to give this experience to my students as I think there are applications that interest me as a student, and I also enjoy preparing them.” (P2)

“I intend to use *Web 2.0 tools* in my teaching profession.” (P3)

“Yes. I plan to use these tools in the future because they take education outside of traditional patterns (teacher, student, textbook, four walls, etc.)” (P4)

“Of course, I think. It provides a more efficient education as there are tools that include students.” (P5)

The participants’ views on the advantages and disadvantages of Web 2.0 tools are as follows:

“I think that Web 2.0 tools in professional music education have advantages in terms of theoretical lessons. By keeping the *student active*, they can make the theoretical lessons more efficient. But I don’t think it is that *efficient* in practice (performance-based) lessons. In case of *internet interruptions*, the student’s being disconnected from the lesson during the performance and not being able to fully listen to the teacher are disadvantages for Web 2.0 tools in this regard.” (P1)

“Due to our profession, *we can share* both their experiences and appearances with our students as video games, activity opportunities, sound recordings, videos, and images offered by Web 2.0 tools in order to recognize the terms, especially in the auditory field. Thus, we can both *increase their interest in the lesson* positively and enable them to get closer to technology. ... Since the applications are out of the ordinary, it may take *some effort and patience during the learning phase*.” (P2)

“... Web 2.0 tools are more advantageous than the traditional teaching-learning model as they teach not only commonly accepted knowledge but also support *collaborative education*. Web 2.0 tools have *increased the diversity*, theories and

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

analyticity of education. Briefly, the *diversity of information* and being able to *access the topics written by different people* can be given as examples of their favorable aspects. The biggest disadvantage is that Web 2.0 tools may not always *have the correct information*, and since it emphasizes collaborative work, *anyone can delete and edit it.*” (P3)

“Web 2.0 tools keep students *active* in the lesson. They enable *interaction, collaboration and communication*. They provide *information and content creation*. They enable students to *develop their technical skills* in their learning processes, but it is not possible to create a quality-learning environment using only Web 2.0 tools. ... Students may *be uneasy and reluctant* to work because the work done with web tools is open to all study groups or to the whole class. They don’t want the whole class to see it because they think they can make a mistake.” (P4)

“I think it is very *efficient and interesting* for transferring topics to students in theory classes. ... I prefer performance-based courses that are done face-to-face because the internet environment hinders the functioning of these courses. Yet, this is not caused by Web 2.0 tools. However, these tools can be productive since they *can be used repeatedly.*” (P5)

Participants were asked for their suggestions on this subject. The “Suggestions” theme was formed from the answers obtained, and the codes in Table 12 were reached.

Table 12

*Participants’ suggestions for Web 2.0 tools*

<u>Theme</u>	<u>Codes</u>	<u>Participants</u>
Suggestions	Use should be encouraged	P2
	Content for music education should be reproduced	P3
	It should be used more in lessons.	P4

When Table 12 is examined, it is seen that the participants suggested that the use of Web 2.0 tools should be encouraged, they should be used more in lessons, and the content that would cover the field/education of music in these tools should be increased. Participants’ suggestions for Web 2.0 tools are as follows:

“I wish Web2.0 tools could reach more people and *encourage* them to use them. Thus, I am sure that many lessons, activities and presentations will become more fun, colorful, equipped and practical.” (P2)

“Although Web 2.0 tools are useful applications in most areas, there are cases where they can be weak *in the field of music education...*” (P3)

“... I think that Web 2.0 tools should be *included more in lessons*, so that the interaction with students and the participation in the lesson will increase.” (P4)

### **3 Discussion**

This study aimed to determine the perceptions and views of the students of the music education department at Bursa Uludag University towards Web 2.0 tools. In line with the findings, it was determined that most of the students in the music education department (91.3%) had a computer, and it was concluded that Web 2.0 tools were used in 18 different courses in the music education department of Bursa Uludag University.

While 65.7% of music teacher candidates stated that music teachers use Web 2.0 tools within the scope of school experience and teaching practice courses, 60% indicated that they benefited from Web 2.0 tools. In the study, the participants commented that they used only four tools (Prezi, Padlet, Powtoon, and Kahoot), excluding Google applications. In addition, it was determined that the students planned to learn to use more Web 2.0 tools. If they achieve these goals by learning different tools/applications or programs, it is assumed that the use of Web 2.0 tools will increase in the practicum they carry out within the scope of the teaching practice course in the 4th grade. In addition, Akbana and Dikilitaş (2022) concluded in their research that students feel anxiety about digital integration because they do not have enough knowledge about Web 2.0 tools and therefore cannot produce activities.

In the survey, which forms the basis of the quantitative step of the study, it is seen that the majority of the students chose “I agree” or “strongly agree” in survey items. Based on these results, it can be concluded that the students of the music education department have a high perception of Web 2.0 tools. The answers given by the students to the item “Web 2.0 tools help learners develop communication and language skills” in the survey are in line with the opinion of the interviewed participants about Web 2.0 tools that “Web 2.0 tools allow participant interaction”. In addition, the interaction and communication codes stated by the participants among the advantages of Web 2.0 tools also coincide with the relevant article.

The second item of the questionnaire is “Web 2.0 tools allow learners to work through their ideas and promote critical reflection.” As a result of the research, it was concluded that music teacher candidates perceive that Web 2.0 tools will support critical thinking skills. It has also been stated in different studies that teachers’ critical thinking skills should be developed (Xu, 2011; Choy & San Oo, 2011; Taghva, Rezaei, & Ghaderi, 2014; Kazikoğlu, 2019; Polat, 2020; Erdoğan, 2020; Yıldırım-Tastı & Yıldırım, 2022). Similarly, in the study conducted by

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

Aytan and Başıel (2015), they concluded that “Web 2.0 tools will improve pre-service teachers’ self-reflection and critical thinking skills” and indicated that “Turkish teacher candidates’ interest in Web 2.0 tools is important for the development of critical thinking skills.”

The answers to the items “Web 2.0 tools bring learners’ work to an authentic and wider audience” and “Web 2.0 tools facilitate communication and feedback between learners and teachers” of the survey are in line with the results obtained from the interviews. The participants stated that among the advantages of Web 2.0 tools is that they allow students to share and access the shared work of different people, and the contributions they provide to communication and interaction.

Although most of the respondents (53.4 %) “agree” or “strongly agree” to the item “Web 2.0 tools help learners develop a sense of ownership” of the questionnaire, the rate of those who answered “neither agree nor disagree” is also not to be overlooked (33.6 %). Aytan and Başıel (2015) reached a similar conclusion in their study. In that study, 31.3% of the participants answered this questionnaire items as “neither agree nor disagree”. When the opinions of the five participants who were interviewed about this situation were asked, it was determined that all participants stated that Web 2.0 tools developed or could create a sense of ownership. With this result, it is estimated that the sense of ownership is not considered with regards to Web 2.0 tools while answering the survey items, but during the interviews, the participants had the opportunity to think more and express their opinions in detail.

When the answers given to the item of the questionnaire “Web 2.0 tools develop skills needed in today’s modern, technological world” are examined, it is seen that the majority of the answers are “I agree” or “I strongly agree” (86.8 %). This result parallels the “increasing technological aptitude” code obtained from the interviews, in which the advantages of using Web 2.0 tools are stated. Although it was concluded in the studies carried out in the early 2000s that teacher candidates and teachers do not use technology sufficiently, this situation has completely changed today (Adıgüzel, 2010; Kocasaracı, 2003). Especially in 2020, with the covid-19 pandemic, education could be carried out remotely thanks to technology. While this situation brought teachers and students closer to technology, it also improved their usage skills. In addition, this situation is supported by the use of Web 2.0 tools, and the teacher candidates also have the same opinion.

79.8% of the participants gave the answers “agree” or “strongly agree” to the item “Web 2.0 tools promote learners to interact and build a learning community” of the questionnaire. In addition, concerning the item “Web 2.0 tools provide collaborative learning opportunities”, the interviewed participants defined Web 2.0 tools as “tools that allow participant interaction, collaborative

learning, and collaboration”. When Web 2.0 tools are examined, it is seen that the tools created for classroom management allow team and group formation (Google Classroom, Kahoot, etc.). Altıok, Yükseltürk, and Üçgül (2017, p. 6) have concluded that “social and cultural activities contribute to the cohesion of a group that comes together for the first time and has group awareness in a short time” with the study they carried out on the training of Web 2.0 tools. Similarly, Tulaboev, and Oxley (2012) concluded in their study that activities carried out through Web 2.0 tools facilitate learning by improving the sense of community. On the other hand, during the interviews, one participant stated that among the Web 2.0 tools disadvantages “the fact that the whole class or group can see the mistakes made by the students can make the student reluctant and uneasy.” In this case, instructors (class leaders) should observe the situation well and give students an opportunity using Web 2.0 tools’ features that “allows students to express their individuality and creativity.”

Most of the participants (81.2%) chose “agree” or “strongly agree” on the item “Web 2.0 tools allow learners to pose questions to the community” of the questionnaire. Similarly, in Gündüzalp’s (2021, p. 1169) study, students evaluated Web 2.0 tools as follows: “The use of Web 2.0 tools is essential because we can find the opportunity to ask questions and get answers immediately when we do not understand.” In addition to all social media applications based on Web 2.0 thinking, other Web 2.0 tools frequently used in education (Google Classroom, Padlet, etc.) allow the community to ask questions about the subject.

The item “Web 2.0 tools allow learners and/or teachers to share photos, music, and videos” of the questionnaire is the item with the highest rate of “I strongly agree” (57.4%). Perhaps the most frequently used Web 2.0 technology by students is social media. These platforms can easily share photos, music, and videos. Kekeç Morkoç and Erdönmez (2015) concluded that students find using social media beneficial in their education. In addition, Dıkbaşı Torun (2020) concluded that students of higher education level prefer watching videos for educational purposes rather than other social media activities. Uça Güneş (2016) defines social networks as “in addition to their ability to appeal to many people due to their widespread and frequent use, they can access information and experts quickly, stay connected, and enable different interactions with different tools”. Similarly, one of the participants with whom the interviews were conducted stated that the possibility of accessing different people’s post is among the advantages of Web 2.0 tools. In addition to social media, it is possible to share photos, videos and music via many other Web 2.0 tools used in education.

In parallel with the following three items in the questionnaire (“Web 2.0 tools allow learners and/or teachers to find and share educational resources”, “Web 2.0

tools promote knowledge sharing” and “Web 2.0 tools allow learners to share their opinions, experiences, and perspectives”), participants expressed a similar opinion and listed the advantages of Web 2.0 tools, such as sharing opportunities, diversity in education, diversity of information and the possibilities of accessing different people’s shared works. According to Kulaklı and Mahony (2014, p. 665), “Web 2.0 has not radically changed the process of creating and sharing information, the content of different sharing structures has been transformed and the flow of information has increased. Therefore, these developments have increased teaching and learning activities. Academics are more flexible in content creation and have access to more resources.”

The item “Web 2.0 tools appeal to digital native learners” of the questionnaire is the item with the highest rate of disagreement (8.4%). In line with this result, the participants were asked about the term “digital native” in the interviews and the reason why they chose the answer I disagree with this item at this rate. While two of the participants explained this concept correctly, the other two participants confused this concept with “competence” and answered accordingly. The other participant stated that she had no idea about this term. With these results, it can be thought that the participants who answered the questionnaire had no idea about this term or were confused. Although the term “digital native” was introduced by Prensky in 2001, this term has been the subject of discussion by many researchers (Prensky, 2001; Bayne & Ross, 2007; Selwyn, 2009). For example, Kirschner and De Bruyckere (2017) stated in their study that they presented scientific evidence showing that there is no such thing as a digital native. In line with these different opinions among researchers and the findings obtained from the research, it is thought that the term “digital native” should be discussed in more detail with the students of the music education department, and research should be conducted on this subject.

### **Conclusions**

According to the results of the survey application in the research, it was determined that the students of the music education department had a very high perception of Web 2.0 tools. Also, music education department students stated that Web 2.0 tools are used more frequently in distance education processes. Still, these tools are not included enough in face-to-face education and should be used more. Although it is mentioned in many studies that Web 2.0 tools contribute to active learning and provide an effective/productive educational environment, this idea is also considered and expressed by students in the music education department (Luckin et al, 2009; Hew & Cheung, 2013; Revenko, 2021).

Another significant result obtained from the interviews in the research is that music education department students need tools/programs and applications with



content specific to the field of music. One of the participants specifically stated that the music-specific characters, symbols, or animations could not be included in the materials he wanted to prepare using Web 2.0 tools for music education. He also stated that if this deficiency is eliminated, music education students or teacher could use these instruments more frequently.

In line with all these results, it is recommended that:

- Teacher candidates learn the effective use of Web 2.0 tools in teaching programs, updating the contents of other related courses, especially the “Teaching Technologies” course,
- Instructors use Web 2.0 tools more frequently in their lessons, especially in theoretical classes,
- Activities that allow teacher candidates to use Web 2.0 tools more frequently in the course contents of teaching programs should be incorporated,
- Content specific to the field of music should be integrated with Web 2.0 tools, increasing the use of these tools in music lessons,
- The teacher training institutions should train teachers who are curious about technological developments with an awareness of the development of new technologies and Web 2.0 tools and are willing to use them in classroom environments effectively.

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*Acta Educationis Generalis*  
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## **Parameters and Models of Item Response Theory (IRT): A Review of Literature**

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### **Abstract:**

**Introduction:** Item response theory (IRT) has received much attention in validation of assessment instrument because it allows the estimation of students' ability from any set of the items. Item response theory allows the difficulty and discrimination levels of each item on the test to be estimated. In the framework of IRT, item characteristics are independent of the sample and latent traits of the person are independent of the test on the account that the selected models perfectly fit the data. Therefore, scores that describe examinee performance are independent on test difficulty. The scores of the examinee may be lower on a difficult test and higher on easier tests, but the ability level of the examinee remains the same over any test at the time of testing. The IRT model allows the estimation of item parameters. The line of difference between the models and parameters of IRT is not clear to many students in assessment.

**Purpose:** This paper reviews the parameters that are estimated using IRT and the models available in IRT. Also, the paper highlights the difference between the parameters and models and the various models under each set of data.

**Methods:** Various literatures on IRT relating to the parameters and models of IRT are reviewed.

**Conclusions:** There are four parameters estimated with IRT but the models are not four. Again, the models of IRT depends on the type of data. Dichotomous data has four models for the four parameters. However, polytomous data has two parameters: item difficulty and item discrimination for the models.

**Key words:** item parameter, models of item response theory, item difficulty, items discrimination.

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## **Introduction**

Item response theory (IRT) is also known as latent trait theory or item characteristic curve theory, according to de Ayalaya (2009). Item response theory is a model system for determining the relationship between latent variables and their manifestations (Gyamfi & Wren, 2022; Butakor, 2022). Item response theory does not explain why a person responds a certain way to a question or how they determine what to answer (Bichi, Hafiz, & Bello, 2016; Bichi, Embong, Mamat, & Maiwada, 2015). This distinguishes it in the traditional sense. Instead, IRT is like statistical estimation theory, in which latent characterizations of the examinee and items are used as predictors of observed scores (Gyamfi, 2023). Comprehensive and accurate knowledge on the assumptions, models, and parameters of IRT is required for better utilization of the theory. However, the distinction between the models and parameters of IRT in respect to a particular type of data continues to be a challenge to many students of measurement.

### **1 Assumptions of IRT for polytomous items**

There are two basic assumptions that underpin IRT for polytomous items; unidimensionality and local dependence (Bulut, 2015) and in addition, a third one-measurement invariance, for monotonous items.

- Unidimensionality: Annan-Brew (2020) stated that most popular assumption of IRT models is unidimensionality. “It is a specified form for the Item Response Function (IRF) that can be checked empirically. Unidimensionality means that all items of the test measure the same latent trait and that with the result examinees can be ordered on a linear scale” (p. 29). The unidimensionality makes it possible to estimate the ability of an examinee on the same ability scale from any pool of items in the universe of items. There should be a dominant component that is being measured by the test. Carvalho, Primi and Baptista (2015) reported that polytomous items in mathematics meet the unidimensionality assumption. There has been suggested statistical approach of checking unidimensionality assumption for both polytomous and monotonous items such as confirmatory factor analysis, IRT and principal component analysis (DeMars, 2018).
- Local independence: The local independence assumption is related to unidimensionality. The assumption holds that the responses to items of a test are statistically independent conditional on the ability level of the examinee  $\theta$  (Annan-Brew, 2020). It indicates that an examinee's performance on one item must not have a positive or negative impact on their responses to subsequent test items. In other words, an item's content cannot give away the answers to other things on the test. Furthermore, it is believed that the likelihood of

correctly answering to an item does not decrease monotonically with skill level. Item response theory (IRT) is “a set of latent variable techniques that are specifically designed to explain the interaction between a subject’s ability and item level stimuli such as difficulty, discriminating, guessing, and others.” (Janssen, Meier, & Trace, 2014, p. 9) The IRT is concerned with the pattern of responses rather than the total score variables and linear regression theory. Le (2013) pointed out that performance-based assessment produces more local independence than traditional assessment. A residual correction coefficient of 0.7 is used to check the local independence assumption for both polytomous and monotonous (Lord, 2008; Min & He, 2014).

- Measurement invariance: This assumption of IRT holds that the items are the same for all groups across the test. This means that all examinees respond to the same set of items. It is therefore an assumption based on system rather than the responses. Thus, if a system is comprised of measurements of several items using a single instrument, measurement invariance shall be defined as observing the same relationships between measurements when a second measurement instrument is used in the assessment. It can be defined as the equality of item and examinee parameters from different examinee populations or measurement conditions (Annan-Brew, 2020). This may not be applicable in polytomous items where examinees have options to select from when taking the tests. That is, when all examinees are not mandated to respond to the same set of items, the measurement invariance assumption is not applicable. A typical situation is in the case of performance-based assessment.

## **2 Parameters in item response theory**

Parameters of IRT are the characteristics of the items that are estimated using IRT. There are four basic parameters that IRT estimates. These are item difficulty, item discrimination, guessing and ceiling effect (Annan-Brew, 2020). They are denoted by letters  $b_i$ ,  $a_i$ ,  $c_i$  and  $d_i$  respectively.

- Item difficulty: According to Liaquat, Asif, Siraji, and Maroof (2012), item difficulty means the percentage of students who answer correctly each test item. Item difficulty indices is an indication of the proportion of the examinees who responded to the item correctly. The lesser the proportion, the difficulty the item is. The  $b_i$  is the location of the examinee on the item. The  $b$  is called ability level needed to respond above a specific threshold with 50% probability.
- Item discrimination: As Nitko (2001) puts it, item discrimination ( $a_i$ ) is the difference between the fraction of the upper group answering the item correctly and the fraction of the lower group answering the item correctly. The  $a_i$  indicates the extent to which the item is able to differentiate between

higher achieving students and lower achieving students. According to Nitko (2001), item discrimination is important because it is able to indicate both the absolute achievement and relative achievement of the students. By absolute achievement, item discrimination is able to determine the level of subject matter a student has accurately learned.

- Guessing effect: The parameter  $c_i$  represents the likelihood of properly answering the item by guessing alone. The value of  $c_i$  does not change with the level of ability. It is the same regardless of skill level. Examinees with high ability and those with low ability both have the same chance of guessing correctly on an item (Annan-Brew, 2020).
- Ceiling effect: The  $d_i$ -parameter is described as the item upper asymptote of carelessness. Response time and the slowness parameter are combined in the suggested 4-parameter logistic model (Zanon, Hutz, Yoo, & Hambleton, 2016). The 4PL has not really been formally added to the traditional IRT models. Also, softwares are not available for analysing it.

