Differentiation Models for the Curriculum of Gifted and Talented Individuals: A Literature Review

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The purpose of this research is to inform about the differentiation models related to the teaching programs of the gifted and talented individuals in the scope of the special education and to prove the necessity of using these models with related researches. Differentiation, which is accepted as changing the education process according to the individual differences of the students in the education of the gifted, is used as a tool in enrich the education programs of these individuals. In this study, information about gifted is given, the necessity of differentiating the curriculum of these individuals is emphasized and information about differentiation models is given. In this context, the definitions of The Maker Curriculum Differentiation Model, The Parallel Curriculum Model, The Curriculum Narrowing Model, The Integrated Curriculum Model, The Grid Curriculum Model, The Three-Stage Purdue Model, The Enrichment Triad Model, The Autonomous Learner Models about the curriculum of gifted students and supporting studies in the context are researched.

Keywords: Gifted and talented, differentiation curriculum models, special education, differentiation, curriculum

INTRODUCTION

Gifted and talented individual is defined as learning in a faster mood compared to their compeers. Gifted and talented students are more creative, have a capacity on leadership and art capacity, have higher up abilities academically, can got ideas' abstracted forms, prefer acting independently in their fields of interest, and display performance at a high order (MEB, 2020). There are various definitions of giftedness in the literature. Baykoç (2009) identified giftedness, physical growth, development, controlling of movement, focusing, continuous eagerness of learning, motivation to learn, deepening in areas of interest, rapid perception and meaningful selectivity, analysis, synthesis and problem solving skills, verbal linguistic development, social skills, aesthetics. and analytical thinking, artistic skills, and creativity, being ahead of their peers according to the experts' measurement and observations.

According to Renzulli (1986), giftedness is the combination of three key elements which are talent, creativity and motivation. It is defined as a set of high-level expressions and skills that emerge as a result of their interaction with each other. These three basic elements are the state of having a talent above the normal functioning compared to their peers about the development of general intelligence. It is the ability to establish different systems in problem solving ways, to reach creative results and to produce products which can be expressed as creativity. Clark (2008) states that *inquisitiveness* and *questioning* behavior in gifted students creates the need to understand situations or events in depth, and the ability to easily *connect* their thoughts reveals the basic need for *complexity* in the education for gifted and talented individuals. There are some difficulties to teach normal and gifted students in a same way. It is not effective to educate the whole students connately in institutions where gifted and talented students study. Preparation of curriculum according to individuals who are in normal improvement causes inability of gifted individuals to adapt, boredom of the learning process, having anxiety disorders, etc. It causes them to encounter problems such as not being able to advance their skills and not being able to access sufficient saturation during the educational context. For this reason, there is a need to prepare curriculum that is suitable for the different interests and learning speeds of gifted and talented students, who are in the percent of 1.5-2 of the society (Van Tassel-Baska & Stanbaugh, 2005).

The fact that the the normal curriculum lacks the ability to be challenging for gifted students is the most significant reason that requires their education to be different from the general education. Adapting the curriculum to the nature of the learner, that is, differentiation, has long been an accepted approach of instruction of the gifted individuals (Tomlinson & Jarvis, 2000). The basis of differentiation is to prepare an education programme to qualify the necessities of individuals who are in different learning areas, by giving importance to the educational necessities of each individual and increasing learning capacity. For this, teachers can apply content, process and product to

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differentiation processes according to students' readiness, interests and learning styles. The arrangements applied in the curriculum and teaching should be quite comprehensive in terms of learning styles, interests and readiness of gifted. Throughout planning the educational process, differentiation can be made in each or some of curriculum elements which are content, process and product, according to the differences in readiness level. Similarly, the same application can be made according to the differences in student interests and learning profiles. Before starting teaching, determining the individuals' differences of each other in accordance with the learning styles, learning speeds, interests and their readiness (Heacox, 2002).