### **3 Models in item response theory**

The IRT framework encompasses a group of models. There are two major categories of IRT models depending on the type of data set: models for dichotomous items and models for polytomous items.

#### *3.1 IRT models for dichotomous items*

For dichotomously scored test questions, there are four IRT models, three of which are considered standard IRT models, known as 1, 2, and 3 parameter IRT models (Annan-Brew, 2020; Butakor, 2022). The number of parameters estimated gives it names as 1PLM, 2PLM, 3PLM and 4PLM.

##### *1) Four-parameter logistic (4PL) model*

The 4<sup>th</sup> parameter was introduced by Barton and Lord (as cited in Annan-Brew, 2020) as an upper asymptote parameter. It was added to the difficulty, discrimination and guessing make it 4PL. It is also referred to as the ceiling effect parameter, expressed by  $d$ , into the 3PL model, resulting in the 4PL model. It is represented by the equation:

$$P_4(\theta) = C + (d_i - c_i) \frac{1}{1 + \exp[-1.702a_i\theta - b_i]}$$

“Where  $d_i$  = upper asymptote parameter,  $c_i$  = guessing parameter of the item,  $a_i$  = discrimination parameter of item commonly known as item slope,  $b_i$  = difficulty parameter of item known as item location parameter  $a$  and  $\theta$  (Theta) = the ability level of a particular examinee. The P4PL( $\theta$ ) ranges from the lower asymptote  $c_i$



to 1, and P4PL( $\theta$ ) ranges from  $c_i$  to the upper asymptote parameter  $d_i$ . The  $d_i$ -parameter is described as the item upper asymptote of carelessness.”

The parameter  $c$  represents the likelihood of properly answering the item by guessing alone. The value of  $c$  does not change with the level of ability. It is the same regardless of skill level. Examinees with high ability and those with low ability both have the same chance of guessing correctly on an item. Although the parameter  $c$  has a theoretical range of  $0 \leq c \leq 1$ , the acceptable range in practice is  $\theta \leq c \leq 0.35$ .

The location parameter is also known as the difficulty parameter. It is represented by the letter  $b$ , and it's defined as the point on the ability scale where the probability of properly answering the item is 0.5. Theoretically, range is  $-\infty \leq b \leq \infty$ , although the typical value of range is  $-3 \leq b \leq 3$ . “It is the slope of the tangent line of the item characteristics curve at the point of the location parameter”, which is the item discrimination parameter (the slope parameter). It has normal values in the  $-3 \leq b \leq 3$  range. While most test items discriminate positively (the likelihood of responding correctly to an item rises as ability level rises), some items discriminate negatively (the probability of responding correctly to the item decrease as the ability level increases from low to high) (Mozgalina, 2015; Butakor, 2022).

## 2) *Three-parameter model*

The 3PL estimates three parameters that is difficulty, discrimination and guessing size in the responses. It assumes that the  $d$  parameter is constant hence taking out of the analysis. It is represented by the equation:

$$P(\theta) = c_i + (1 - c_i) \frac{1}{1 + e^{-a_i(\theta - b_i)}}$$

“Where  $c_i$  = guessing parameter of the item,  $a_i$ = discrimination parameter of item commonly known as item slope,  $b_i$ = difficulty parameter of item known as item location parameter and  $\theta$  (Theta) = the ability level of a particular examinee.” Figure 1 illustrates a 3-PLM (Park, 2012).

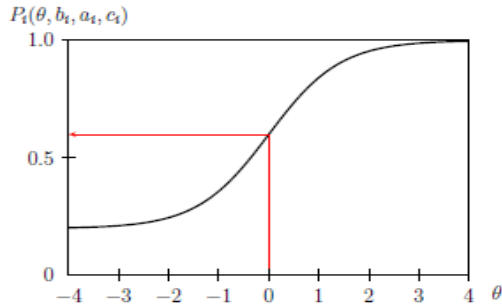


Figure 1. Three-parameter model.

3) *Two-parameter model*

For the 2PL, the guessing factor  $c$  is assumed or constrained to be zero. It is assumed that the guessing factor is constant; therefore, the 3-parameter model is reduced to the 2-parameter model for which only item location (difficulty) and item slope (discrimination) parameters are estimated. Mathematically, the two-parameter is represented as follows (Park, 2012) and Figure 2 illustrates a two-parameter model.

$$P(\theta) = \frac{1}{-1 + e^{-a_i(\theta - b_i)}}$$

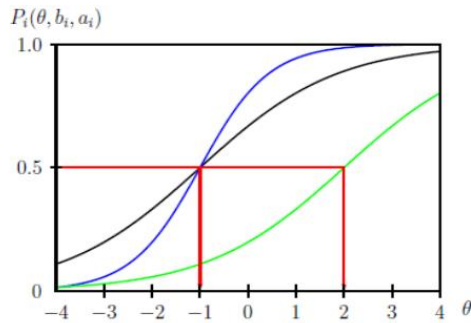


Figure 2. Two-parameter model.

4) *One-parameter model*

The Rasch model is another name for the one-parameter model. It was named after a scientist who first worked in the area. The 2PL is also subject to a constraint that stipulates that all things have the same and fixed discrimination.

The difficulty parameter ‘b’ is the only one that is estimated. As a result, parameter ‘a’ is treated as a constant rather than a variable, and it is not approximated. The IRT model then becomes one parameter model as illustrated by the equation and Figure 3.

$$P(\theta) = \frac{1}{1 + e^{-(\theta - b)}}$$

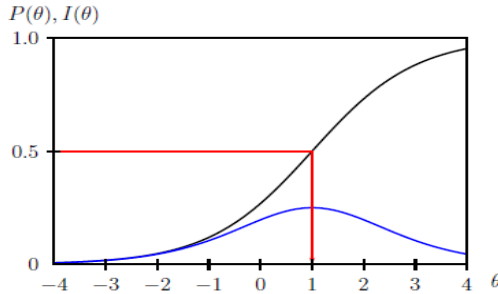


Figure 3. One-parameter model

### 3.1.1 Comparison of the models

Wyatt (2016, p. 234) claimed that “the 2-parameter model is the best for norm-referenced tests”. This is because, aside the difficulty index of each item acquired from the Rasch model, the discrimination powers of the items are evaluated. The 3-parameter model can also be used to estimate discrimination power. The value of *c* (the guessing parameter) is unaffected by the level of ability. As a result, the examinees with the lowest and best abilities have the same probability of guessing right on the item (Royal & Gonzalez, 2016).

Under the 3-parameter model, the discrimination parameter ‘a’ could be read as proportional to the slope of the item characteristic curve at  $\theta = b$ . The slope of the item characteristic curve at  $\theta = b$ , however, is really  $a \frac{1-c}{4}$ . While the differences in the values of parameters ‘b’ and ‘a’ may be little, they are significant when evaluating the findings of test studies (Wyatt, 2016).

### 3.2 IRT models for polytomous items

There are two major types of polytomous IRT models; generalized partial credit model and the graded response models. The two focuses on the two types of response probability, which are peculiar to polytomous models and their corresponding response functions. The response functions are modelled differently by the different types of polytomous IRT model.

### 3.2.1 Generalized partial credit model (GPCM)

Generalized partial credit model (GPCM) provides both conceptual and mathematical description of the major specific polytomous models. “Such models include the Nominal Response Model (NRM), the Partial Credit Model (PCM), the Rating Scale model (RSM) which are all variations of the generalized partial credit model. Partial Credit Model uses the Rasch model to specify the probability of success.” That is the partial credit model is the counterpart of the Rasch model which estimates the difficulty ‘b’ parameter. The PCM is quite popular in assessment contexts because it has limited number of assumptions and steps in the analysis. For PCM, sample size as small as 300 could produce a reliable estimate of the trait (de Ayala, 2009).

Unlike the PCM, Generalized Partial Credit Model includes the item-level discrimination parameter. It is a counterpart of the 2PL of dichotomous items. It is represented by the equation similar to that of the 2PL.

$$P_{ij}(\theta) = \frac{1}{1 + \exp[ai(\theta - bi_j)]}$$

The GPCM has flexibility characteristics. It offers the possibility to identify item response options that may be duplicated with each other. Example is a situation where the IRFs for some response options may be centred at the same ability level (de Ayala, 2009). One significant distinction between PCM and RSM is that RSM assumes that the gap between item difficulty levels is the same for all things on the test. When a common set of anchor items (Likert-type anchors) elicits item replies, this is usual.

### 3.2.2 Graded response model (GRM)

The Graded Response Model (GRM) by Samejima (1969) belongs to the cumulative approach where all categories of scores are used to quantify the probability of success or failure (de Ayala, 2009). The GRM estimates probabilities based on the specification of 2PL. Separate  $b_i$  parameters are estimated for each step of the item. However, it uses one  $a_i$  parameter for all steps for each item. The GRM indicates  $m-1$  “boundary” response functions which are an indication of the cumulative probability for a response category greater than the option of interest. It is represented by the equation:

$$P_{ij}(\theta) = \frac{\exp[ai(\theta - bi_j)]}{1 + \exp[ai(\theta - bi_j)]}$$

The reason for using GRM, or any model is based on ordered response categories, with testlet-based scores (group of items based on the same or similar

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

content developed as a unit with predetermined procedures that the examinee may follow) is that, theoretically, testlet-based scores can have an ordered quality if scores “correspond to the degree of completeness of the examinee’s reasoning process within a testlet” (Le, 2013, p. 58). Table 3 shows the summary of the IRT models.

Table 1

*Summary of IRT models*

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<i>IRT model</i>	<i>Item format</i>	<i>Model characteristics</i>
Rasch model		Equal discrimination across all items is assumed; estimation of difficulty location parameter for each item
Two parameter logistic (2PL)		Estimation of discrimination (slope) and difficulty (location) parameters for each item
Three parameter logistic (3PL)	Dichotomous	Estimation of discrimination (slope), difficulty (location), and guessing parameters for each item
Four parameter logistic (4PL)		Estimation of discrimination (slope), difficulty (location), guessing and ceiling parameters for each item
Graded Response Model	Polytomous	Used for ordered responses and discrimination varies across items
Generalized Partial Credit Model		Used for ordered responses and discrimination varies across items. Could be used as an alternative to graded response model
Partial Credit Model		Assumes equal discrimination across all items. Estimation of separate category location parameters for each item
Rating Scale Model		Equal discrimination across all items. Estimate a single set of categorical location parameters for all items
Bock’s Nominal Model		Used for unordered responses. Discrimination allowed to vary across items

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## **Conclusion**

It should be noted that there are not four models of IRT. But there are four parameters estimated with IRT. Again, the models of IRT depend on the type of data. Dichotomous data have four models for the four parameters. However, polytomous data have two parameters: item difficulty and item discrimination. This is because there is no guessing effect in polytomous items. Therefore, only two parameters are estimated for models of polytomous data.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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## **Musical Art Distance Education after Pandemic**

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### **Abstract:**

**Introduction:** The spread of the coronavirus brought necessary changes in education, including the abrupt transfer from classroom instruction to an exclusively online environment. The teachers and pupils/students adapted to the new conditions, and currently, virtual education elements are being implemented in face-to-face teaching to enhance its efficiency. The aim of our research was to monitor distant education in vocational music school environment, describe main difficulties in vocational music online classes, and identify elements of distance learning that can be implemented in music education after pandemics.

**Methods:** The study utilized a mixed research design. The primary method of collecting data was through questionnaires (2020, 2021 and 2022), and analysing essays written by students from the Faculty of Performing Arts at the Academy of Arts in Banská Bystrica, Slovakia (2020).

**Results:** Student respondents strongly believe that while in theoretically oriented courses, online education can replace face-to-face learning, it is no viable option for practically oriented courses in higher music education. More than half of the students do not support the inclusion of elements of distance education in face-to-face teaching. In spite of several challenges, the positive aspects of online education support the implementation of some distance learning elements in face-to-face music education.

**Discussion:** Our findings about vocational music online education do not contradict other surveys (Yurdal, Sahin, Kosan, & Toraman, 2021; Wang, 2023; Al-Mawee, Kwayub, & Gharaibeh, 2021; Bakhov, Opolska, Bogus, Anishchenko, & Biryukova, 2021; Martha, Junus, Santoso, & Suhartanto, 2021).

**Limitations:** The main limitation is the sampling, as it only included participants who had internet access and were willing to participate in the survey. Future studies should encompass more music educational institutions in Slovakia to achieve a larger sample size. Furthermore, in analyzing questionnaires, we did not make difference between participants' music study fields.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

**Conclusions:** Although distance education has shown considerable improvement since 2019 and has undeniable advantages, students pursuing performing arts and composition at the Faculty of Music Arts at the Academy of Arts maintain rather sceptical attitude towards it. They strongly believe that in practical courses, the online teaching cannot fully replace the face-to-face instructions. However, teachers often incorporate certain online teaching elements into their regular classes.

**Key words:** education, music, distant form, online teaching.

### **Introduction**

Despite the fact that the coronavirus pandemic entered world history in 2019 and the initial panic has long since passed, its consequences, which were initially concentrated primarily in the field of healthcare, have undeniably exceeded its borders and touched almost all areas of human existence. No one will bring back lost lives, fill in the holes that have been created in families, in communities and in the work environment, no one can replace the time and energy that healthcare workers spent to save the sick. However, in addition to acute losses and sleepless nights, anti-pandemic measures have also affected other sectors, such as recreation and restaurant services, air transport and tourism, trade, sports... After the first waves of Covid-19 have subsided, the virus has not disappeared, it still lives among people, but it no longer receives as much attention as it did during the outbreak of the pandemic.

However, on a long-term scale, it has consequences that have literally changed the world: the economy of many states, society, relationships between people have changed... Many of the consequences that no one anticipated at the time of the outbreak of the pandemic gradually manifested themselves. Among these, we can mention primarily the deteriorated mental health of children and the young generation which was most affected by the nearly two-year closure of schools, the new career focus of many people in productive age, new requirements for job positions and key competences of employees in various areas of work... One area that obviously benefited from the measures, is on the information and communication technologies that allowed people to stay in touch despite limited movement and the temporary elimination of personal face-to-face meetings. Interpersonal direct contact has moved to a virtual environment. These changes were also reflected in education, which, even after the cancellation of all restrictions, accepted some gains and implemented them into normal practice, which initiated the need for new competencies not only among teachers, but also among school leaders, students and even their parents. At present, "distance learning is advantageous since it allows for learning at any time and from any

location." (Masalimova, Khvatova, Chikileva, Zvyagintseva, Stepanova & Melnik, 2022)

## **1 Distance education and its challenges**

During the pandemic, schools of all levels and types had to switch to distance education in order to maintain the continuity of education. Teachers' faces moved from classrooms to computer screens, and initially, teachers were forced to "experiment" with unknown digital tools in an online environment to ensure at least some standard of teaching. As educators found themselves in a situation for which they were not prepared in advance, many suffered from a deficit of digital competences and lack of experience with online education. According to a questionnaire survey in which 151 teachers from different school levels responded, teachers not only did not have the necessary platforms and applications for video conferences installed, but also, after downloading them, they were unable to work efficiently with them (they had problems with organizing a meeting, muting or removing a pupil/student, disabling the private chats during classes, disabling messages, creating groups of pupils/students, sharing presentations with sound, using the blackboard...). Teachers also had problems with test implementation: they had no experience with creating online forms, modifying the form to a quiz according to their own ideas (with choosing different types of answers, with entering the correct answers, with automatic evaluation according to the selected points, with limiting the availability of the test/quiz, with setting time for testing, with changing the question order), and they often faced problems also with sharing forms (Strenáčíková, 2020). However, teachers reacted relatively quickly, started self-education, watched online videos, signed up for webinars, even created supporting videos themselves. Various instructional materials were shared by the school management, and within a few months, teachers had acquired the necessary skills for basic work in the online environment. Although several teachers also faced problems with the availability and reliability of the Internet connection, the size of downloaded data, and the lack of enough methodological materials, the situation gradually stabilized.

### *1.1 The transfer from classrooms to virtual environment*

While at the end of March 2020, i.e. a few days after the schools closing, teachers mostly only assigned students tasks via various portals, or they sent students the necessary materials (survey Focus, March 25-26, 2020), a few months later, most teachers were already teaching via Zoom, Google Meet or Microsoft Teams (own research, July 2020, January 2021). However, this method faced pitfalls, because the digital divide and the digital gap phenomenon between students from different socio-cultural backgrounds appeared. Several

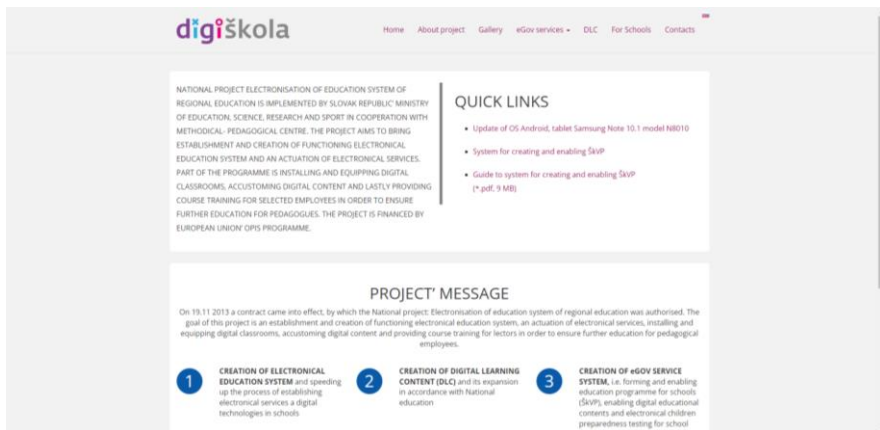
*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

pupils/students did not have any Internet connection, nor advanced technologies that would enable them to actively participate in online classes, or were from families with several children, where various children had classes at the same time, but only one computer/tablet/notebook was available to them. This issue was also addressed and resolved with the help of schools and various organizations. Currently, most schools have ICT resources that they can lend to pupils/students when needed.

Also, teachers have enough digital competencies that would allow them to effectively use the digital tools, internet programs, available platforms etc. Similar problems were encountered by students: not only they had poor internet connection and technologies, but also, some of them lacked the digital competencies necessary for their online studies. In the future, it would be important to improve students' online learning readiness. In order to do so, scientists recommend "several improvements that should be prepared by lecturers: (1) preparing various learning resources, presenting interactive content, and optimizing teaching time with learning activities to increase creativity and understanding; (2) providing metacognitive scaffolding support to help students design strategic plans for task completion; (3) adding collaborative learning activities with heterogeneous groups; and (4) providing motivation scaffolding assistance to manage student motivation." (Martha, Junus, Santoso, & Suhartanto, 2021, p. 14).

The transfer of classroom instruction to the online environment was a stimulating element for the activity of several organizations that tried to help teachers, pupils and their parents. They addressed the areas of online scheduling, computer literacy, and service provision. On March 25, 2020, Štátny pedagogický inštitút [State Pedagogical Institute] made available the website [www.ucimenadialku.sk](http://www.ucimenadialku.sk), which provided information on current measures, recommendations about teaching and learning in an online environment, and listed various sources of educational materials. Digital educational content for primary and secondary schools was also available from previous periods on the digital repository Digiškola [Digi school], which was created as a part of the project Electronisation of the educational system of regional education with the last update from 2016.

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*



*Figure 1.* The home page of the portal Digiškola – Digi School (Digiskola, 2016).

The Ministry of Education, Science, Research and Sport of the Slovak Republic has started operating several educational portals, which continue to provide teachers and students with valuable materials. One of them is Planéta vedomostí [Planet of Knowledge], which contains "more than 14,000 educational materials, videos, exercises, games and tasks." (Planet of Knowledge; Introduction to the portal, 2020) Its use is free and only requires logging in via a RIAM account (authentication service of the Ministry of Education, Science, Research and Sport of the Slovak Republic). The available materials cover the content of 11 educational subjects within primary and secondary schools and high schools (grades 1-12) and are intended for both teachers (Teacher Lessons) and pupils (Pupil Lessons).

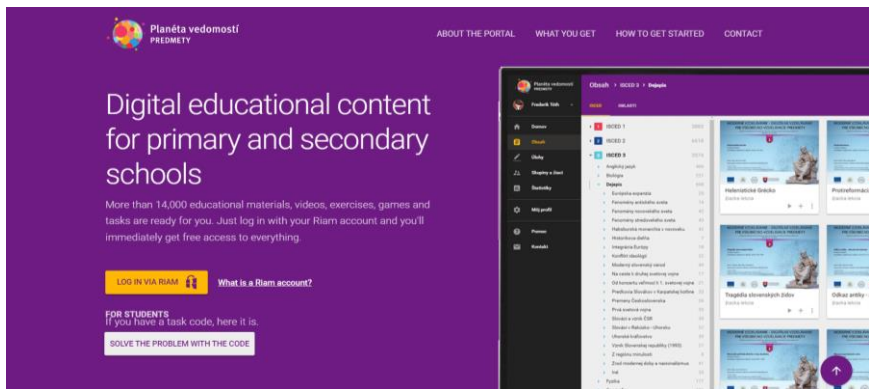


Figure 2. The home page of the portal Planéta vedomostí – Planet of Knowledge (Planéta vedomostí, 2020)

A number of educational materials are also available for teachers on the central digital educational content repository viki, which was also created by the Ministry of Education, Science, Research and Sport of Slovak Republic. It contains thousands of materials for kindergarten, primary and secondary schools and high schools in various fields of education in the form of lessons (with an explanation of the subject content and with interactive exercises with the possibility of immediate feedback), workbooks, methodical sheets, textbooks, online courses with audio samples, etc.

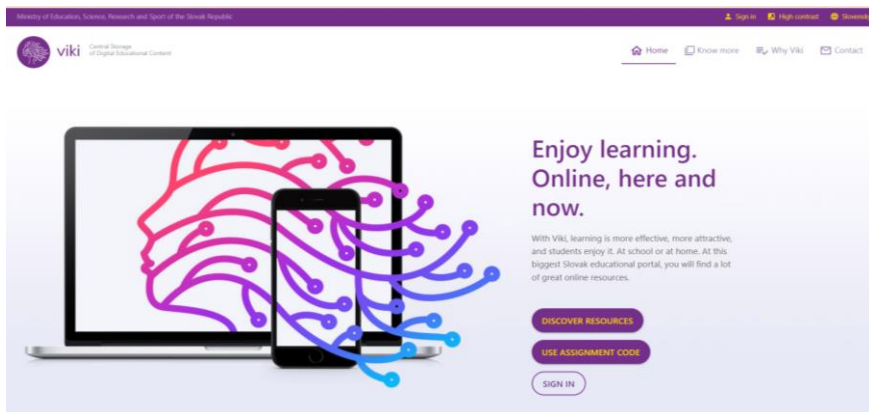


Figure 3. Central Storage of Digital Educational Content, viki (viki, n.d.)

Many tips and materials were shared by teachers themselves. They shared their experience and products on various portals, which also helped students, pupils, and their parents. Registered users can benefit from their work even today. These are, for example, exercises, digital textbooks, dictations, hand-outs, "cheat-sheets" etc. on the portal bezkriedy.sk [without a chalk]. The website Zavretá škola; Ako učiť doma [Closed school; How to teach at home] – a product resulting from the activity of the original Facebook group – also provides stimulating resources. Currently, both are functioning and provide an inspiring basis for the selection of creative materials, and for own production of new materials. In addition, there are shared links, videos and information for educators and parents.

Vocational schools faced almost invincible problems after the school closure. Initially, the professional vocational subjects with a practical focus were not taught at all, and later, teachers sought for various alternatives that, despite fierce efforts, could not fully replace practical activities. A major stumbling block were study fields, which interrupted vocational apprenticeships due to the training institutions, companies and facilities closure. In some countries, a new platform was created for schools to communicate with partner institutions of dual education, to record simulated demonstrations of professional activities, and to carry out apprenticeships in the home environment. However, these activities could not provide equivalent compensation for the students' own experience, which was unavailable in their home environment. The teaching of practical subjects remained an unsolved problem not only in secondary education, but also in many universities.

Further, the current curricula are solid, and in online education, it is challenging to address different learning styles, which "are significant predictors for attitudes towards online education." (Yurdal, Sahin, Kosan, & Toraman, 2021, p. 320). In order to provide more flexibility for different student profiles, it would be advisable to consider certain curricula reorganization.

For the future consideration, "it is essential to prepare and present active learning environments in which technology is incorporated within the education process in order for the student to be involved in the process and make sense of the knowledge and information." (Gül, 2023, p. 76)

### *1.2 Music teaching challenges*

Music education is one of those types of professional education that faced great challenges due to its specificity, whereas practical vocational subjects are linked to live music and to collaboration with other musicians, both of which require synchronization in time.

The first problem when teaching a music instrument or singing is poor quality signal transmission, which does not allow to hear the sound as it actually sounds.

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

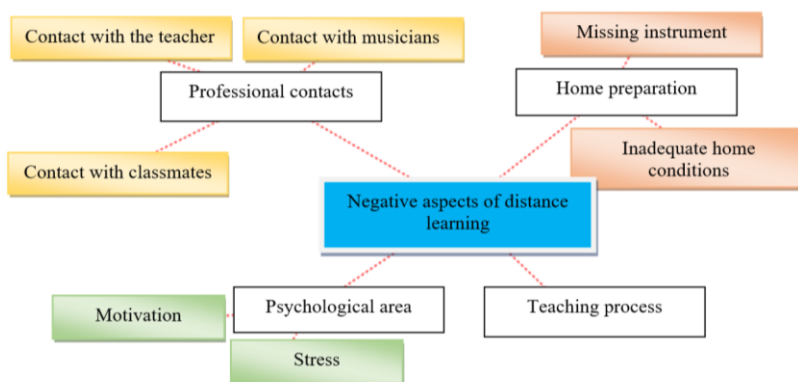
The distortion mainly consists in reducing the clarity of the tones, making it impossible to transmit the fine dynamic shades of the instrument's sound. Moreover, while playing some instruments, there is also a problem with capturing high tones. This happens, for example during singing classes, on breathing and technical exercises which require speaking sibilants and singing high-frequency tones. These are often completely removed by the device as noise during speech due to the “suppress background noise” function. Inadequate sound transmission distorts the students’ performances, and it cuts on the possibility to work, for instance, on the dynamics of the performance. The pitfall is that the teacher cannot always get an accurate idea of his/her student's performance, and thus cannot even provide him/her with adequate feedback.

Another problem has to do with diagnosing pupils' interpretation skills, and is related to the size and details of the image. During playing/singing, it is important for a teacher to see the student's posture, the way (s)he holds the instrument, breathes etc. The screen provides little space to show the whole body of the pupil and if the pupil places the camera/mobile in a way, so that the whole body is visible, the teacher loses the possibility to see the detail of the playing apparatus. Gentle movements of the fingers, their bending, the height and the speed of the stroke, the angle of the wrist/elbow, the tension in the hand muscles, etc. play an important role in music performance, but the screen is not able to convey these nuances to the teacher. Even the feedback itself is problematic, as in acoustically inappropriate home conditions, the sound of the playing is louder than the sound of the laptop/cell phone, and the pupil/student often does not hear the teacher clearly. Even if (s)he heard a comment, due to the time shift, it came late and was no longer relevant at the given moment. For example, if the student's forearm is raised when playing a chord, the hand changes position again during the next chord; or if the student plays rhythmically inaccurately, the teacher snaps his fingers or indicates the beat, and these sounds cannot have any time delay compared to the sounding music. The solution of these problems would require better technological support, high-quality microphones and cameras and high-speed Internet for signal transmission, but the students and teachers are not equipped with them.

A challenging issue when teaching profile subjects (playing an instrument, singing) is the necessary cooperation with an accompanist, the person who plays accompanying parts to the solo. During pandemic, this problem was solved in most cases, since the accompanists recorded their parts at home (however, often with very low-quality sound and video recordings), and subsequently sent the recordings to the students, so that they could practice their parts accompanied by "karaoke" piano. On the other hand, the existence of recordings has its considerable positives, because if a student has a recording, (s)he is no longer limited by the presence of an accompanist in the classroom, and (s)he can

practice at any time and at any place. The second option for enabling the student to play/sing with the piano accompaniment is to organize a video call or a meeting so that both the accompanist and the student could join in real time. With most of the equipment and at a lower signal transmission speed, the shift in the sound (the sound delay) makes the interaction between the accompanist and the student almost impossible. This problem is still not solved, and the practical playing of the instrument/singing with the piano is not feasible in our conditions. In our conditions, teaching collective practical subjects such as playing in an orchestra, chamber music, choir, etc., is an insurmountable problem. Ensemble music playing is an irreplaceable part of the professional music training, and it cannot be simulated in any way. In these subjects/courses, the main focus is in the "common-play", which requires prompt response to an acoustic signal from other players or to a visual signal from the conductor (for example, if a section of instruments in the orchestra plays quieter, the other sections must adapt to current sound).

In order to obtain accurate information directly from music students, we analysed the essays from 65 students of the Faculty of Performing Arts of the Academy of Arts in Banská Bystrica that were part of the Musician's Personality Development course. The students had to send their works by email until the end of June 2020. In their essays, they mentioned negative aspects of school closure which were related to professional contacts, home preparation – training, psychological area and educational process.



*Figure 4.* Negative aspects of the distant learning from the students' point of view at the Faculty of Music Arts, Academy of Arts (Strenáčiková, 2020, p. 85).



In the category "Teaching Process", they commented the most critical shortcomings to be those related to the use of ICT in teaching, demanding cooperation with accompanists, and doing assignments that were supposed to replace practical activities, but did not fulfil their function on a theoretical level. The students also criticized the applied teaching methods, which often could not fully replace the face-to-face form of teaching, the organization of education/classes/courses, which initially failed (teachers did not know how to organize meetings, classes overlapped, the schedule did not work, there were no uniform requirements for exams), and they also saw pitfalls in the accuracy of information about Covid-19 measures and poor availability of study material. In music education, most of the students are dependent on the materials that the teachers share with them from their own music archives, but due to restrictions, even the teachers did not have access to the archives. The current situation favours various databases and online stores where music scores can be found and which students can obtain either for certain fees or can download them for free (for example, the free library IMSLP – International Music Score Library Project is popular).

Many complaints were directed to limited social interaction. Our data correspond to other findings that "distance learning is less effective for first-year students than for fourth-year students because the former cannot effectively adapt and communicate in a new social environment, and develop trusting interpersonal relationships with fellow students and teachers." (Wang, 2023).

## **2 Positives of the distance education and its implementation after the pandemic**

Distance education, despite its pitfalls, was used and perfected at a time of necessity to such a level that even after the end of the pandemic, some of its elements continue to be implemented in teaching at all school levels. According to the research in recent years, "advantages include the absence of physical and temporal limits, the ease of accessing material and scheduling flexibility, as well as the cost-effectiveness of the solution." (Masalimova, Khvatova, Chikileva, Zvyagintseva, Stepanova, & Melnik, 2022) There is no doubt that digitalization affected education to a great extent, that "...digitization replaces some elements of the traditional education and opens new possibilities that can educate students more effectively." (Matúšová, & Kollár, 2023, p. 14)

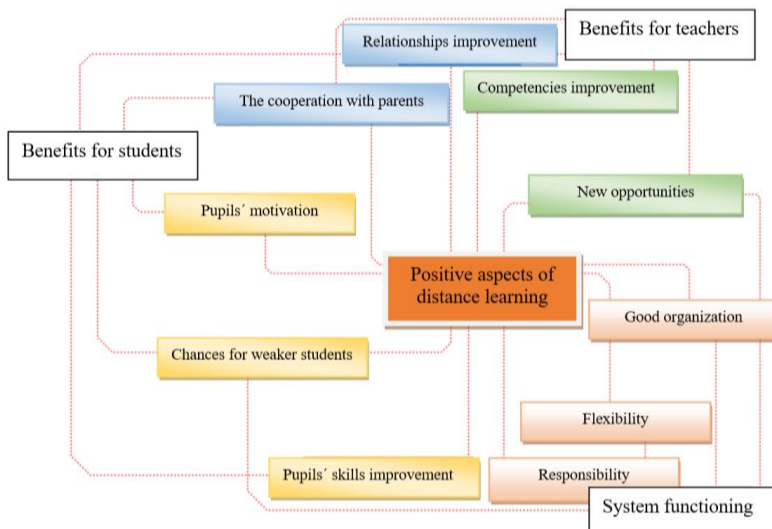
We examined the benefits of distance learning through online questionnaires distributed during May and June 2020. We received answers from 151 teachers at every school level.

The educators described various positive aspects of distance education:

- An increase in pupils' and students' motivation, manifested by an increased effort to complete assignments and to participate in online activities, by

improving children's reactions, etc. Moreover, this phenomenon was observed not only among pupils with excellent and average results, but also among pupils who are making little or no progress during classroom instruction and who are less active during face-to-face teaching.

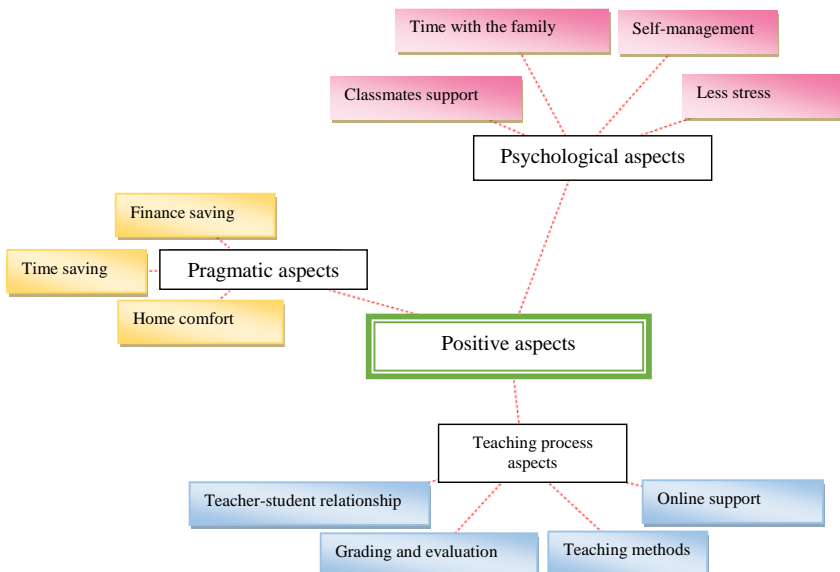
- Positive changes in some personal characteristics of both pupils and teachers in an increase of independence, cooperation competences, awareness of own responsibility for studies resulting in strengthening the pupils' self-discipline.
- An improvement of computer literacy in both teachers and students, which resulted from the necessity to use technology in education and in assigning and completing tasks, in the preparation of educational materials and their elaboration.
- The innovation in teaching methods and forms of work as a necessary consequence of moving education to the online environment, searching for new methods, interactive activities, group work etc.
- Enhanced cooperation between school and family, especially in the lower grades, as parents had the opportunity to see their own child directly during classes and to monitor his/her activity and reactions. In addition, parents came into contact with the teacher more often (they joined the lessons themselves) and were more involved in solving their children's tasks.



*Figure 5.* Scheme of positive aspects of distance learning from the educators' perspective (Strenáčíková, 2020, p. 61).

University students (we received 64 responses) revealed other positive aspects of distance education:

- Innovating teaching methods: more variable methods using platforms such as Zoom, Microsoft Teams or Moodle, more interesting assignments and projects and, last but not least, a change in the way of monitoring and evaluating acquired knowledge in the form of online tests and oral exams via video calls.
- Economic savings as a consequence of traveling costs elimination, quitting to hand in printed assignments, lowering accommodation fees. In a secondary sense, students mentioned saving time, which they could spend either in activities from which they could have financial gains or they could relax and thus increase the productivity of their later work.
- Psychological changes that were related to the improvement of family relationships, the intensification of relationships with classmates (togetherness), the stress level reduction resulting from testing, examinations and constant time pressure, and the strengthening of self-management skills.



*Figure 6.* Positive aspects of distant learning from the students' point of view (Strenáčíková, 2020, p. 72).

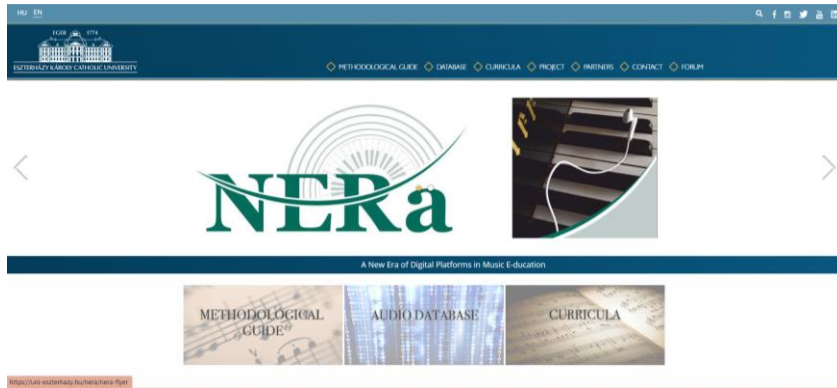
The answers of our students were in close relation to similar surveys. For example, at Ukrainian universities, students indicated "the aspects that negatively affect the organization of full-scale distance learning as follows: the large volume of tasks - 16.80%; the rapid fatigue due to prolonged work in front of a computer - 16.35%; the absence of necessary equipment and/or constant (stable) access to the Internet - 15.33%." (Bakhov, Opolska, Bogus, Anishchenko, & Biryukova, 2021, p. 1).

### *2.1 Elements of distance education in current music art education - outcomes of the project NERa*

The indisputable positives of distance education, described by students and teachers of the university, increased the interest in applying some of its elements also in face-to-face teaching. Therefore, some educators at the Faculty of Music Arts at the Academy of Arts decided to participate in the project "A new era of digital platforms in music e-education – NERa"; Erasmus+ Strategic Partnership 2020-1-HU01-KA226-HE-093947, ongoing in 2021-2023. The head of the project is dr. hab. Bence Asztalos from Eszterházy Károly Catholic University in Eger, Hungary. Partner universities are in Hungary (Zeneiroda Kft.), Poland (University of Rzeszów), Italy (Conservatorio Lorenzo Perosi Campobasso and Conservatorio Ottorino Respighi Latina), Slovakia (Academy of Arts in Banská Bystrica) and Romania (Babeş-Bolyai University Cluj-Napoca).