The contents of the curriculum prepared for gifted individuals must be produced according to their interests and abilities for the student groups, based on enriching and deepening the curriculum differentiation strategies. Enrichment is the practice of diversifying and enriching the programs which responds the interests and needs of gifted individuals by enabling them to study within their peers and in regular classes. Nowadays, the models applied in every developed country is the curriculum enrichment model on average (Ataman, 1998). Gifted individuals need to work in-depth investigation on the subject they are interested in. This is because these individuals are highly skilled at making connections between subjects and situations and also understanding the relationships between them. The curriculum to be implemented in learning environment must be planned in such a way as to satisfy the needs of gifted students while responding the needs of other individuals (Walker, Hafenstein, & Enslow, 1999). Various differentiated instructional strategies are viewed for gifted and talented. This is a reason why a standard education and curriculum cannot be put forward for gifted individuals. Because when the abilities of these individuals are observed, it is seen that each of them has different abilities. For this reason, it is very important that the curriculum that should be applied to gifted individuals are prepared individually in a way that will develop the interests and abilities of these individuals (Van Tassel-Baska & Stanbaugh, 2005).

In this context, when the educational expectancy of gifted and talented individuals mentioned throughout studies are examined for context of the literature, the importance of using differentiation models in terms of the curricula to be designed for the gifted becomes evident. Because of this, in this study, differentiation models, which are compiled and which have positive results in some studies, are introduced and suggestions are made for the usage of the models for teachers and curriculum development experts studying with gifted and talented individuals. The aim of this study is providing information by literature review about the differentiation models for the curriculum of the gifted and talented students in the context of special education. Moreover, it is aimed to prove the requirement of using these models with the relevant researches. In the study, it was also aimed to raise awareness of the requirement of differentiating the curriculum for these individuals by providing information about the needs of gifted individuals and related models.

METHOD

In this study, the phenomenological design, which is respected as qualitative research models, is used and the data is collected through the technique of document analysis. The purpose of phenomenological research is describing the experienced universe for discovering the common meanings highlighting the phenomenon that is given for. For this purpose, phenomenology also allows life experiences to be translated into literary expressions (Baker et al.,1992). In this study, the gifted and talented phenomenon has been examined and effective models for them have been presented. Merriam (2009) actually stated that according to some, all qualitative research is phenomenological. Document analysis is a kind of analysis technique which searches the whole written literature that contains information about the case or the cases which are aimed to being searched. Document analysis also enables the analysis of the documents that are created for a certain time era for a kind of research problem or for the documents that are created by several sources and at several intervals on a relevant subject (Yıldırım & Simsek, 2008).

In the research, information is given about the models that can be used for differentiation in the curriculum of gifted students. Throughout the research, which was carried out in the literature by means of document review, the documents were accessed, the documents were checked, the documents were examined and understood, the acquired literature was analyzed in terms of usage and the literary data obtained in line with the purpose of the study were used in the research (Yıldırım&Simsek, 2008). In order to reach the relevant data in the subject scans related to the research, searches were carried out in academic databases including YÖK National Thesis Center, YÖK Academic, ULAKBİM and scientific studies.

Differentiation Models for The Gifted

In this section, information about the models that can be used for differentiating the curriculum of gifted students is given. In this research, which was carried out in the literature by means of document review, the relevant literature and documents were examined and the literature data obtained in line with the purpose of the study are explained below.

Differentiation is the shaping the course topics according to the skills of the students in line with the principles such as making changes and arrangements through the dimensions of content, process and product in accordance with the teaching, using appropriate and various assessment and evaluation methods, by giving importance to the differences between individuals of gifted and talented students (Tomlinson, 2009). Differentiation that requires systematic and progressive work; the teaching, which is shaped according to the basic concepts, principles and skills of the subjects, should be done by considering the learning differences between individuals. In differentiation studies, if the content is shaped by taking into account the basic concepts, basic principles and desired skills, reaching the desired results can be at a higher level (Tomlinson, 2007).