Its goal was to develop teachers' digital competences through the development of both an innovative audio database of parts/voices of vocal and instrumental compositions, which are included in the curricula of individual study courses, and also through the development of a progressive integrated digital curriculum of vocal, instrumental and theoretical subjects.

The project outcomes include the methodical manual that describes the processes within the project, including a description of teachers' experiences with online teaching, the process of creating the database, the use of various platforms for communication between project participants, the outcomes value etc. An important outcome is the audio-database of a number of piano accompanists' recordings, which can be used by teachers and students as a basis for practicing their own parts/voices.



*Figure 7.* Home page of the project NERa (NERa, 2023).

Further, the outcome includes integrated curricula for chamber music, singing and choir. They are based on the experience of educators participating in the project.

The recordings for the singing curriculum help students gradually learn to sing more expressively, to use vocal technique so as to expand their range and expression, to acquire the correct intonation through appropriate exercises, and to build their artistic and aesthetic awareness. When using the piano part, students become more relaxed, they can listen to their own singing in harmony with piano accompaniment, improve their breath control, acquire the skills to sing with correct intonation, with coordinated breath support, with minimal tension, etc. The module contains 143 piano recordings, distributed in 50% of technical exercises and 50% of music pieces suitable for performance, the traditional division of time in a teaching unit/class.

The choir curriculum audio materials from the database also play an important role. In one kind of exercise they help students decode one voice, which is emphasized, while the other voices of the choir sound in the background. Another approach is when a given voice is omitted completely, creating the opportunity to add it and sing with a virtual choir (85 recordings are in piano arrangement). Such ways of singing maximize the effectiveness of learning and preparing the choir for performance.

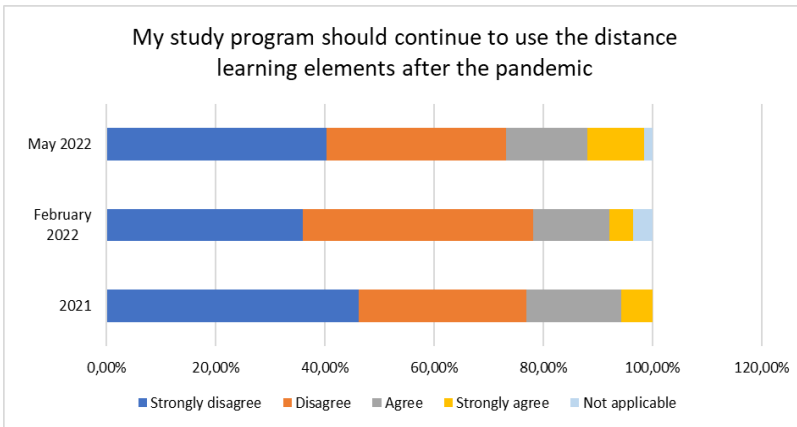
In chamber music, online education is especially effective during the first phase of individual home preparation, because well-prepared students increase the effectiveness of "rehearsals", where they meet face-to-face. The project participants emphasize that web resources can ensure adequate learning, as the creation of neuro-reflexes necessary for sound production determines the timing

of muscle coordination in the creation of tones, sound colour, and the intensity of instruments in a specific ensemble. The curriculum includes 70 audio-recordings for piano, string and wind instruments, and can be used during all semesters.

*2.2 The perspective of the distance education at FMU AU from the students' point of view*

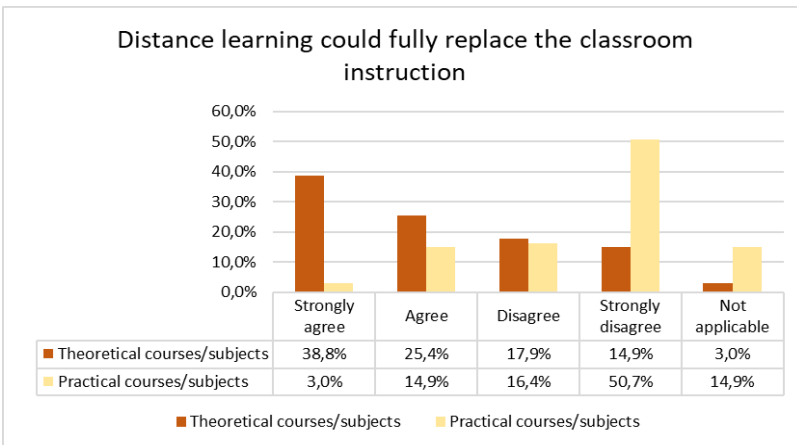
Despite many disadvantages, as time passes, some achievements of distance education at the FMU AU seemingly balance its negatives. New databases of accompaniments for piano works are available, students and teachers have acquired enough digital competences that will enable them to transfer teaching to a virtual environment if necessary (and under specific conditions, such as the teachers' tour, or performance in foreign concerts etc.), and thus maintain the continuity of education. The technical classroom equipment has improved, the pedagogues have created materials which can enrich face-to-face instruction, new blended/integrated curricula were created...

Students expressed their opinion on distance education in the Akademická štvrťhodinka [Academic quarter of an hour] survey conducted in 2021 by the Slovak Accreditation Agency for Higher Education and then, two years later, in student surveys that we conducted in February 2022 and May 2022 by the Academy of Arts after the distance education was over. 52 students answered in the 2021 survey, 114 students in the February 2022 survey, and 67 students in the May 2022 survey. It is clear that after ceasing distance education, their views on it improved slightly. While in 2021 only 23.1% and in February 2022 only 18.4% of students agreed that elements of distance education could be used in their study program, in May 2022, i.e. after the return to face-to-face teaching, it was 25.38%. This might reflect their negative attitude towards the long-term closure of schools. Similar opinion about negative outcomes were commented by research at Western Michigan University: "all the participants were actively enrolled in a distance learning class at the time when they reported their perceptions, and that may have influenced their overall negative perception of distance learning." (Al-Mawee, Kwayub, & Gharaibeh, 2021, p. 11).



*Figure 8.* Graphical display of students’ responses (agree – disagree) on the use of distance learning elements after the pandemics; Surveys in 2021 and 2022.

The students’ statements also show that in terms of theoretical courses/subjects, they consider distance learning to be acceptable and able to fully replace face-to-face instruction. However, in practical education, such a form of learning is not possible to be a full-fledged substitute of traditional learning.



*Figure 9.* Graphic display of students' answers to questions about the full-fledged replacement of classroom instruction by distance learning, May 2022.

## **Conclusion**

Covid-19 and related anti-pandemic measures have brought a number of necessary changes to many areas of people's lives, including education. The transfer from classrooms to an online environment was initially associated with a number of problems that had to be solved promptly and flexibly, while many challenges were gradually revealed, from the initial chaos, through lack of technology, unreliable and unavailable Internet connection to lack of materials and digital competences. Vocational education faced significant problems, as practical subjects and courses could not be fully replaced in a virtual environment and various demonstrations could not replace one's practical experience. A similar situation occurred in music education, where time shifts of sound and image, sound distortion, the suppress background noise function eliminating even those sounds that were a deliberate part of the performance, the impossibility of live cooperation with the accompanist and other performers not only made online teaching/learning difficult and challenging, but some courses/subjects were completely impossible to run.

Despite the problems, after a couple of months in the virtual environment, teachers and pupils/students adapted to the new conditions and many positives were uncovered. Support platforms and new educational materials were created, the participants improved their digital competences, and new projects focusing on the creation of new materials were done. Among them, we mention the project "A new era of digital platforms in music e-education – Nedra"; Erasmus+ Strategic Partnership 2020-1-HU01-KA226-HE-093947, within which, based on the cooperation of universities from Hungary, Poland, Romania, Slovakia and Italy, an audio database of piano accompaniments and an integrated curriculum for singing, chamber music and choir were created. It is possible to use these materials in integrated teaching in order to make the individual home preparation of pupils more efficient and, subsequently, also the face-to-face instruction, and to make the necessary materials available even for a case of other potential limitations and crises accompanied by the absence of a teacher in the real classroom and the impossibility of traditional teaching (e.g. when the teacher has a tour, gets sick, or when the school closes due to high morbidity or severe weather conditions).

Although distance education has its indisputable positives, has improved considerably since 2019, and many shortcomings have been eliminated, performing arts and composition students at Faculty of Music Arts at the Academy of Arts take a rather sceptical attitude towards it. They are convinced that while in theoretically oriented courses/subjects it can replace face-to-face learning, they do not see such a possibility in practically oriented courses/subjects in higher music education. Even after the end of the anti-pandemic measures, more than half of the students do not agree with the



inclusion of elements of distance education in face-to-face teaching. When looking for possible reasons for their attitude, we consider a serious argument that their study programs require personal contact and the physical presence of the teacher in class based on the very specific practical training. In addition, art ensemble performance is a very important part of their preparation, which cannot be simulated in an online environment in our current conditions.

Despite the answers of the performing arts students in Banská Bystrica, it is clear that teachers often use the "gains" of the forced school closing, they implement new methods, teaching/learning materials, ICT technologies, applications, and online resources in the current education system and even they can benefit from them in the form of increasing the attractiveness of the study. "AI (artificial intelligence) can make more optimized environments and professional music classes so that teachers and students can make the most of this and ensure smooth improvement in the network's teaching model." (Wei, Karuppiiah, & Prathik, 2022). Perhaps, after improvement of both the artificial intelligence and the internet connection, the distance education could become a valid alternative of face-to-face instruction in music education.

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# **Investigating the Relationships between Obsessive Compulsive Symptoms (OCS) and Depression Symptoms and Intolerance of Uncertainty in Turkish Adolescents during Covid-19**

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## **Abstract:**

**Introduction:** This study aims at examining the direct and indirect mediating role of the intolerance of uncertainty (IU) variable in the relationship between COVID-19-induced OCS and depression in a Turkish adolescent sample.

**Methods:** The sample consists of 427 people (248 females, 179 males) between the ages of 14-18, living in Turkey and selected by convenient sampling method. The data were collected through the COVID-19 Obsessive Compulsive Disorder (OCD) Scale, Depression, Stress and Anxiety Scale (DASS-21) and Intolerance of Uncertainty Index-A for Children (IUI-A-C).

**Results:** The findings show that COVID-19-induced OCS have strong predictive effects on depression symptoms. The findings also revealed that IU directly and indirectly mediates the relationship between COVID-19 OCD and depression symptoms, as well as its negative predictive effect for depression symptoms.

**Discussion:** It can be said that OCS caused by COVID-19 trigger depressive symptoms in adolescents. In addition, it can be thought that IU, with its mediator effect, may play a triggering role in the emergence of COVID-induced OCS. Another research finding is that IU may be an important transdiagnostic construct for depressive symptoms.

**Limitations:** The current study has also some limitations. First, the study was carried out as a cross-sectional study. The fact that the sample group is non-clinical and a clinical group is not included can be considered as second delimitation. Third, the current study just used scales to evaluate the students' self-report. At this point, a different perspective can be developed by taking the opinions of the parents.

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**Conclusions:** The results show that COVID-19-induced OCS increase depressive symptoms in Turkish adolescents and IU has a mediating effect in this relationship. In addition, the results provide important data for the treatment of mental symptoms related to the pandemic.

**Key words:** intolerance of uncertainty (IU), adolescent, COVID-19, OCS, depression, mediation.

## **Introduction**

Emerged in Wuhan, China as of December 2019 and affected the whole world in a short time, the new type of coronavirus (COVID-19) disease has become an important test for people of all ages in the last century by creating a serious epidemic effect (WHO, 2022). The rapid increase in the epidemic's transmission and death rates has pushed countries to take precautions such as curfews, suspending education and social activities, and canceling many activities involving social interaction (Silva et al. 2021; Banerjee, 2020). Almost three years after the beginning of the epidemic, the physical and medical impact of COVID-19 seems to have decreased compared to the past, with the development, use and dissemination of vaccines, one of the most important means of protection from the virus, adherence to the measures and the slowdown in the transmission rate (Sharma et al., 2020; Murray, 2022). In addition to the decrease in the physiological effects of the pandemic, the intense anxiety and stress experienced by people due to the epidemic has been interpreted as a psychological secondary effect, and this has triggered some mental problems in humans (Shah et al., 2021; Rodríguez-Rey et al., 2020). At this point, obsessive compulsive disorder (OCD) and its associated symptoms can be shown as one of the mental problems caused by the pandemic and affecting individual's daily life functionality (Kumar & Somani, 2020; Banarjee, 2020; Khosravani et al., 2021).

## **1 Literature review**

### *1.1 Obsessive Compulsive Disorder and COVID-19*

Obsessive Compulsive Disorder (OCD) is defined as a mental disorder that includes sub-dimensions such as cleanliness, order, control and hoarding (APA, 2013). Giving excessive importance to cleanliness, engaging in cleaning behaviours in the form of repetitive rituals, repetitive thoughts and avoidance behaviours, including fear of contamination and disease, can be shown among the characteristics that define the cleaning dimension of OCD (Reuven et al., 2014; Abramowitz & Jacoby, 2015). Perpetual supervision and control of the physical environment, repetitive control attempts to provide security for the individual himself/herself or his/her relatives, and to protect from people,

situations or disturbances that s/he thinks will harm can be shown among dysfunctional intellectual and behavioural controlling actions and compulsive controlling behaviors (Bloch et al., 2008; Salkovskis, 1999). Hoarding, another OCD symptom dimension, is characterized by an obsessive tendency to hoard belongings, garbage, or things that they think they will need in the future, and to worry about the absence of these items (Abramowitz et al., 2008; Samuels et al., 2002). It is noteworthy that the definitions regarding the symptoms of OCD mentioned above and the behaviours that occur and are frequently observed during the pandemic are similar. Emphasis on hand hygiene and social distancing to protect against the virus seems to have similar content with the individuals' responses exhibiting compulsive cleaning and controlling behaviours (Jayakumar et al., 2022; Jassi et al., 2020). As a matter of fact, the mentioned rules, such as hand hygiene and social distancing, can increase the severity of symptoms in people with OCD and they can also trigger OCD symptoms (Rajkumar, 2020; Jassi et al., 2020). Intense anxiety, uncertainty and fear of contamination caused by the pandemic have caused people to purchase and stock more of these products with the supply of necessary materials, such as masks, disinfectants, food and medicine in addition to their cleaning behaviours. It is stated that this may exacerbate the symptoms of people with existing hoarding symptoms and may also cause hoarding symptoms to occur (David et al., 2021; Banerjee, 2020).

### *1.2 OCD caused by COVID-19 and its relationship with depression*

It is suggested that the OCD reactions that occur as a result of the effect of the pandemic may also pave the way for other psychological disorders and may have a triggering effect (Wheaton et al., 2021; Jassi et al., 2020). Depression is one of the most common of these disorders (Mrklas et al., 2020; Seçer & Ulaş, 2021). There are research results reporting that reasons, such as decreased physical activity and mobility during the pandemic, strict quarantine measures, frequent exposure to social media news about COVID-19, sudden and compulsory decrease in socialization, and restriction of activities that provide social interaction, cause depressive symptoms in individuals (Rosa-Alcázar et al., 2021; Nissen et al., 2020). In addition to these, it can be shown that the emergence of depression symptoms, or an increase in the severity of existing depression symptoms as a result of triggering obsessive symptoms due to fear of COVID-19. In this context, it can be stated that OCS caused by the pandemic carry the risk of maintaining its effects in individuals even though COVID-19 has reduced its physiological effects. In addition, it can be suggested that such psychological symptoms may continue to have psychological effects in the future considering that developing obsessive symptoms is an important risk factor for depression in individuals (Seçer & Ulaş, 2021).

*1.3 COVID-19-induced OCS, depression, and IU as a transdiagnostic structure*

Some of the individuals' psychological factors may pose a risk for mental problems such as OCD, depression or anxiety disorders that occur due to the COVID-19 (Salari et al., 2020; Jassi et al., 2020; Lee, 2020). In this context, intolerance of uncertainty (IU) can be shown as one of the psychological and cognitive vulnerability factors observed in individuals (Carleton, 2016; Holaway et al., 2006). Intolerance of uncertainty is defined as the intense anxiety about the unknown and the tendency to perceive potentially negative events as unacceptable (Carleton et al., 2007; Dugas et al., 2001). Inability to tolerate ambiguous situations can cause cognitive, behavioral and emotional reactions, characterized by symptoms of many anxiety disorders, such as anxiety, avoidance, and distress (Ladouceur et al., 2000; Meeten et al., 2012; Carleton et al., 2012). It is thought that IU may be an important risk factor in the emergence of pandemic-related mental problems considering that situations, such as not knowing the exact cause of the emergence of the COVID-19 virus, fear of infection, uncertainty about the course of the epidemic and its ending, economic uncertainties awaiting countries and individuals in the future, and the possibility of food shortages after the pandemic, cause anxiety, fear and intense stress in individuals (Satici et al., 2020; Bakioğlu et al., 2021; Rettie & Daniels, 2021). Thence, it is thought that intolerance of uncertainty may have a negative effect on the symptoms of OCD and depression, among the mental problems observed in adolescents during the COVID-19 and may be an important sustaining factor in the long-term chronicity of the symptoms and the emergence of other psychological reactions.

This study aims at revealing the relationships between OCS and depressive symptoms observed in Turkish adolescents and examining the mediator role of IU as a transdiagnostic factor for OCD and depressive symptoms. Identifying the relationships between these variables may help mental health professionals working for the treatment of COVID-19-induced OCS and depression symptoms in adolescents in their intervention practices. It is also thought that the study will contribute to the increase of awareness about the transdiagnostic structure of IU in mental disorders. In this context, answers to the following research questions were sought:

1. Are OCS caused by COVID-19 an important predictor of depression symptoms?
2. Is IU a significant predictor of depression symptoms?
3. Does IU have a mediating role in the relationship between COVID-19-induced OCS and depression symptoms?

## **2 Method**

### *2.1 Participants*

The study was conducted with 427 adolescents aged between 14 and 18 (average = 16.11, SD = 1.29). 58.07% of the participants are females and 41.93% are males. In the study, the participants were selected among high school students studying in Yozgat using convenient sampling method, and in this context, 427 participants were reached. In the convenient sampling method, the researcher starts with the most accessible study group and works on a situation that will provide the highest savings (Büyüköztürk et al., 2013). The students included in the sample were chosen by their school counselors and school principals.

### *2.2 Research tools*

#### *2.2.1 COVID-19 Obsessive Compulsive Disorder (OCD) Scale*

This scale was adapted to Turkish culture by Seçer & Ulaş (2021) in order to measure OCD symptoms developing during the COVID-19, with reference to the Florida Obsession Compulsion Scale (Storch et al., 2007). The self-reported 4-point Likert-type scale has 17 items and 3 sub-dimensions, and also has frequency and density questions with 5 items independently. The increase in the scores obtained from the scale indicates the high level of OCD symptoms caused by COVID. In this study, another dimension was developed for the 5-item frequency and density questions in addition to the scale's 3 dimensions, and its psychometric properties were re-examined. The model fit was ensured as ( $X^2/Sd$ : 3.15, RMSEA: .071, RMR: .054, SRMR: .055, CFI: .91, GFI: .97) (Tabachnick & Fidell, 2013; Hooper et al., 2008). The Cronbach's Alpha reliability values of the scale were .91 for the total scale, .85, .79, .73 for the sub-dimensions, and .80 for the frequency and intensity dimensions, respectively.

#### *2.2.2 Depression, Stress and Anxiety Scale (DASS-21)*

This scale, which was shortened by Brown et al. (1997) and stated that the 42-item long form (Lovibond & Lovibond, 1995) of the Depression, Stress and Anxiety Inventory (DASS-42) has the validity to perform the same measurement, was adopted to Turkish culture by Yılmaz et al. (2017). It is a self-report, 4-point Likert scale with 21 items and 3 sub-dimensions. In this study, depression symptoms were measured by using 7 items in the scale developed to identify depression symptoms. High scores obtained from the scale indicate high levels of depression symptoms. During the study, the psychometric properties of the 7 items describing the symptoms of depression were re-examined, and it was determined that the model fit was achieved as ( $X^2/Sd$ : 3.50, RMSEA: .077, RMR: .055, SRMR: .050, CFI: .91, GFI: .99) (Tabachnick & Fidell, 2013; Hooper et al., 2008). The Cronbach's Alpha reliability value of the scale was .92.

### 2.2.3 Intolerance of Uncertainty Index-A for Children (IUI-A-C)

Developed to evaluate the tendency of children and adolescents to see uncertainty as acceptable and intolerable (Rifkin & Kendall, 2020), it was adapted from the adult form of the Intolerance of Uncertainty Index (IUI-A) (Gosselin et al., 2008; Carleton et al., 2010). The language structure of the scale has been simplified in order to facilitate the self-report of young people. It is scored from 1 (never) to 4 (always), and high scores indicate an increased degree of intolerance of uncertainty. The scale was adapted to Turkish culture as part of the current study. Within the adaptation process, the psychometric properties of the scale were examined after linguistic validity and pilot studies (Cronbach's Alpha value is .94). The construct validity of the scale was analyzed with 402 high school students aged 14-18 using confirmatory factor analysis (CFA). The results obtained from the CFA revealed that the form of the scale, consisting of 14 items and one dimension, fits well in the Turkish culture ( $\chi^2/Sd$ : 2.97, RMSEA: .068, RMR: .036, SRMR: .040, CFI: .98, GFI: .93). Internal consistency, two-half reliability and test-retest reliability analyzes were carried out to maintain the reliability of the scale. The internal consistency of the form was .90, the two-half reliability was .86, and the test-retest reliability was .85. Related results show that the scale is reliable in Turkish culture.

### 2.3 Data collection

During the data collection, first, the permission of the parents was obtained through the school administrators following the research permission was obtained for the institutions. After the permission of the parents, the measurement tools were applied only to volunteered students in the presence of the school counselors. Participants were informed that they could stop filling out the scales at any point and the results would remain confidential. The application took 10 minutes on average, and the process took 10 days in total. The data were collected by two experts in the field of psychological counseling.

### 2.4 Procedure and data analysis

After the data collection, the data related to the scales were transferred to the computer environment, and, missing data analysis was first conducted with SPSS 22 software, and 5 data sets containing 5% missing data (Enders, 2022; Graham, 2009) were excluded as recommended. Secondly, skewness and kurtosis and Mahalanobis calculations were made for extreme value analysis, and it was decided to exclude 6 people's data found to violate parametric conditions from the data set. After these processes, the analysis was repeated to confirm the assumptions of normality values and it was decided to perform the analysis with a total of 416 data sets.



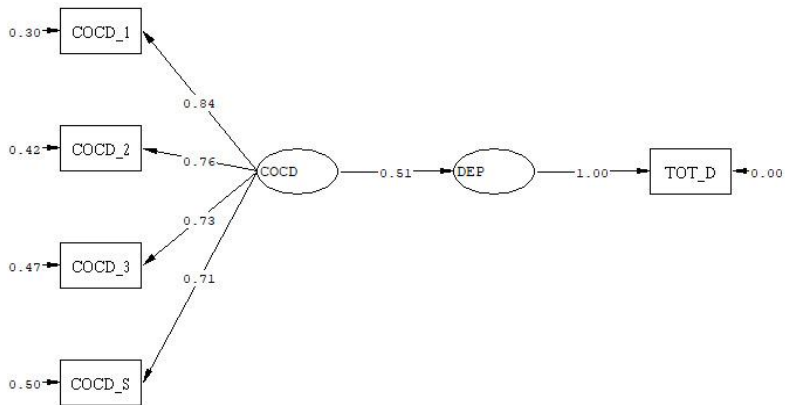
Confirmatory measurement and structural equation models were tested with LISREL 8.8 software within structural equation modeling (SEM) to answer the research questions. SEM was tested by developing three different models. Model I tested whether COVID-19-induced OCS were a direct predictor of depression. Intolerance of uncertainty (IU) was included in Model II to test whether COVID-19-induced OCS predict depression both directly and with IU. In Model III, the full mediator role of IU between these variables was tested. Ratio of chi-square value to degrees of freedom ( $X^2/Sd$ ), CFI (Comparative Fit Index), NFI (Normed Index of Fit), GFI (Goodness of Fit Index), SRMR (Standardized Root Mean Square Residual) and RMSEA (The Root Mean Square Error of Approximation) values, frequently used criteria in structural equation models, were used to evaluate the goodness of fit for the confirmatory measurement with the established models (Tabachnick & Fidell, 2013).  $X^2/Sd \leq 5$ , acceptable fit  $\geq .90$  and perfect fit  $\geq .95$  for CFI and NFI, acceptable fit  $\geq .85$  and perfect fit  $\geq .90$  for GFI, acceptable fit  $\leq .08$  and perfect fit  $\leq .05$  for SRMR and RMSEA criteria are considered in the evaluation of goodness of fit criteria (Kline, 2015; Tabachnick & Fidell, 2013). Verification of the proposed measurement model is considered as a prerequisite for testing structural equation models (Schumacker & Lomax, 2004). In this sense, a two-stage approach was adapted in the data analysis process. In the first stage, the confirmatory measurement model was applied for the compatibility of the determined models. Goodness-of-fit measures ( $X^2/Sd$ : 2.87, CFI: .98, NFI: .98, GFI: .99, SRMR: .020, RMSEA: .066) obtained from the measurement models show that the model fits well and is validated (Tabachnick & Fidell, 2013). In the second stage, the predictive effects of COVID-19-induced OCS on depression symptoms and the mediator role of IU between these variables were tested.

### *2.5 Ethical processes*

Research permission for the study was obtained from the Research Permission Commission of the Ministry of National Education (MoNE). (Date: 15.03.2022, No: 2022/605.01-E.5488725)

## **3 Results**

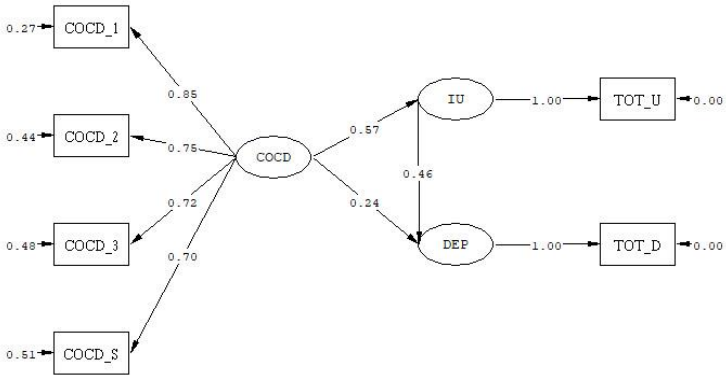
After the measurement model was verified, 3 different models were tested in order to find answers to the research questions. Model I, developed to answer the first research question, tested the direct predictive effect of COVID-19-induced OCS on depressive symptoms. In Model I, COVID-19-induced OCS were expected to have negative predictive effects on depressive symptoms. The relevant findings are presented in Figure 1.



*Figure 1.* Structural equation modeling (SEM) results for Model I.

Considering the goodness of fit values ( $X^2/Sd$ : 2.78, CFI: .98, NFI: .98, GFI: .99, SRMR: .024, RMSEA: .065), it can be said that the variables had significant relations with the observed variables ( $p < 0.01$ ). Since the scale of depressive symptoms is one-dimensional and it can cause error variances defined as Heywood Case in SEM applications, the error variance of the observed variable of the latent variable was fixed to 0 to avoid such cases, as suggested by Chen et al. (2001). Model I shows that COVID-19-induced OCS predicted depressive symptoms ( $\beta = .51$ ,  $p < 0.01$ ). This finding suggests that depressive symptoms will increase as the OCS caused by COVID-19 increase.

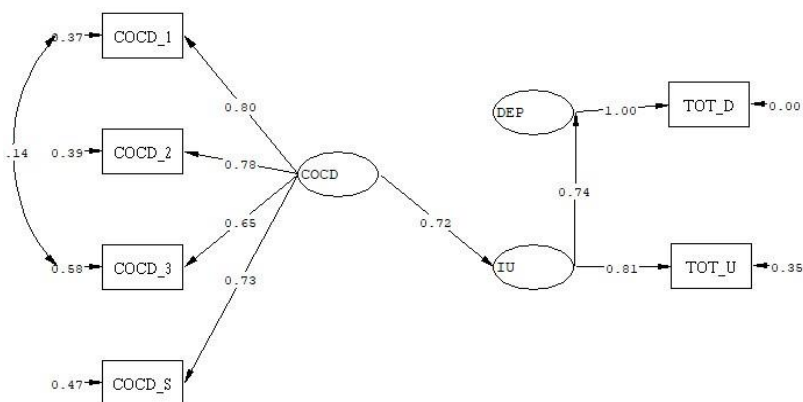
Following the validation of the research question of Model I, mediation relations were examined. At this stage, IU was included in the model as a second stage to examine the parameter values of the direct and indirect relationships between the predictor variables and the predicted variable, and whether IU mediated the relationship. In order to reveal the indirect relationships for the mediation relationship, a partial mediator model was established and the predictive relationships between the variables were determined. The related relationship was tested as Model II, and the related findings are presented in Figure 2.



**Figure 2.** Structural equation modeling (SEM) results for Model II.

Considering the findings in Figure 2, changes were observed in the parameters in Model I after IU was included in the model. When the fit indices of the tested model were examined, it was concluded that the model gave a good fit ( $X^2/Sd$ : 3.95, CFI: .99), NFI: .98, GFI: .98, SRMR: .029, RMSEA: .073). Since the scale for the IU variable is unidimensional, the error variance of the observed variable for the latent variable was fixed at 0, as was the case with depressive symptoms. When Figure 2 was examined, it was found that the latent variable of COVID-19-induced OCS predicted IU latent variable ( $\beta = .57, p < 0.01$ ) and depression latent variable ( $\beta = .24, p < 0.01$ ). The IU variable included in the model as a mediator was found to predict depression symptoms ( $\beta = .46, p < 0.01$ ). In Model I, the correlation coefficient between the COVID-19-induced OCS variable and the depression variable ( $\beta = .51, p < 0.01$ ) showed a significant decrease ( $\beta = .24, p < 0.01$ ) with the addition of the IU variable. This change can be considered as a strong sign for the partial mediation relationship of IU in the relations between the variables.

The full mediation role developed to reveal the existence of a direct relationship over IU was tested by removing the path representing the relationships between COVID-19-induced OCS and depression symptoms. The findings regarding the full mediation relationship expressed as Model III are shown in Figure 3.



*Figure 3.* Structural equation modeling (SEM) results for Model III.

Parameter values ( $X^2/Sd$ : 3,91, CFI: .99, NFI: .98, GFI: .96, SRMR: .040, RMSEA: .086) of Model III established to determine the full mediator role of IU between COVID-19-induced OCS and depression symptoms indicate that the tested model and the full mediator role of IU are confirmed. Examining the Figure 3, it is seen that OCS caused by COVID-19 predicted IU ( $\beta=.72$ ,  $p<0.01$ ) and IU predicted depression symptoms ( $\beta=.74$ ,  $p<0.01$ ). Considering Model II, removing the path ( $\beta=.24$ ,  $p<0.01$ ) representing the relationship between COVID-19-induced OCS and depression from the model has led to significant changes in statistical values and path coefficients, as seen in Model III. This shows that IU acts as a full mediator and that COVID-19-induced OCS may be an important risk factor in triggering depressive symptoms.

#### 4 Discussion

The results obtained within Model I in the study showed that OCS caused by COVID-19 have direct predictive effects on depression symptoms in Turkish adolescents. Transmission of disease and the related fears caused by the pandemic have revealed that people can increase their avoidance and cleaning behaviours and it triggers OCS, such as contamination and infection anxiety and compulsive hand washing (Mrklas et al., 2020; Jassi et al., 2020). The unusual behaviour and thought patterns and psychological stress developed by these OCS due to COVID-19 can intensify over time, disrupting the person's mental well-being and triggering depressive symptoms (Seçer & Ulaş, 2021; AlHusseini et al., 2021). The fear of infection and avoidance behaviours not only trigger OCS but they can also lead to secondary consequences such as sleep problems, anger and anxiety, triggering depressive symptoms (Shigemura et al., 2020; Ornell et

al., 2020; Xiang et al., 2020). In this context, considering the results obtained from the study and other supported research findings, it is thought that regarding depression symptoms together in the assessment and treatment of COVID-19-induced OCS in adolescents can provide important data to mental health professionals. Another result obtained from the study suggests that IU has predictive effects on depression symptoms, determined after including the IU variable in Model II. IU is shown as one of the cognitive frailty factors for anxiety and depression disorders, and it is stated that the inability to tolerate uncertainty can trigger depressive symptoms in adolescents (Hong & Cheung, 2015; Carleton et al., 2012; Boelen, 2010). It is thought that negative cognitive, emotional and behavioral reactions in the face of uncertainty can negatively affect the mental well-being of the individual and increase depressive symptoms by decreasing the tolerance of uncertainty. In addition, studies show that depression has a strong relationship with intolerance of uncertainty (McEvoy & Mahoney, 2012). In addition to the aforementioned research findings, it was emphasized that uncertainties caused by the pandemic can trigger depression and anxiety in individuals, and it was suggested that reducing uncertainties would contribute positively to depression, anxiety and stress levels (Bakioğlu et al., 2021). It is thought that situations, such as uncertainties regarding the COVID-19, not knowing the end time of the disease, constant presence of the possibility of infection, and the lack of knowledge of the biopsychosocial effects of the disease, may also trigger anxiety and depression in individuals. Model III shows that the direct predictive effect of COVID-19-induced OCS on depression symptoms decreases following the inclusion of the IU variable to the model. This can be interpreted that IU variable has a direct and indirect mediation effect. Uncertainty situations are shown as one of the biggest factors that anxiety and fear due to the pandemic play a role in triggering OCS (Tull et al., 2020; Asmundson & Taylor, 2020), which suggests that IU may have an important mediating effect for depression triggered by OCS. The frequently changing symptoms of COVID-19 and the uncertainties regarding the infection and the timing of the virus seem to have led to the development of protective and avoidant behaviours in individuals, thus triggering some potential OCS (Kumar & Somani, 2020; Shafran et al., 2020). The repetitive handwashing and avoidance behaviours can increase the stress level in OCS, and the existence of uncertainties also shows that depressive symptoms can be triggered as a secondary mental problem (Mazza et al., 2020; Rosa-Alcázar et al., 2021). This suggests that IU may have indirect and direct effects on depression caused by COVID-19-induced OCS.

## **5 Delimitations and future research**

One of the delimitations of this study is that the participants were selected by convenient sampling method. The fact that the sample group is non-clinical and a clinical group is not included can be considered as another delimitation. The findings were created based on the reports of the adolescent group without taking the observations of the participants' parents. And only Turkish adolescent sample was used in the study. For future studies, including adolescents' parents in the process, selecting participants from different cultures for the sample, choosing wide application methods, conducting research with more participation, and obtaining more detailed results with longitudinal studies on the mediation effects will make significant contributions to the literature.

## **Conclusion**

The uncertainties and increased stress experienced during the pandemic seem to have triggered some mental disorders such as OCD and depression in individuals. Exaggerated attempts to find certainty will continue to be a detrimental risk factor for mental health, despite the fact that the disturbing aspect of uncertainty has always existed for the human species. The findings of the current study also seem to support the aforementioned issues. In this sense, raising awareness regarding IU's mediating effect in reducing OCS and depression triggered by the pandemic process in adolescents will provide important data for experts in the field of mental health.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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## **A Framework for Implementing Positive Learner Discipline in Public Secondary Schools from the Context of the Mpumalanga Province**

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### **Abstract:**

**Introduction:** Learner indiscipline has emerged as a global cause for concern for educators and parents in the 21st century. This study sought to develop a framework for the successful implementation of positive discipline. The study sought to provide answers revolving around the contributing factors towards learner indiscipline, the effects of indiscipline on teaching and learning, educators' perceptions on positive discipline, factors leading to the ineffective implementation of positive discipline and the constituents of an effective framework for implementing positive discipline.

**Methods:** The study adopted a qualitative approach. Districts were identified utilising convenience sampling, while participants were sampled purposively. Data collection comprised semi-structured interviews and document analysis. Six schools from two districts in the Mpumalanga Province were selected as the study sample. The sample comprised twenty-four participants, including principals, class teachers, Life Orientation teachers, and chairpersons of School Governing Bodies from each school. Thematic content analysis was used to analyse the data and present the findings.

**Results:** The findings revealed that learner indiscipline is affected by several contributing factors such as family situation, community setting, human rights, peer pressure, educators, and learners themselves. Lack of stakeholder engagement, absence of training, overemphasis on learners' rights and conditioning of educators and parents on corporal punishment are the factors that have led to the ineffective implementation of positive discipline.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

**Discussion:** To ensure the implementation of positive discipline is successful, a framework should support a multi-stakeholder consideration to engagement. Ubuntu values should be incorporated in re-packaging the positive discipline toolkit so that it suits the local context.

**Limitations:** Only two education districts in one province of South Africa formed part of the study.

**Conclusions:** Educators are to adopt a revised curriculum that accommodates positive discipline and Ubuntu values in related subjects taught in school. Effective implementation requires regular monitoring, evaluation and reviewing of the positive discipline approach. The study proposed an Afrocentric framework for the implementation of positive discipline.

**Key words:** learner indiscipline, positive discipline, corporal punishment, disciplinary problems, positive discipline framework.

## **Introduction**

Learner indiscipline refers to a learner's conduct that amounts to a breach of rules and regulations resultantly undermining school effectiveness (Masingi, 2017). Discipline problems are a thorny issue not only in South Africa (SA) but globally (Pitsoe & Letseka, 2014). Historically, corporal punishment (hereafter CP) was the most common method of discipline. CP was legalised in public schools in South Africa during the apartheid era. This system of instilling discipline negated the rights of children, as well as basic human dignity. South Africa entered a new political dispensation in 1994 and thus ushered in a democratic Constitution (1996), which brought about a new dispensation with a new set of values that sought to promote children's rights and therefore heralded the abolishment of CP (Pitsoe & Letseka, 2014). According to the National Education Policy Act (1996), no person shall administer CP or subject a learner to physical or psychological abuse. The banning of CP, therefore, gave rise to the introduction of alternative means of learner discipline. Positive Discipline (hereafter PD) was then introduced as a more humane way of dealing with learner indiscipline.

PD provides parents and teachers with the knowledge and skills to be both kind and firm simultaneously, fostering a sense of connection with the children they interact with. This approach neither condones permissiveness nor advocates for punitive measures. It serves as an effective avenue for parents, teachers, and learners to acquire life skills and cultivate a sense of community and connectedness through relationships built on mutual respect.