When differentiation is planned through activities that develop the levels of gifted and talented individuals' cognitive learning, current studies for the necessary theories should be put forward in accordance with the results of the related studies. Theoretical-based differentiation studies that are based on theory, which are proposal examples for the special education studies, could advocate the development of gifted and talented students and support them for receiving higher qualified education. Some educational differentiation models which exemplify theoretically-based differentiation models and are mentioned in the study are: Maker Curriculum Differentiation Model, Parallel Curriculum Model, Curriculum Narrowing Model, Integrated Curriculum Model, Grid Curriculum Model, Three-Stage Purdue Model, The Enrichment Triad Model, Autonomous Learner Models.

Maker Curriculum Differentiation Model

Maker (1982), known for his differentiated curriculum proposition, introduced a model named after himself. There are many sub-dimensions in the Maker Curriculum Differentiation Model. The general purpose of these sub-dimensions is the creation of the curriculum within the framework of certain rules, give importance for the specialties of gifted and talented individuals while designing the curriculum. Curriculum models guide the development of new models as well as the differentiation of models in practice. Curriculum differentiation is the mostly used as a teaching strategy in the education of gifted and talented individuals (Sak, 2012). In the differentiation process, some parts of the general curriculum are discarded, it takes place as an acceleration in education; sometimes new acquisitions are added in addition to the general curriculum. According to Maker (1982), curriculum elements gifted students' education must be both qualitatively and quantitatively differentiated. In this model, there are four main dimensions of differentiation in overall elements of curriculum which are content, process, product and learning environment. These elements are also aggrouped in themselves. Maker also suggested that a differentiated teaching should be given to gifted students and stated how this teaching could be done in the content area and explained the differentiation in the content as follows: *"Content"* covers content topics that are abstract, complex and different from the normal curriculum; it caters more to individual needs and interests; gives importance to

interdisciplinary interaction; it encourages the examination of problems encountered in real life; it encourages the support of the affective characteristics of the students with various subjects. Maker (1982) stated how differentiated instruction can be done in the process area of gifted students and explained the differentiation in the process as follows: *"Process"* develops high-level scientific thinking processes; it provides opportunities for exploration and experiential learning; it provides solutions to open-ended problems; it teaches research skills for independent research, and it uses a plenty of learning strategies to correspond various learning styles. Moreover, it enables small group activities. Maker stated how differentiated instruction should be used in the product area for gifted and talented individuals and he explained the differentiation in the product as follows: *"Product"* involves real-world problems; it values real-life learning; offers the opportunity to reveal creativity and encourages presentations in different ways beyond the traditional logic of homework. Maker stated how differentiated instruction should be applied in classrooms which consists gifted and talented students. Maker explained the differentiation in the product as follows: "*Learning Environment"* provides a supportive and student-centered learning classroom; which has a risk taking condition, provides a supporting physical environment and which provides outdoor learning experiences (trips, social projects, etc.). and it supports cooperation with higher education institutions.

Parallel Curriculum Model

Tomlinson, Kaplan, Renzulli, Purcell, Leppien, Burns and (2009) stated that this model consists of four parallel curricula. These; which consists of four areas: "core, connections, practice and identity". When necessary, they can be used together, or they can be used unique. Curriculum components and the purposes of these components in the Parallel Curriculum Model (PCM) are given below. The Parallel Curriculum Model can be considered as the most comprehensive of the models developed to date, as it consists of four parallel dimensions as the "General Core Curriculum, Curriculum of Connections, Curriculum of Practice and Curriculum of Identity". Each dimension includes learning achievements that overlap with the objectives of the curriculum. Parallel dimensions can be used integratedly or independently form each other (Sak, 2010).

"Core Curriculum" includes learning outcomes developed for all students within national education systems. It also covers the main concepts, principles and skills that make up a discipline. It includes topics that experts studying in this discipline consider important (Tomlinson et al., 2009). Gaining basic knowledge, skills and attitudes related to the discipline takes place within the scope of the general curriculum (Tomlinson, 2009).

"Curriculum of Connections" is projected for helping learners to discover connections throughout gained information. Since it is built on the core curriculum, it is focused on concepts, theories, principles and skills of a discipline. The most important goal of this curriculum is to help students comprehend how disciplinal concepts, theories, principles and skills are used in sub-fields of the discipline, in different disciplines, at different times and places (Tomlinson et al., 2009). In addition, associating disciplinary principles and concepts with students' own lifes or daily life is carried out within the scope of the connections curriculum (Tomlinson, 2009). *"Curriculum of Practice"* aims to move students from apprenticeship to mastery in a discipline. It tries to achieve this by guiding students' disciplinal knowledge and skills to practice the working styles of experts working in the discipline (Tomlinson et al., 2009). The main purpose of the "*Curriculum of Identity"* is to guide learners for researching and comprehending a discipline depthly, for associating the discipline with their own lives, and to identify themselves by comparing and relating discipline-specific abilities with their own abilities. Here, metacognitive skills come into play (Tomlinson et al., 2009).

The main aim of "Parallel Curriculum Model" is making the learner an expert, starting from the amateur level, respectively. There are skills that students need to achieve at each step. These skills are customized according to the discipline, as each discipline has its own unique achievements, behaviors and thinking processes/styles. The teacher is responsible for differentiating the curriculum in order for the student to gain the competencies at each level and successfully upgrade from one step to the next,

to designate the learners' levels and to make the necessary groupings, to implement the activities with appropriate strategies, and to evaluate the results with appropriate criteria and give feedback (Tomlinson et al., 2009).

Curriculum Narrowing Model

According to Reis and Renzulli (1978), the Curriculum Narrowing Model, which can be differentiated on both student and group basis, is based on the placement of other achievements or activities by discarding the general curriculum objectives or shortening the time. When making differentiation in the Curriculum Narrowing Model, three different strategies are used: acceleration, enrichment and other activities. These strategies can be applied alone or in combination.

As in other models, there are certain stages during differentiation. In the implementation process of these stages, the learning achievements and objectives of the subjects are firstly determined. Then, in the second stage, as the first target, the identification of gifted students comes up. At this stage, their competence on the subject and how long the unit will be covered is determined. If necessary, when the students are examined in terms of their readiness, if the student has sufficient knowledge about the relevant subject, these subjects can be removed from the unit. In the last stage of the curriculum narrowing process, the strategies to be used are determined, activities are designed and the necessary materials are provided in order to carry out the teaching.

Integrated Curriculum Model

According to Van Tassel-Baska (1986), the Integrated Curriculum Model, like other curriculum differentiation models, was developed based on the assumptions that each individual should have different needs, that there should be acceleration and enrichment in the curriculum of the gifted, and that every education planned for the gifted should be prepared meticulously. This model has been developed to include three dimensions for gifted learners. These dimensions are advanced content, high level process and product work, development of intradisciplinary and interdisciplinary concept and understanding dimension.

The Integrated Curriculum Model is used in many different states in the USA, it is also used as well as in Australia and Canada (Van Tassel-Baska&Brown, 2007). The distinguishing feature of this model from many other models is that it can be applied in fields such as social studies, linguistics and science (Kaplan, 2013). A kind of the most basic components of the Integrated Curriculum Model, which focuses on inquiry-based teaching, is teacher training. William & Mary University also carries out teacher education programs in this field (Van Tassel-Baska&Brown, 2007).

Grid Curriculum Model

Three basic elements are taken into consideration while preparing the grid curriculum. These are; content, process and product components (Kaplan, 2009). In this curriculum model, which is intended for providing an experience of differentiated learning for gifted and talented individuals, one of the main components is the *content component*; applying teaching strategies such as acceleration and enrichment with the help of the general curriculum; the *process component*; used to acquire and develop certain skills, and the *product component* is used to develop different and creative tools (Kaplan, 2013). These components are gathered under a single "theme" and "big idea" headings. During the theme choosing process, the general content is determined, while choosing the big idea, a topic can be selected within the theme.