McVittie (2003) states that PD equips all parties involved with the necessary skills to establish healthy interpersonal connections, creating an environment where each person's contribution is meaningful, valid, and anticipated. If

properly implemented, it can transform a school system into a peaceful and orderly one where educational goals are achieved with fewer predicaments. This approach plays a pivotal role in establishing safer school environments where children's rights and dignity are upheld, and they are empowered to reach their full potential. Notably, this approach firmly rejects the use of violence as a teaching tool.

According to Durrant (2016), PD focuses on guiding children's behaviour. Instead of instilling good behaviour through fear, educators take on the roles of models, mentors, and guides, while schools make long-term investments in the holistic development of each child. This approach not only supports the comprehensive growth of children but also enhances the school environment by eliminating fear, teaching self-discipline, and fostering greater enjoyment and engagement in learning. In line with this, Ozan (2015) reveals that cultivating a positive classroom climate involves assembling various puzzle pieces, with each component contributing to an environment that values determination, compassion, self-esteem, and mutual respect. It focuses on implementing a comprehensive plan that demonstrates effective teaching practices and highlights the emotional motivations of teachers. Furthermore, it aims to promote emotional, cognitive, and behavioural development, nurture positive relationships among individuals, and equip learners with systemic thinking and judgment skills (Ozan, 2015).

Du Plessis (2015) asserts that despite the introduction of the approach, disciplinary issues persist in South Africa, and the situation is deteriorating. Likewise, Kourkoutas and Wolhuter (2013) argue that learner discipline remains a challenge in South African schools. Magaba (2018) highlights that indiscipline among learners has significantly increased over the past 15 years causing considerable anxiety for teachers in their day-to-day experiences. Poor discipline manifests in various ways, including truancy, tardiness, involvement in cultism, drug abuse, verbal insults, physical assaults, theft, bullying, rioting, threatening other learners and school staff members and many other antisocial vices (Masingi, 2017).

The foregoing demonstrates that the implementation of the approach has not yielded the much-anticipated levels of success. Rather, it has been confronted with difficulties and challenges, as learners reject any kind of authority; this has resulted in the phenomenon of 'learner power,' as a form of entitlement, which leads to intimidation and violence (Rampa, 2014). The question then arises: What kind of framework for implementing PD can be proposed for greater effectiveness of managing learner discipline? In pursuit of this question, the authors of this paper sought to explore ways of establishing a context-oriented framework for the implementation of PD in public secondary schools in the Mpumalanga province. This transpires at a time when the notion of

'Africanisation of the curriculum' has taken centre stage among academic debates in South Africa (Msila & Gumbo, 2017). The researchers intended to develop a framework based on Ubuntu values that would guide the effective implementation of this approach. In this endeavour, the following objectives were considered:

- To identify the factors that lead to learner indiscipline.
- To examine the influence of learners' indiscipline on the quality of teaching and learning.
- To explore educators' perceptions of positive discipline.
- To ascertain the factors that contribute to the ineffective implementation of positive discipline.
- To determine the essential components that should be included in a framework for the effective implementation of positive discipline.

## **1 Theoretical framework**

This study was mainly be guided by Adler's Individual Psychology theory. However, the Ubuntu African Philosophy was also incorporated to augment Adler's theory, to develop a richer and better-balanced theoretical framework. According to Watts (2015), Adlerian Psychology encompasses two key principles: the pursuit of perfection or superiority and Gemeinschaftsgefühl (community feeling/social interest). These concepts, proposed by Adler, played a significant role in the inception of positive psychology, which in turn laid the foundations for PD.

Watts (2015) indicates that Adler's concept of "striving for perfection or superiority" refers to the human endeavour directed towards achieving competence or self-mastery, serving as the central motive behind human behaviour. Adler (1927) explains that individuals engage in self-evaluation, resulting in the development of a persistent mood characterized by a feeling of inferiority. This triggers a deliberate pursuit of final compensation and the formulation of a life plan influenced by unconscious thought processes and envisioned goals. Schultz and Schultz (2013) further emphasise Adler's belief that feelings of inferiority are common to all individuals and serve as a motivating force for behaviour. Adler posited that experiencing occasional feelings of inferiority is an inherent aspect of being human, rather than a sign of weakness or abnormality. Schultz and Schultz (2013) assert that Adler's concept of superiority differs from its conventional understanding. It does not involve a sense of being better than others or having a superiority complex. Instead, striving for superiority is driven by a pursuit of perfection and a desire to become whole and complete (Watts & Erguner-Tekinalp, 2017).

DeRobertis (2014) adds that the aspiration to overcome feelings of inferiority and become more competent can serve as a motivating force for children to

become actively engaged and enthusiastic learners. This presents an opportunity for educators to create a nurturing and empowering environment that inspires learners without indulging them excessively. By understanding and harnessing this motivation, educators can foster a conducive learning atmosphere that encourages genuine growth and development.

Ubuntu is a virtue that is common among most African communities. Muzvidziwa and Muzvidziwa (2012) have observed that the concept of Ubuntu exists in various languages across Africa. For instance, in the Zimbabwean context, the Shona term "Hunhu" is synonymous with Ubuntu in Zulu, Botho in Sesotho, Ajobi in Yoruba, Numunhu in Shangaan, Vhuthu in Venda, Bunhu in Kalanga/Tsonga, Umntu in Xhosa, Utu in Swahili, and Abantu in Ugandan. Similarly, Mugumbate and Nyaguru (2013) mention that in Botswana, the word "botho" carries the same meaning as Ubuntu, while in Tanzania, it is "bumuntu." Other countries such as the Congo, Angola, Malawi, Mozambique, and Uganda use the terms "bomoto," "gimuntu," "umunthu," "vumuntu," and "umuntu," respectively (Mugumbate & Nyaguru, 2013). The claim, therefore, that Ubuntu is a widely shared African virtue is thus substantiated by the above observations. Ubuntu emphasises the fundamental understanding that human beings cannot thrive in isolation; it highlights our inherent interconnectedness. Individuals labelled as having Ubuntu are known for their generosity. Mugumbate and Nyaguru (2013) state that Ubuntu also entails a continual consciousness that recognizes the inherent worth of "the other" and imparts a profound respect for them, akin to the regard one has for oneself. It embodies the principles of "I am because we are," "You are; therefore I am," "Without the other, I am nothing; together, we are one." Ubuntu instils in individuals the value of prioritising the well-being of others above their own.

While it is a fact that Ubuntu values were passed on from one generation to another through oral traditions and the complex system of socialisation, the current dispensation would most likely require a more packaged and deliberate approach that achieves effectiveness within a macro-social environment, characterised by multi-media technology platforms that allow easy access to diverse lifestyles from across the globe. This study, therefore, sought to develop a framework for the effective transmission of Ubuntu values within the education system to achieve optimum levels of discipline in secondary schools.



## **2 Methods**

The study adopted a qualitative approach. According to Tomaszewski et al. (2020), qualitative research conducted unselfishly, is internally consistent, rigorous, and assists researchers to answer important questions regarding people and their lives. Qualitative studies undergo an assessment of trustworthiness through a systematic approach that evaluates the extent to which credibility, transferability, dependability, and confirmability are achieved throughout the stages of preparation, data collection, organisation, analysis, presentation, and interpretation of findings. The study employed a collective case study design. De Vos et al. (2015) reveal that the collective case study is an instrumental research design that encompasses multiple cases, facilitating comparisons between cases and concepts, thereby extending and validating theories.

Convenience sampling was used to identify districts and schools to take part in this study. Convenience sampling is a method of non-probability sampling that allows researchers to select individuals from the target population based on practical considerations such as accessibility, proximity, availability, and willingness to participate. This approach, as described by Etikan et al. (2016), enables the inclusion of participants who meet the practical criteria set by the researcher. For this study, purposive sampling was employed to identify and select schools and participants. Purposive sampling, as discussed by Maree et al. (2016), is commonly used in qualitative research and involves the researcher's judgment to include elements that possess the most characteristic, representative, or typical attributes of the population. Data collection included semi-structured interviews and document analysis. The research sample consisted of six schools located in two districts of the Mpumalanga province, with a total of twenty-four participants including principals, class teachers, Life Orientation teachers, and chairpersons of School Governing Bodies. The document analysis focused on incidents record books, school codes of conduct, as well as minutes from the school disciplinary committee and school safety committee. Thematic content analysis was applied to analyse and present the collected data. The data collected from the study participants and examined documents were subjected to thematic analysis. Qualitative data analysis is utilised by researchers to uncover the most significant findings of the. In this study, qualitative data analysis aided the researchers in highlighting key issues relevant to the investigation of technology integration into teacher education. The researchers familiarised themselves with the collected information by thoroughly reading the data. The process of annotating the transcripts, which involved labelling relevant key terms, phrases, sentences, or sections, established the coding framework for this study. Subsequently, coding was employed to conceptualise the qualitative data, organize and categorise it into essential themes.

### 3 Findings and discussion

Qualitative data gathered through semi-structured interviews and document analysis are analysed, presented and interpreted. The analysis was conducted using the content analysis technique where themes emerging from the sub-research questions of the study were generated and articulated in detail with the support of sub-themes constructed from the views of participants.

During this presentation (in living up to the ethical code of anonymity and confidentiality), schools and participants are named using codes of the alphabet. Schools are named as School A, B, C, D, E and F. Principals are identified as PA, PB, PC, PD, PE and PF, where PA is stationed at School A and PB at School B and so on. Class teachers, SGB chairpersons and LO teachers are coded similarly; as are the documents.

In this multiple case study design, School A and B are rural-based, School C and D are semi-urban while schools E and F are purely urban. The findings of the study were triangulated during a presentation with this socio-geographic aspect in mind. Detailed codes used for the identification of participants and documents are provided in the table below.

Table 1

*Code names used for participants*

<u>Category</u>	<u>Code name</u>
Schools	SA, SB, SC, SD, SE, SF
Principals	PA, PB, PC, PD, PE, PF
School Governing Board Chairpersons	CA, CB, CC, CD, CE, CF
Class teachers	CTA, CTB, CTC, CTD, CTE, CTF
Life Skills Orientation teachers	LSTA, LSTB, LSTC, LSTD, LSTE, LSTF
School Code of Conduct	CCA, CCB, CCC, CCD, CCE, CCF
DC Minutes	DCA, DCB, DCC, DCD, DCE, DCF
Incidents Record Book	IRA, IRB, IRC, IRD, IRE, IRF
School Safety Committee Minutes	SCC

#### 3.1 Factors leading to learner indiscipline

It was necessary to establish the factors that lie at the centre of learner indiscipline. Identification of these factors would assist in developing a framework for PD that addresses the root cause of behaviour problems in selected public secondary schools in Mpumalanga. The study found that learner indiscipline can be attributed to various factors, including family setting, community setting, peer pressure, the learner, the educator, human rights, and

biological factors. These factors are in line with Porubčanová and Pasternáková (2018) who state that if a child is successful with indiscipline behaviour, then they determine principles, attitudes and values that affect people in their surroundings. Each of these factors contributes to shaping the behaviour of learners, as discussed below.

### 3.1.1 Family setting

The family serves as the primary socialization agent for learners, where they acquire the norms and values that regulate their behaviour. The dynamics within the family can have an impact on the learner's behaviour in the wider world, often presenting challenges. The behaviour of learners is often a reflection of their home environment. PC noted that *"In the majority of cases, we struggle with learners with an improper home background involving the family."* This perspective is consistent with Jinot's (2018) assertion that the underlying causes of learner misbehaviour in schools originate from the home environment. Similarly, Kiwale (2017) argues that the home environment has a significant impact on shaping a learner's behaviour at school. Tauatswala (2018) further reinforces this claim by suggesting that the type of family in which a child is raised influences their behaviour in the educational setting. A learner is an essential component of a cohesive family unit, and their conduct is often a reflection of the behaviours exhibited by other family members with whom they are associated.

### 3.1.2 Community setting

The lifestyle and characteristics of the community from which learners come tend to have an impact on their behaviour within the school environment, which can be seen as a microcosm of the larger community. The characteristics of a school are a reflection of the surrounding community it serves. Any criminal activities and negative behaviours prevalent within the community are likely to manifest among the learners in the school setting. It has been observed that learners originating from high-density environments tend to display more instances of misbehaviour compared to their counterparts from low-density environments and rural areas. PF highlighted that *"Crime in communities where learners come from also causes learner indiscipline as learners tend to import criminal activities from their communities into the school."* Similarly, Netshitangani (2014) confirms that a school is influenced by the broader environment, suggesting that school violence reflects violence in the wider social context. This suggests that instances of school violence are frequently influenced by the surrounding community and society as a whole. According to Obadire and Sinthumule (2021), the immediate community of learners has a substantial impact on their behaviour, while Makhasane and Chikoko (2016) support the

notion that violence present in the community can extend to neighbouring schools. Consequently, many of the behaviour challenges educators face at school can be traced back to the community where learners reside.

Real threats of community influence on learner misconduct identified in the study relate to drug abuse and gangsterism. The study revealed that the community acts as the source of drugs that learners traffic and consume. The prevalence of drug abuse in the community is reflected in the school environment to some extent. The types of drugs trafficked and consumed within the school premises are the same as those readily available in the surrounding community. Rural communities that are known to produce dagga supply rural schools with this drug, while urban communities plagued by nyaope, cocaine, alcohol, and other drugs infiltrate urban schools with the same substances. Learners who are under the influence of drugs often exhibit disruptive behaviour that hinders teaching and learning activities. LSTA stated that:

*“In this community, there is no motivation for the value of education. Most rich people here earned their riches through production and trafficking of dagga. This area produces a lot of dagga and our learners get involved as well.”*

Similarly, CTC reiterated that *“Learners here abuse a lot of ‘nyaope’, alcohol and cocaine. This is a town environment, and these substances are readily available. Some even sell them here at school.”* The perspective shared by Kiwale (2017) in the literature aligns with the notion that the school is often seen as a reflection of society. Upindi (2013) is also of the view that some of the causes of indiscipline in schools are drug abuse, neglect and media violence emanating from the community.

### 3.1.3 Peer group pressure

It was revealed that the peer group contributes to the behavioural problems in schools. Participants emphasised that learners form peer groups within the school, and these groups play a significant role in shaping behaviour. The peer group establishes norms and behavioural expectations, driven by the learner's innate desire for a sense of belonging. In their pursuit of acceptance, learners often conform to the subculture and values of their peer group, which can sometimes clash with family expectations and the school's code of conduct. Particularly during adolescence, learners seek to establish their identity among friends who validate their actions, leading to the adoption of behaviours such as smoking that are learned from peers. CE shared the following thoughts regarding the influence of the peer group:

*“Our children misbehave because of influence from bad friends. Their friends teach them to do things we do not allow them to do at home. Which parent in his or her right mind can teach a child how to smoke?”*

This perspective aligns with Jinot (2018), who argues that many learners engage in misconduct due to peer pressure within the school environment. Similarly, Nene (2013) asserts that learners often misbehave to conform to the expectations of their peer group and avoid rejection. Gutuza and Mapolisa (2015) add that some learners exert a negative influence on others, leading to disruptive behaviour, particularly when they interact with peers who have different behavioural tendencies. They further suggest that as children grow older, the influence of parents as a reference group and a model for conformity diminishes, and they begin to prioritise their relationships with peers.

#### 3.1.4 The learner

In the current study, learner-based factors were also identified among the key contributors to learner indiscipline. According to Jinot (2018), the learner is one of the factors that have a hand in the increase in violence. Kagoiya and Kagema (2018) similarly posit that learners themselves are a source of indiscipline in schools. This study identified the learner's personality and the developmental stage associated with secondary school-going learners (adolescence) as key learner-based aspects that impact negatively on learner behaviour. Regarding personality, participants argued that some learners have an inborn type of personality that predisposes them to be ill-disciplined. CD candidly remarked that *"People are created differently; some were born to be naughty."* Netshitangani (2014) shares a similar perspective by asserting that certain personal characteristics, such as innate traits, gender, age, impulsivity, inattention, hyperactivity, substance abuse, lack of guilt, and experiences of victimisation, can act as precipitating factors that may trigger aggressive behaviour. Educators also observed that some learners exhibited attention-seeking tendencies in their personalities, which were responsible for disruptive behaviours that hindered teaching and learning. LSTF articulated that:

*"Attention seekers are a problem. When they misbehave and you punish or rebuke them, they get excited because that is what they wanted in the first place. They are even seen as heroes by their friends because they can stand up and challenge the teacher."*

These findings align with the research conducted by Nene (2013) in KwaZulu Natal, which aimed to explore the challenges of managing learner discipline. The study concluded that learners' behaviour problems were primarily attributed to emotional difficulties. It was further noted that some learners exhibit unconventional behaviour in the classroom due to various reasons, such as the need for special attention, a desire for leadership, aversion to interference, or a tendency to hurt others because they have been hurt before (Nene, 2013). Therefore, it can be argued that personality traits characterized by attention-

seeking tendencies play a significant role in the development of problematic behaviours in learners.

Furthermore, the challenges related to puberty, which primarily impact individuals during their adolescent phase, also play a role in learner indiscipline. The research findings indicate that a considerable number of secondary school learners are in the midst of adolescence, and many behavioural issues exhibited by these learners, stem from developmental factors. Jinot (2018) proposes that adolescent learners, aged 13 to 15 years, often demonstrate a notable lack of discipline due to experiencing an adolescent crisis. Individuals undergo physiological and hormonal changes during this stage that can influence their temperament, views, and actions. CTF stated that *“Most of our kids are in their adolescence. So, the hormones are making them to behave hey wire [sic].”*

This reflection is in line with Barbot and Hunter (2012), who state that adolescence is often characterised as a phase of inherent ‘storm and stress’. Throughout these various fluctuations, the primary task of adolescence is centred around the formation of identity, which is influenced by environmental, communal, adolescent, and neurobiological factors. These adolescent changes often manifest in behaviours such as risk-thrill-seeking, impulsivity, and emotional disturbances. The indiscipline observed in adolescent learners can be ascribed to the pursuit of identity, as explained by Erickson’s theory of psychosocial development. As per Sznitman et al. (2019), the identity-seeking status represents an identity arrangement that emerges when there is a deficiency in the exploration and commitment to significant aspects of life. Additionally, adolescents experience the Moratorium status, which is characterised by probing and a search for identity, involving searching and consideration of potential commitments (Barbot & Hunter, 2012).

### 3.1.5 The educator

The study uncovered that educators play a role in the emergence and display of learner indiscipline. As learners typically spend a significant amount of time with educators, the conditions created within the school and classroom by these educators have an impact on the level of learner discipline. Some educators were found to be lenient towards indiscipline, while others were criticised for inadequate lesson preparation and frequent absences. Educators who have irregular attendance, come to class unprepared, or leave the classroom before the lesson concludes tend to contribute to learner indiscipline. When learners are left idle, they are more prone to engage in disruptive behaviour. CF argued that *“Some teachers fail to attend classes regularly. When learners are left alone, they end up misbehaving.”* PD also remarked:

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

*“Educators sometimes come ill-prepared for the lesson. When learners discover that the educator has not prepared enough teaching material to occupy them for the whole lesson, they start making noise.”*

These perspectives align with the findings of Magwa and Ngara (2014), who assert that teachers who frequently and unjustifiably miss school and fail to promptly respond to the bell (such as after a break) contribute to the prevalence of indiscipline. Additionally, Tauatswala (2018) argues that educators who inadequately prepare for their teaching contribute to learner indiscipline, as learners tend to lose focus when faced with an educator who appears unsure of their lesson content and objectives.

### 3.1.6 Human rights

The study established that there was an over-emphasis on human rights by the government upon banning CP. Learners were accorded too many rights ahead of educators, hence the development of negative attitudes that allow them to behave as they want. Learners have developed a superiority complex, showing no respect to adults either at home or at school. Such learner attitudes have escalated the levels of indiscipline in schools to unprecedented levels. PF remarked that *“Government’s appetite for political gains gave too many rights to learners without emphasis on responsibility. Learners were overloaded with rights without teaching them what they entail.”* Educators and parents were also rendered powerless in the process, hence their limitation in instilling discipline properly. This was articulated by PE, who argued that *“Too many rights and freedoms were given to learners by the government. These rights have rendered educators and parents powerless to the extent that they can’t control the behaviour of learners.”*

The introduction of PD was largely coated by an emphasis on human rights (Rampa, 2014). This culminated into a situation where educators and parents are confronted with difficulties and challenges of learners rejecting any kind of authority under the guise of ‘learner power’ (Rampa, 2014). This pupil power phenomenon, as a form of entitlement, led to intimidation and violence.

The learner, family settings, peer pressure, the educator, community settings, and emphasis on human rights emerged as the core factors responsible for learner indiscipline in selected secondary schools in the Mpumalanga province. The findings revealed a wide array of factors that are at the centre of learner indiscipline. These findings portray a holistic perspective to understanding contributory aspects to learner indiscipline.

This comprehensive perspective is grounded in Bronfenbrenner’s (2006) bioecological systems theory, which posits that behaviour is influenced by intricate processes involving interactions within the individual and between the individual and the surrounding environmental forces (Ettedal & Mahoney, 2017).

According to this theory, there are four interrelated types of environmental systems that operate across four levels: the microsystem, mesosystem, exosystem, and macrosystem. The microsystem, which is the closest to the individual, encompasses their regular and direct interactions with family members, peers, teachers, or caregivers. The mesosystem involves the dynamic interactions among the various elements within an individual's microsystem. The findings of this study highlighted how the relationships between the family, peer group, the school and the community affect learner behaviour. The exosystem consists of the factors beyond the person that have an impact on them, such as the parent's employment status. This was accommodated through exploration of the family's socioeconomic status and its effect on learner indiscipline. The macrosystem represents the broader societal system that encompasses a set of ideological beliefs, values, and norms, which are manifested in the cultural, religious, and socioeconomic organization of a society (Ettekal & Mahoney, 2017). The government's approach of emphasising human rights is an ideological aspect that fits well within this purview.

### *3.2 Effects of learner indiscipline on quality of teaching and learning*

The study also sought to establish the views of participants on the effects of learner indiscipline on the quality of teaching and learning. It was revealed that learner indiscipline has adverse effects on teaching and learning. Ntuli and Machaisa (2013) concur with this position; they contend that disciplinary problems have a propensity to negatively impact learner performance. Themes generated from the data gathered include *disruption of teaching and learning, demotivation of teachers and learners, inducing fear in educators and learners, time-wasting, and low work rate by undisciplined learners*. These are discussed below.

#### *3.2.1 Disruption of teaching and learning*

The study established that misbehaving learners disrupt teaching and learning sessions by engaging in fights and making noise. Fights involving rival groups gain the attention of the entire school and side-track learners from concentrating on their studies. Noisemaking, pandemonium, and restlessness create a hostile environment that hinders effective teaching and learning. PB reiterated that *"Indiscipline has a huge impact on teaching and learning. For an example, learners under the influence of alcohol will be passive in class, others will be out of the way, while some become loud, restless and disrupt learning."* In the same vein, Gutuza and Mapolisa (2015) argue that indiscipline is evident in disruptive behaviour, which poses challenges for other learners in their learning process. Khewu (2012) also support the findings in stating that misbehaving learners with aggressive tendencies and anti-social behaviours create a hostile environment



that impedes the effective acquisition of learning matter. Learning cannot take place amid chaos. Aggressive learners intimidate their classmates and often create a chaotic classroom environment that hinders successful teaching and learning. In most cases, undisciplined learners are uncontrollable and difficult to manage (Nconietsa & Shumba, 2013).

### 3.2.2 Demotivation of teachers and learners

Learner indiscipline creates a hostile school environment which lowers the morale of educators and other learners. Effective teaching and learning thrive on educator and learner motivation. Learner indiscipline angers the educator and dampens their interest in teaching. Educators and learners find themselves emotionally disconnected from the teaching and learning environment because of learner indiscipline. Schools with unbearable levels of learner indiscipline experience high staff attrition as educators opt for schools with acceptable levels of learner discipline. Teaching and learning as an academic process and core business of the school suffer a huge blow when educators and learners fail to emotionally commit themselves. PF summed up the argument: *“Due to learner indiscipline, some educators tend to be demotivated and disengaged. Some educators end up transferring to other schools where discipline levels are optimal.”*

This resonates with Ncontsa and Shumba (2013), who pointed out that because of learner indiscipline, the morale of the educators dwindles, and they become completely demotivated. Magaba (2018) further contends that teachers experience demoralization when they must handle challenging learner behaviour, which ultimately impacts the quality of their teaching practices and their dedication to their profession. Similarly, Ofori et al. (2018) argue that due to concerns for their personal safety, teachers are unable to perform at their best and implement strategies that could foster effective learning.

### 3.2.3 Inducing fear in educators and learners

It was established that learner violence scares educators and other learners. Educators and learners require a conducive environment for learning that is free from threats. One cannot expect productive teaching and learning to take place where violence and death threats are the order of life. Undisciplined learners and their gang leaders can pose a safety threat to educators and other learners. LSTC contended that *“Educators cannot teach well in an unsafe environment where there are threats from learners and gangsters they collaborate with from outside.”* According to Karanja and Bowen (2012), there is a growing apprehension about the safety of many schools, which poses a risk to the teaching and learning environment. They also highlight that indiscipline not only hampers learners' academic performance but also instils fear in others, leading to

a phobia of attending school. The emotional and psychological distress resulting from learners' disruptive behaviour further strains interpersonal interactions among individuals (Njoroge & Nyabuto, 2014). It has also been observed that learners who are victims of bullying live in constant fear, lack concentration, and thus perform badly in their schoolwork (Ncontsa & Shumba, 2013). The arguments made in this regard fit well within Maslow's theory. Safety needs come second in the hierarchy of needs. Teachers and learners cannot be motivated to perform at their best in an environment marred with threats to their survival and safety. The feelings of fear and lack of control over events happening in their lives create a sense of anxiety and paranoia which negatively impacts performance.

#### 3.2.4 Time wastage

Learner indiscipline consumes time originally meant for productive teaching and learning. Educators direct a lot of time towards solving discipline problems instead of teaching. Learners also lose learning opportunities as a result of the consequences of engaging in acts of violence. Additionally, time lost through absenteeism is not easily recovered. This results in poor preparation for external examinations as well as poor performance.

PC argued that *“The teacher puts so much effort into disciplining learners and setting order instead of teaching. This leads to poor performance.”* In terms of absenteeism, CTE remarked that *“Absenteeism involving significant numbers retards pace of content coverage since teacher has to repeat what was taught during their absence. Preparation for examinations becomes compromised in the process.”*

Ncontsa and Shumba (2013) concur with these findings; they argue that school violence creates chaos and shortens learning and tuition time, given that disturbances call for the need to attend to the problems reported before learning can proceed. Much time is wasted as almost all the learners' present attempt to give an account of what transpired. Shortened instructional time has a direct impact on the high failure rate in schools. Likewise, Waithaka (2017) asserts that a considerable amount of classroom time, nearly half, is consumed by activities other than actual instruction, and discipline issues contribute significantly to this loss of instructional time. Further, Njoroge and Nyabuto (2014) contend that undisciplined learners do not have enough reading time hence negatively affecting their academic performance.

#### 3.2.5 Low work rate by undisciplined learners

Participants observed that learners who constantly misbehave do not perform well in their academic work. In support, Khewu (2012) argues that research has demonstrated that schools, where learners are not disciplined, have a plethora of

problems, chief being a high failure rate. Poor performance of such schools is a result of disruption of learning, lack of teacher and learner motivation coupled with fear for their safety, time wastage, and low work output by undisciplined learners. LSTB remarked that *“In-disciplined learners will not pass. They invest too much effort and energy into unproductive activities instead of reading and doing schoolwork. They are always behind.”* Document analysis of School C’s SSC minutes points to the following statement that well explains the overall effects of indiscipline on teaching, learning and academic performance: *“The principal highlighted that the school might not be able to perform well due to the problematic behaviour challenges it is faced with.”*

In support of the foregoing observations, Khewu (2012), contends that anarchy and chaos resulting from an act of indiscipline obstructs the effective running of schools and negatively impacts the learners’ academic achievement, thereby making it impossible to attain the mandate of the school. Karanja and Bowen (2012) also argue that the consumption of cannabis is associated with the adoption of a non-conventional lifestyle, which in turn contributes to a significant increase in indiscipline and lack of proper commitment to studies in schools. According to a study carried out in Kenya by Njoroge and Nyabuto (2014), the academic performance in most schools was abysmal, with numerous cases of poor grades subsequently attributed to indiscipline. Ofori et al. (2018) conducted a study in Ghana and concluded that indiscipline has contributed to the poor performance of learners in schools. According to their perspective, the diverse inappropriate behaviours exhibited by the learners hindered their ability to concentrate in class, led to the loss of taught content and knowledge, created tension and a sense of insecurity, disrupted lessons, and consumed a significant amount of instructional time in resolving conflicts.

Learner indiscipline has adverse effects on teaching and learning. The study established that learner indiscipline disrupts teaching and learning sessions, lowers educator and learner motivation, induces fear in educators and learners, wastes valuable learning time and lowers academic achievement. The assumption is that once a proper framework for the implementation of PD is developed, discipline levels in schools will improve and thus eliminate these negative effects that come with high levels of indiscipline.

### *3.3 Participants’ perceptions of positive discipline*

It was essential for the study to establish participants’ views regarding PD. Participants’ different views broadly fell within the categories of the definition, strategies and an evaluation of the effectiveness of the approach in maintaining discipline and order in schools. The following subsections explore the findings.

### 3.3.1 Definition of positive discipline

In defining the approach, participants demonstrated varying levels of understanding. The range of understanding varied from ignorance to adequate understanding of the concept. One participant expressed total ignorance of the concept. One wonders as to how the educator performs in terms of implementing it when they confess to hearing the term for the first time. LSTC remarked, *“Yeah, hey...I am meeting the word for the first time.”* Successful implementation of PD hinges on the understanding of its principles and strategies. It was yet to be established as to how educators who have no clue perform in terms of its implementation in managing learner discipline. Others provided definitions close to being correct, however, fell short of certain imperatives that provide a clear-cut separation of PD from alternative disciplinary measures that are punitive. These viewed it as an approach that incorporates more humane strategies in moulding learner behaviour as opposed to CP. PF defined it as: *“Positive discipline is using other methods to shape a desirable behaviour of the learner other than using CP.”* Others demonstrated an impressive understanding in which issues of human rights and learner dignity were mentioned. PE elaborated that *“Positive discipline is a means of handling learner discipline issues using approaches that respect the rights of the learner and do not degrade him or her in any way.”*

Authoritative sources present it in a manner closest to what PE expressed. According to Assali (2015), PD is a model of teaching and parenting that seeks to find a harmonious equilibrium between two crucial aspects: effective teaching and the acknowledgment of children's rights. Ozan (2015) additionally perceives it as a management approach aimed at fostering children's sense of responsibility and their ability to address challenges, enabling them to develop positive self-perception while learning societal norms. Furthermore, he argues that in practical implementation, it emphasizes the implementation of a well-structured plan that aligns accurate teaching methods with teachers' emotional motivations. It is interesting to note that none of the participants could mention a single principle that guides it. This demonstrates the existence of a huge knowledge gap in principals, educators and SGBs chairpersons regarding the concept of this approach.

### 3.3.2 Positive discipline strategies

It was also necessary to establish what strategies principals, educators, and SGB chairpersons apply in managing learner indiscipline within the PD purview. Participants' views agreed that it does not incorporate CP as a means of correcting learner behaviour. Manual labour, parental involvement, detention, counselling, delegation of responsibility to learners, suspension, the multi-stakeholder approach, motivation, expulsion, and law enforcement were

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

identified as the strategies that are used in managing learner behaviour in selected public secondary schools in Mpumalanga. Some of the strategies suggested bear a punitive undertone, even though they appear less violent than CP.

Physical punishment in the form of manual labour is still used as a way of enforcing discipline in schools. Learners are made to dig holes, pick up litter, clean toilets or water the garden as punishment for committing offences at school. The main purpose of using manual labour for offenders is to deter others from doing the same. PA revealed that *“For severe cases, we require the learners involved to dig holes. This serves also as a lesson to others not to do the same.”* It was also noted that the school codes of conduct also bear phrases that legitimise the use of punitive measures. School A’s code of conduct has a section that reads *“All disciplinary measures shall match the offence committed and shall be more severe as the behaviour becomes repetitive.”* The paradox surrounding the use of manual labour during the PD era is the fact that learners’ rights appear to be trampled upon in the process. Cleaning toilets and other forms of physical punishment can be humiliating to the learner.

The use of punitive strategies is against what literature views on PD dictate. Coetzee and Mienie (2013) assert that it adopts a preventive approach as opposed to a punitive one, emphasizing proactive discipline rather than reactive measures. This approach places emphasis on supportive behaviours, including mutual respect, teaching, effective communication, collaborative planning, self-discipline, role modelling, encouragement, and motivation (Rampa, 2014). In situations where misbehaviour has occurred, it employs carefully selected corrective techniques that aim to address the issue without humiliating or compromising the learner's dignity (Coetzee & Mienie, 2013). The principle of ‘discipline that teaches’ calls upon teachers and parents to shun punitive measures and embrace an approach of being kind and firm that focuses on the attainment of set goals in a safe environment (Assali, 2015). The use of manual labour with PD is a misnomer. The argument can be made that forcing learners who tend to fight to take part in physical labour would make them stronger, thus there might be far more serious consequences in the next physical altercation. This brings to light the extent to which educators lack an understanding of what the concept entails.

Many educators use detention for instilling discipline in learners. Detention requires the learner to remain behind when others go home after school. The educator plays a supervisory role whilst the learner is under detention. Productive detention implies that the learner undertakes schoolwork during detention so that the time is put to the benefit of the learner. LSTB remarked that *“We use supervised detention, where the learner is encouraged to ask where they do not understand.”* This is in line with Nene (2013), who reveals that

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

alternative methods to CP, such as detaining learners, can prove beneficial as they provide an opportunity for such learners to engage in their schoolwork while simultaneously instilling discipline. What seemingly raises questions about the appropriateness of detention to the PD approach is the fact it is punitive to both the learner and educator. CTB indicated that *“When you detain a child after school time, you directly detain yourself as well since you have to be there to enforce the detention.”*

In as much as detention is legally approved for use in maintaining learner discipline in schools, it violates the learners’ rights as enshrined in the Constitution. Section 12 (1) of the Constitution reads: *“Everyone has the right to freedom and security of the person, which includes the right - (b) not to be detained without trial.”* Detention violates this provision, as the learner is often detained without a fair trial. However, literature supports the use of detention in instilling learner discipline in schools. According to the Department for Education (2016), detention during lunchtime, after school and at weekends is a legally permissible measure of instilling discipline in learners. In the authors’ opinion, it is necessary to differentiate between legally approved measures and mechanisms. The fact that certain measures such as detention are permissible by law does not necessarily render them PD compliant. Compliance of disciplinary measures with PD expectations should be based on the extent to which those measures subscribe to the concept’s principles and values. It is, therefore, necessary for legislative frameworks that regulate learner discipline issues to be revised so that they embody PD strategies.

Parental involvement is one of the strategies used to maintain learner discipline in schools. This goes a long way in ensuring that both the school and home speak the same language where the discipline and learning of the child are concerned. Joint efforts eliminate manipulation of the school and home by the learner. CTA summarised this notion as:

*“We call the parent and discuss indiscipline matters of the child so that the home and school can cooperate with each other in correcting the child. Some of these learners are very clever, they say one thing at home and a completely different story at school. So, if you do not involve the parent, you can both be fooled and manipulated by the child.”*

*These findings are consistent* with Ntuli and Machaisa (2013), who state that greater parental involvement in the disciplinary and academic affairs of the child should be encouraged. Ntuli (2012) similarly posits that the involvement of parents as much as possible in the education of their children should be made a priority. According to the Centre for Justice and Crime Prevention (CJCP) (2012), this approach is most effective when there is open communication between parents and teachers, as well as consistency in discipline styles between the school and home environments. Ntuli (2012) argues in favour of parental

involvement by emphasising that the working together of parents and teachers can produce more effective results in the learners' behaviour than when either party is grappling with the problem alone. Similarly, according to Nene (2013), establishing an active partnership between parents and schools can yield positive outcomes, as parents have a significant influence on children's behaviour. Newman et al. (2019) further emphasise that Epstein introduced a model of parental involvement that emphasises the importance of ongoing communication between parents and the school. This communication allows for the sharing of parenting styles and effective communication methods that align with each other's expectations regarding learner discipline.

Counselling is also one of the strategies used to manage learner behaviour. Parents and educators engage in face-to-face discussions with learners to deal with indiscipline matters. Face-to-face discussions play a pivotal role in discovering the reasons why a particular learner misbehaves, facilitating the generation of appropriate solutions to the behaviour problems. The learners also get to understand themselves better and, in the process, takes an active and voluntary part in complying with suggested courses of corrective action. CE remarked, *"When my child has done wrong, I sit him or her down and we talk one on one. This sometimes helps me as a parent to understand why the child did what they did."* Similarly, CTF echoed: *"We conduct counselling for learners who misbehave. It helps us discover sometimes the deep sited issues that cause the learner to misbehave. We then are able to work out an appropriate solution for the learner."*

These findings resonate well with CJCP (2012), arguing that PD encourages teachers to talk to learners on an individual basis to understand their backgrounds and the issues and challenges confronting them. Understanding the context and circumstances that shape learners' behavioural tendencies will assist in mapping out appropriate solutions to the behaviour challenges and avoid arriving at irrational conclusions about the learner. Mabea (2013) contends that teachers can use counselling to identify mistaken goals, faulty logic in the minds of learners and closely work towards dealing with the associated faulty behaviours. The counselling process enables the teacher to gain an understanding of the developmental, environmental, individual, relational, and cultural factors behind the conduct of learners, to map out informed corrective and coping mechanisms for the affected learners (Prins et al., 2019).

This study established that some schools had created multi-stakeholder platforms to manage indiscipline in schools and crime in communities. Schools work with different professionals in the community to instil discipline. Individuals cited as part of the multi-stakeholder approach consisted of religious leaders, traditional leaders, political leaders, educators, police officers, social services representatives, parents and Learner Representative Council. The approach takes

advantage of the different skills and expertise each professional group has. It also rides on learner inclusion as a mechanism for managing learner discipline. This provides a holistic mechanism that makes use of knowledge from a wide variety of disciplines in dealing with learner indiscipline. LSTC stated that *“Police conduct awareness programmes on crime prevention and other health professionals. Psychologists, pastors, and community leaders also come and address our learners on the dangers of crime and encourage them to behave morally and responsibly.”* In addition, document analysis of School C’s SSC minutes recorded attendants to the meetings as *“Pastors, Traditional leaders, Principal, Social services representative, School Governing Board members, Police representative, Councillor, Mayor’s representative, Department of Education representative and Learner representative.”* The multi-stakeholder approach also recognises the value of learners in the generation of school regulations. Under the section titled, Operationalisation of the school rules, Schools A, B and E’s codes of conduct for learners articulated: *“Learners shall be involved in the drawing of school rules through questionnaires, use of indaba, classroom monitors reporting to the Learner Representative Council.”*

The adoption of a multi-stakeholder approach to handling matters related to learner indiscipline is in sync with Tlhapi (2015), who proffered that discipline in schools should not be left to educators alone but should be the responsibility of all stakeholders. Lumadi (2020) contends that lasting solutions to learner indiscipline can be arrived at through consistency and teamwork. The teamwork approach calls upon what Obadire and Sinthumule (2021) describe as the working together of policymakers, parents, principals, educators, learners and community members. The multi-stakeholder approach calls upon the mutual participation of the local community in the affairs of the school, to adequately address those indiscipline elements that emanate from the wider community (Tlhapi, 2015).