During the design section of differentiated activities in the Grid Model, among options related to content, process and product dimensions, the ones suitable for the course, purpose and conditions are selected and learning activities are developed according to these choices (Sak, 2010). The components within the scope of the model can be briefly explained as follows (Sak, 2010):

The first component *"Content"* covers information that is interesting, important, and useful for gifted students. The information consists of ideas, concepts, generalizations, principles, concepts, and

systems. Content is produced in accordance with the extensive themes. The second component "*Process"* is divided into thinking and basic research skills. General thinking skills includes complex skills such as problem solving, creative thinking and critical thinking and while basic research skills include more basic skills such as note-taking, communication, summarizing, learning to learn, using technology, and basic life skills (Sak, 2010). There is a general misconception and practice that these skills should not be mentioned when developing a curriculum for gifted learners. However, for developing complex, abstract, and high-level thinking skills, it is necessary to master the basic skills. For example, problem solving skill, which falls under the category of high-level thinking skills, prerequisite basic skills to be able to use it are information gathering (research skills) and sorting information (basic skills) (Kaplan, 2009). The other component *"Product"* emerges as a result of the combined use of content cognisance of thinking and research skills. The product, in a way, refers to the transformation of cognisance and skill into various forms of communication. The product is seen as both a tool and proof of learning (Sak, 2010). It is important to offer students many alternatives regarding the product. Students should be given the opportunity to make choices according to their interests and skills among different options such as writing reports, making oral presentations, animating, and developing models. In addition, it is an important component to reach and examine the products of the recognized experts of the discipline working in the product dimension, to realize and appreciate their value. In this context, it is also important to determine the appropriate criteria to evaluate the developed product according to world standards and to evaluate the product according to these criteria (Kaplan, 2009).

The Three-Stage Purdue Model

The three-stage purdue model is a consecutive model of enrichment which move learners from simply thinking skills to skills that are complex which need to be done independently. It consists of 3 steps (Feldhusen&Kollhoff, 1986). *The first step* focuses on convergent and divergent thinking skills. At this stage, activities are organized to enhance the fluency, flexibility and comprehensive thinking skills of the learners. Thus, learners have the opportunity for developing their creative and productive skills of thinking. Students' ages should be taken into account while developing scientific process skills. They should be expected to develop more basic skills in the first stage of primary education. *The second step* enables development in the creative problem solving process. In primary schools, developing skills of students is aimed such as making detailed observations, making measurements, recording what has been achieved and what has been done, interpreting the data, and making inferences through small and simple activities (Bağcı-Kılıç, 2003; Ergin et al., 2005). *The third step* involves students' using their skills of researching competencies through the enhancement of independent skills of studying (Van Tassel-Baska, 2006; Van Tassel-Baska & Brown, 2007). The student should come to the third step by understanding and applying the information about the knowledge infrastructure and problem solving techniques related to separating and unifying thoughts. Therefore, the first two stages prepare the student for the third stage. Careful planning of the first and second steps will manifest itself in this step. If the first and second steps are given serious attention, a high level of independent study of the student is possible in the third step. PM was designed by considering the specialities and basic requirements of learners with high intelligence and ability (Moon et al., 1994).

The secondary education level of this model provides educators with a comprehensive structure in curriculum development for students at this level and consists of eleven components, including acceleration and enrichment activities. These components are "Guidance Services", "Honor Classes", "Maths acceleration", "Foreign Languages", "Art", "Cultural Events", "Advanced Placement Courses", "Career Education", "Seminars", "Vocational Curriculum", "Out of School Teaching" (Feldhusen & Robinson, 1986).

The Enrichment Triad Model

This model has been put forward by educators and researchers as a result of 15 years of research and discipline studies. This model combines the previously developed triple enrichment model and the

revolving door enrichment model with a more flexible approach. First of all, field studies of this combination were carried out in different school types of different sizes in 11 areas. These field studies resulted in the development of the school-wide enrichment model (SEM), that is widely used (Van Tassel-Baska & Brown, 2007). In this model, a talent pool is created from gifted students by using different evaluation criteria such as teacher suggestions, achievement tests, creativity tests… etc. Students are selected for this pool for a time, and they can be involved in many different activities. First of all, the interests and learning styles of the students in the talent pool are evaluated. Secondarily, the curriculum is compacted for students who have exceeded the current objectives of the curriculum. Enrichment practices are carried out for students with a high level of interest, ability and motivation. The enrichment activities in this model consist of three types. These are; *Type I Enrichment* involves general exploratory experiences. This category of general enrichment is designed to enable students to encounter a variety of new and exciting disciplines, arts, subjects, occupations, hobbies, people, places and events not covered by the regular curriculum. *Type II Enrichment* involves group teaching activities. It consists of activities designed to improve cognitive and emotional processes. The skill that is aimed to be developed in each objective can be presented in a distribution from simple to complex levels, emended in accordance with levels of ability of the learners. In order for planning and executing Type II Enrichment processes, taxonomy of these processes must be established. *Type III Enrichment* involves examination of real problems with individuals and small groups. It is the upper stage type of enrichment. In order for the student to upgrade this step, teachers should decide together. If the teachers share the same decide for student to upgrade to Type III Enrichment, the student can use the time they will gain as a result of the intensification of the curriculum for upper-level enrichment. The purpose of this type of enrichment is to guide students to creative solutions of real problems and to present these real products to real users (Renzulli & Reis, 1986a; 1986b).

The Autonomous Learning Model

This model has been developed to meet the educational requirements such as cognitive, affective and social necessity of gifted individuals (Betts, 1986). Gifted students who have completed their education are expected to become autonomous learners by assuming the responsibility of monitoring and evaluating their own learning. This model has 5 basic dimensions such as *orientation, individual development, enrichment, seminars and in-depth study.* The dimension of *orientation* involves the process of obtaining basic information about the program by students, teachers, directors, and families. Special attach is cared on giftedness, creativity and the advancement of potential. *The individual development* dimension focuses on providing students with the affective, cognitive, and social skills necessary to become lifelong learners namely autonomous learners. The *enrichment* dimension of the curriculum includes providing the students with the appropriate content that is not included in the curriculum but that they will be glad to research, learn and benefit from. In this dimension, students can conduct in-depth research in their own areas of interest or explore new areas of interest within the opportunities available to them. In the *seminar* dimension of the curriculum, students explore a topic in small groups and present this topic to the rest of the group as a seminar, taking into account the evaluation criteria determined by the students. In the *in-depth research* dimension, students are encouraged and supported to conduct in-depth research and learn in areas of their special interests individually or in small groups (Betts, 1986).

Conclusion and Suggestions

In this section, information is given about the research, experimental studies and the results obtained about the differentiation models used in curriculum development and regulation of gifted students. Özdemir (2016) stated that differentiated activities and materials designed and developed for gifted students at the fifth and sixth grade levels provided significant benefits in meeting the mental, emotional, and social needs of gifted students in mathematics. Thus, these students were able to find opportunities to meet their needs in mathematics lessons, and this helped teachers to reduce the problems they experienced in their classrooms for gifted and talented students.