The use of punitive strategies such as suspension, manual labour, detention, and expulsion could be seen as a violation of learners’ rights. Subjecting learners to manual work such as digging holes and cleaning surroundings give learners the impression that physical work is punitive; hence they may grow up with a negative attitude towards physical work and hygiene. Ordinarily, work is good practice, and the education system should inculcate values of industriousness and hard work in learners through positive means. Additionally, detention is isolative in nature. The learners find themselves in a semi-prison setup whilst others enjoy their freedom. Suspension deprives learners of a learning experience during the period of absence. Upon returning, there is no guarantee that they receive additional support from educators to catch up on missed work. Expulsion gives the impression that the school has failed to correct the learner. It is synonymous with passing on the problem to the learner’s next destination. Expelling the



learner is a violation of the learner's universal right to education. These strategies share commonalities in that they embarrass the learner who feels humiliated out of the public spectacle that comes with punishment. The continued use of such strategies points to the fact that educators lack an adequate understanding of PD principles and approaches.

### 3.3.3 Evaluations of positive discipline

In the process of exploring participants' perceptions of PD, the study generated views that reflect their evaluation and appraisal of the approach. Participants made positive and negative appraisals. Some were of the view that it is a good approach, while others mentioned that it was a difficult approach to apply. Views in support of it indicated that the approach is productive and prepares learners for current and future life in terms of behaviour. CTB remarked that *"It is a good approach. You strike two birds with one stone. It is good for correcting current behaviours, but it also prepares the learner for life after school."* These findings align with the perspectives shared in the existing literature. A study conducted in Eswatini by Mabuzza et al. (2017) found that teachers viewed it as an effective approach for disciplining learners and expressed that it allows for a smooth correction of learners' behaviour without causing unnecessary pain, which could potentially lead to psychological and emotional disturbances among the learners. The study further asserted that this kind of discipline is instrumental in maximising the possibilities of producing responsible learners. In a similar study conducted in the USA, Roberts-Clawson (2017) also confirmed that PD helped to minimise negative learner behaviour. Somayeh et al. (2013) conducted a study in Taiwan; it underscores the fact that applying it in the classroom paves the way to internalisation of the values, decrease disrupting behaviours, and also leads to promotion of self-self-discipline among learners. It is therefore viewed as an effective strategy that promotes good learner behaviour and helps in cultivating a culture of acting responsibly in learners.

Some participants viewed it as a good approach, however, with a few concerns. The main obstacle hinged on how it was introduced and implemented. It was established that the poor implementation strategy adopted made it difficult for educators to understand the PD concept. The approach was also said to be good on paper but lacked the much-expected effectiveness in bringing behaviour problems under control. PB stated that *"It is a good approach on paper but how do you put it to use? Sometimes you find yourself wondering as to what you end up doing especially when you try talking to the child and nothing works."* Similar views also indicated that even though it is a good approach, it tends to spoil learners and does not yield results on learners that are way out of line. CTF remarked, *"It has its fair share of good things and problems. It helps learners to be responsible, but it also can spoil learners in a big way."* Ntuli (2012)

conducted a research study reviewing ways of controlling discipline in particular secondary schools in Limpopo; participants in the study stated that specific alternatives to CP were effective while others were not.

It has also been viewed as an approach that exists in theory, is time-consuming and not practically effective in handling learner indiscipline matters. It was blamed for the worsening state of learner indiscipline. The approach has also been described as Western-oriented and thus lacks relevance to the local socio-cultural context. CC expressed that:

*“It is a system for the Whites. Why do you have to change a winning team? Things were ok during CP. Children had respect for adults. I see it as a strategy introduced by the Western countries to kill African Societies.”*

These views confirm what Mabuza et al. (2017) reported on, that certain teachers in Eswatini expressed reservations about implementing PD in an African context. According to the participants in the study, PD was seen as incompatible with their cultural setting, as they observed an increasing moral decline among learners who were accustomed to disciplinary measures involving physical punishment in their homes. In African society, it was argued, when a child misbehaves at home, parents often resort to CP as a disciplinary method.

In addition to this, some parents consider the act of abolishing CP as a Western-centric concept that causes havoc in African cultures and leads to moral decay. This implies that PD is considered a foreign strategy that has not been tailored along with African values for adaptability and is bound to destroy the moral fibre of African societies. Roberts-Clawson (2017) observed that it is viewed as a strategy that does not prepare learners for the real world. This observation is consistent with Mabuza et al.’s (2017) perception that this approach lacks relevance in the day-to-day means of disciplining learners. PD is therefore viewed as a superficial system that is not in tandem with systems applied in wider society. Educators have held the perception that its strategies are ineffective, inadequate, and a waste of time (Chonco, 2019; Moyo et al., 2014; Singo, 2017).

#### *3.4 Factors contributing to the ineffective implementation of positive discipline*

It was necessary to establish participants’ views on the factors that led to its ineffective implementation. Identifying these factors was considered appropriate for developing a framework for effective implementation of PD that attempts to address the pitfalls experienced so far. Sub-themes generated from the data gathered through interviews revolved around *lack of stakeholder engagement in policy formulation, lack of stakeholder training, over-emphasis on learners’ rights and conditioning of educators and parents on CP as an effective disciplinary strategy.*

#### 3.4.1 Lack of stakeholder engagement

Stakeholders expressed their dissatisfaction with the lack of consultation during the policy formulation process and the subsequent development of an implementation framework for PD. Principals, educators, and parents voiced their concerns about being excluded from the decision-making process regarding the adoption of this approach. The implementation was perceived as top-down, and some stakeholders saw it as the imposition of a foreign disciplinary model that lacks relevance to the local context. PF summarised the argument as follows: *“School administrators, educators and parents were not consulted in the first place. The system was just copied and pasted from foreign countries without considering the situation in Africa as a continent and SA as a country. Proper consultation was going to help generate ideas on how best the system could have been better localised.”*

Bowling (2018) points out challenges in implementing this approach, including the use of complex strategies and a top-down approach that disregards stakeholders' involvement. According to Moyo et al. (2014), educators expressed dissatisfaction with the lack of consultation when PD was introduced, leading to their continued use of CP and reluctance to adopt alternative disciplinary measures. Similarly, Ntuli (2012) states that participants criticized the lack of consultation in the introduction of disciplinary changes in South Africa. Rampa (2014) argues that it was imposed on educators by the Department of Basic Education, without considering their input. Additionally, Moyo et al. (2014) highlight concerns from educators, parents, and religious groups who felt that their right to be consulted in their children's education was disregarded by the government.

#### 3.4.2 Lack of training for stakeholders

The study found that its implementation lacked adequate training for principals, educators, and parents on its principles and strategies. This posed numerous challenges for educators and parents, as they lacked alternatives and the necessary skills to effectively address disciplinary issues in an environment where CP is prohibited. As a result, educators and parents resorted to trial and error with alternative methods that may not align with its values. Consequently, its intended goals are not fully realised. PC aptly remarked:

*“The approach was not properly introduced. There was no formal orientation for principals and educators. Also, conditions for PD are not clearly stated by the department. Schools end up relying on their own experiences in seeing what works and what does not work.”*

These findings resonate with Bowling (2018) who spells out that what hindered PD was the lack of support and training for teachers on the new approach. This is confirmed by Mabuza et al. (2017), who reveal that teachers in Eswatini stated

that limited knowledge of the concept had hindered them from effectively implementing it. According to Rampa (2014), the government neglected to provide ongoing professional development and training for educators in disciplinary procedures that could serve as alternatives to CP. He further notes that educators experienced the pressure to implement disciplinary reforms with no support from authorities. Mahlangu et al. (2021) argue that educators perceive themselves as lacking empowerment and adequate knowledge of effective PD methods to establish a safe and conducive learning environment. Moyo et al. (2014) hint that the reason behind this unfortunate reality is that educators and parents were left all to themselves to discover alternative ways to CP. Bilatyi (2012) further confirms this by stating that the DBE has not put any capacity building initiatives in place that target stakeholders with regards to discipline and seemingly it does not know how to handle the training programme for it.

#### 3.4.3 Overemphasis on learners' rights

Its implementation also suffered a blow because of the over-emphasis on learners' rights. The introduction of PD was paired with the abolishment of CP, hence the emphasis on children's rights overlooked corresponding responsibilities. In the process, the rights of educators and parents were ignored. This study established that educators and parents felt alienated within the new approach. Participants indicated that in their judgement, it was vindictively implemented to get back at the educators who were seen as abusive to learners. Educators and parents felt that they have been rendered powerless, as most of the power and authority has been given to learners. CTC argued that:

*"PD wasn't introduced well. Teachers were made to feel like they wanted to punish learners unfairly. The department was more on the side of learners. Too much attention was given on the rights of the learner and ignoring the educator altogether. As educators, we felt like we are not important and have no rights."*

The aforementioned perspectives align with Venter's (2016) observations, where educators voiced their concerns about the emphasis placed on learners' rights in the new system. As a result, educators hesitated to enforce disciplinary action against rule-breaking learners due to fear of being accused of violating learners' rights. Research conducted in various regions of South Africa also reported that educators felt disempowered, unsupported, and experienced a decrease in respect since the implementation of PD, replacing CP schools (Chonco, 2019; Mestry & Khumalo, 2012; Moyo et al., 2014; Nene, 2013; Van Wyk & Pelser, 2014). According to Moyo et al. (2014), several educators at the Buffalo City Metropolitan Municipality expressed the view that their power had significantly been reduced since the abolishment of CP. According to Van Wyk and Pelser (2014), educators perceived a decline in respect due to the implementation of PD and the adoption of alternative discipline approaches. Similarly, Nene (2013)

found that educators in KwaZulu Natal expressed concerns that their power and authority as educators had been diminished with the absence of CP.

#### 3.4.4 Conditioning of educators and parents on CP

The findings of this study revealed that educators and parents were still bent on using CP even though it was officially banned. Some educators and parents continue to believe that it is effective since it is what has always worked. How adults were socialised was cited as the cause of this rigid stance. Also, when educators have not been capacitated with skills to handle discipline the positive way, they resort to the old system they find familiar. CTD remarked: *“Teachers grew up being disciplined through CP...it’s not easy to adapt to the new system. CP is in their blood.”* The continued use of CP at home creates an imbalance of approaches. This waters down all efforts by the school towards instilling PD values as learners despise educators for adopting a softer approach when they are used to a more aggressive approach at home. Lack of parental involvement in the introduction of the new approach left parents with fewer options save for reliance on CP, which is what they have always known. Parents confirmed using CP to instil discipline at home. CA stated that *“We still beat children at home as a way of moulding them.”*

These findings align with Nene's (2013) views, who highlighted that many participants expressed dissatisfaction with the proposed alternative measures to CP, considering them ineffective in managing learner indiscipline in schools. The alternatives were seen as time-consuming, requiring educators to invest a significant amount of time addressing misbehaviour and subsequently engaging with parents. Similarly, Ntuli's (2013) study conducted in Limpopo revealed that alternatives to corporal punishment do not yield immediate results, unlike CP, which provides instant behaviour change through the infliction of pain. Shaikhmag and Assan (2014) also agree that most educators perceived the alternatives to be less effective. The persistence of CP usage despite its prohibition indicates the challenges encountered in implementing PD in schools (Mestry & Khumalo, 2012).

#### 3.5 Framework for the effective implementation of positive discipline

Considering the weaknesses identified in its implementation in SA schools, this study proposes a framework for effective implementation. The framework is also based on the suggestions put forward by principals, class teachers, Life Orientation educators, and chairpersons of SGBs of selected schools in the Mpumalanga province. The proposed framework adopts a multi-stakeholder Afrocentric approach. This approach intends to blend PD with the theoretical underpinnings of the Ubuntu philosophy. The framework comprises stakeholder engagement, tailor-making of PD to appeal to the local cultural context, review

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

of school guidelines and handbooks for learner discipline, training of stakeholders, harmonisation of home and school disciplinary practices, establishing vibrant LRCs and infusion of PD into the school curriculum.

*Step 1: Stakeholder engagement*

The proposed framework advocates for the engagement of all stakeholders across all stages, starting with enlisting their views about it. Participants bemoaned the fact that PD is a foreign concept that was imported from the West and pushed down their throats without consultation. Given the foregoing, it is necessary to engage in genuine consultation to gather views from all stakeholders that will be brought together to develop a concept reflective of the beliefs, norms, values and rights of citizens. This home-grown concept will appeal to the local socio-economic and cultural context and thus enjoy ownership and support from all stakeholders.

The consultative process should target principals, educators, parents, traditional leaders, community leaders, religious leaders, political leaders, related professionals, and learners. Consultation should be coordinated by the DBE. This exercise can be done at the school, circuit, district, and provincial levels. This exercise entails engagement on issues concerning legal frameworks of learner discipline, CP, PD, human rights and Ubuntu. The outcome of these engagements should produce a consolidated report for guiding activities and decisions.

*Step 2: Review and repackage positive discipline concept*

There is need to review the existing PD toolkit, guided by the report of the consultative process carried out in the first step. Participants observed that certain strategies suggested by the DBE for use in instilling learner discipline as per the dictates of policy violate human rights. The findings of this study also condemned certain strategies contained in the schools' manual for regarding the concept.

This framework advocates the indigenisation of the concept through the blending of human rights values with Ubuntu values that emerge from the Ubuntu philosophy as a component of Indigenous Knowledge Systems. The flavour of local values deposited into this approach is bound to produce a model of discipline that stakeholders can be proud to implement and promote. It is also important to go further and reconfigure policies, school codes of conduct and the school handbooks so that they align with human rights provisions in the Constitution alongside the emerging PD concept. The handbook should spell out disciplinary mechanisms that are attuned to PD principles and are practicable within the SA education system. Reviewing and repackaging this approach is

*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

necessary to ensure that a more relevant disciplinary approach which takes cognisance of cultural permutations that underpin the SA value system is birthed.

*Step 3: Training of stakeholders*

Due to the existence of a multi-stakeholder Afrocentric framework, the third step focuses on the training of principals, educators, members of the SGBs, learner representatives, parents, and community leaders. Principals, educators, and chairpersons of SGBs indicated that they had not been trained on PD approaches hence they lack knowledge, skills and competencies on its principles and techniques. Training should be formal and must ideally begin at the provincial level with the training of trainers. Assessment of training participants should include, among others, theory tests, role plays and simulations, case study scenarios, verbal quizzes and portfolios of evidence. Trainees must be awarded certificates of competence and receive a full toolkit for future reference during implementation.

Having produced adequate trainers, the DoE can widen training to districts, circuits, clusters, and schools. At lower levels, assessments could be simplified to role plays, verbal quizzes, and case scenarios. Teacher training institutions producing pre-service educators will review the curriculum in educational psychology, professional studies, and other related modules to accommodate PD topics, concepts and activities. Training should focus on corporal laws and policies regulating learner discipline, CP (pros and cons), PD principles, values, and strategies applicable to the community, home and school settings. Additional topics related to parenting styles, classroom management techniques, and administrative issues related to codes of conduct and related records also need to be looked at. The subject matter and content of training should depict the localised version of the approach with implications for each stakeholder group.

*Step 4: Harmonisation of home and school disciplinary practices*

The framework emphasises the importance of providing training to parents, learners, and other stakeholders on positive learner parenting and discipline techniques. It advocates for the simultaneous implementation of the approach both at home and at school. Educators have observed that the implementation in schools has faced obstacles due to the unbalanced situation where PD is only practiced at school while parents/guardians employ CP and other punitive measures at home. Achieving harmony in parenting approaches and learner handling between home and school allows educators and parents to collaborate in fostering the development of PD values in learners. Parents should utilize positive parenting techniques to raise their children, enabling the school to build upon the values already instilled by the family as the learner grows. Challenges encountered at home in implementing strategies for discipline can be discussed

with educators and other professionals available in the community for practical solutions.

Furthermore, the involvement of learners in all aspects of learner discipline and well-being is crucial as part of the implementation program in schools. The establishment of Learner Representative Councils (LRCs), consisting of leaders selected by the learners themselves, serves as a bridge between the school and the learner body. LRC members should receive periodic training to effectively fulfil their roles. This concept of establishing LRCs aligns with good governance principles and encourages participatory approaches to leadership and problem-solving, which often yield positive outcomes. LRCs should be involved in the formulation and enforcement of school rules, as well as in promoting learner discipline. An environment characterised by mutual respect between educators and learner representatives is more likely to address behaviour challenges in schools effectively.

The implementation also requires a deliberate commitment by educators to include principles, values and approaches in their day-to-day teaching and learning activities. To facilitate better understanding and acceptance of PD, it is recommended that it be incorporated into the school curriculum. This would involve integrating content related to a localised version into subjects such as Life Orientation and Social Studies. By integrating its content into these curriculum areas, learners can study about and engage with PD values in a context that is familiar and applicable to their daily lives.

#### *Step 5: Monitoring, evaluation and review*

Finally, the study proposes that periodic monitoring of progress in terms of the effectiveness of the approach be conducted at home and school at regular intervals not exceeding six months. This could be done through face-to-face meetings and interviews, questionnaires, suggestion boxes and other means considered appropriate by the DBE. Qualitative and quantitative data gathered from the monitoring exercise should be evaluated regularly. Observations on challenges encountered by parents and educators and corresponding recommendations emerging from the evaluation exercise are to be used for making modifications on the ground. After a series of evaluations, a more refined PD concept is bound to be realised.

### **Conclusions**

A framework for implementing PD should comprise stakeholder consultative engagement, tailor-making it to appeal to the local cultural context, review of school guidelines and handbook for learner discipline, training of stakeholders, harmonisation of home and school disciplinary practices, establishing a vibrant LRC and infusion of this approach into the school curriculum. The consultative



process is aimed at gathering views about PD to reposition the approach to one that commands local context relevance. This is to be arrived at by blending its principles, values and strategies with Ubuntu, which results in the creation of a multi-stakeholder Afrocentric framework for implementing PD. Learner discipline policy, schools' PD manual and school codes of conduct require modification to get rid of strategies that violate learners' rights. All stakeholders are to be trained on PD principles, values and strategies. Implementation should target both the home and school for synergy purposes of working towards raising a self-disciplined learner under an environment characterised by a shared set of values between the home and the school. The framework further advocates the establishment of LRCs that will work with school administration in solving learner disciplinary issues. Educators are to adopt a revised curriculum that accommodates PD and Ubuntu values in related subjects taught in school. However, effective implementation requires regular monitoring, evaluation and reviewing of this approach.

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
*Volume 13, 2023, Issue 3*

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*Acta Educationis Generalis*  
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