Altuntaş and Özdemir (2015) aimed to determine the effect of the differentiation approach on the creative thinking skills of both gifted and non-gifted students based on the purdue differentiation model for mathematics education. As a result, it was concluded that the enriched, creative thinking-based, project-based, dominant intelligence-based activities developed according to the purdue differentiation model improved the creative thinking skills of the students and the program was effective. Özyaprak and Davaslıgil (2015) examined the effect of differentiated mathematics program for the gifted and talented on mathematics attitudes, results were found in favor of differentiation. In this study, the effect of the mathematics teaching program, which is differentiated to meet the cognitive and academic expectations of the gifted, on the attitude towards the mathematics lesson. Based on the research findings, it was concluded that the mathematics program prepared for the gifted and talented students, which was prepared for the experimental group students, significantly increased the students' attitudes towards mathematics compared to the students in the control group. Camci Erdogan (2014) aimed to develop and implement a science and technology program that would meet the learning needs of gifted students and to test the effectiveness of the program in her study. In the study, the 5th grade "Earth, Sun and Moon" unit was differentiated on the basis of scientific creativity skills within the framework of the parallel curriculum model and grid model. The study group of the research consisted of a total of 21 students, 11 of which were in the experimental group and 10 in the control group, who attended a primary school that provides education to gifted students. Research data were collected with the achievement test, science attitude scale, torrance creative thinking test verbal A and B forms developed by the researcher. At the end of the research, it was seen that the differentiated science program applied to gifted students significantly increased the academic achievement, attitudes towards science and technology lesson and creative thinking levels of the students.

Çalıkoğlu (2014) aimed to examine the effects of science education differentiated on the basis of depth and complexity features on academic achievement, scientific process skills and attitude for gifted students in a study. The study group of the research conducted in the pretest-posttest experimental design with a control group consisted of gifted students. The results of the research revealed that the differentiation made is effective on the academic achievement and scientific process skills of the gifted students. Kutlu and Gökdere (2013), in their differentiation research used the purdue differentiation model. In this research, it has been revealed that when the activities prepared according to the purdue model are classified according to the skill levels of the students in the regular classes, they will provide learning opportunities for students at all levels. In order to achieve the goals of this model, teachers have very important duties. Teachers need to internalize this model and similar models. There is a need for in-service training courses where the model will be introduced and taught. In the third stage of the model, the teacher should limit his behaviors and not compromise his identity as a guide. Otherwise, the unearthed product may have the feature of being the work of the teacher. Karaduman (2012) produced a thesis of examining the effect of geometry teaching differentiated on the basis of the parallel curriculum model for gifted students. The differentiated teaching process' affect on increasing creative thinking and academic achievement was examined in the study. It was stated as findings that the academic success of the experimental group students working with the differentiated units with the parallel curriculum model and all other researched elements was found to be significantly higher than that of the students in the controlling group of students who are gifted. Springer, Pugalee and Algozzine (2007) examined the effect of differentiated instructional design on academic achievement in their research. In the study, a computer-aided mathematics program was developed and implemented to support students' learning at their own pace. As a result of the research, it was determined that the post test mathematics achievement scores of the experimental group were significantly higher than the control group statistically.

Van Tassel-Baska, Bass, Ries, Poland and Avery (1998) aimed to examine the effect of differentiated instructional content on the scientific process skills of gifted students through integrated curriculum model in their study. The study group of the research consisted of 1471 diagnosed gifted students studying in schools in 15 different regions. In the study conducted with the formation of

experimental and control groups, it was revealed that there was a significant difference in the scientific process skills of the students in the experimental group compared to the students in the control group. Teachers who took part in the study also reported positive opinions about student interest and motivation for the differentiated unit. When the results of the mentioned researches and experimental studies examined, it is observed that curriculum differentiation models play an important and positive role in enriching and differentiating the curriculum of gifted students. In this context, researches should be conducted on the application of innovative methods and strategies with such models in order to meet the educational needs of gifted individuals. Cognitive, social, emotional and talent interests of gifted students should be evaluated in the education-teaching process and curriculum should be prepared in accordance with their needs. In this context, not only the curriculum but also the educational materials should be integrated or developed in a way that supports the creativity skills of gifted students in parallel.

In the context of in-service training of teachers with gifted students or other trainings they will receive, inclusive education should be taken into account, and training topics should be determined by evaluating all factors and their training should be supported by the senior institutions. Early identification services for gifted students worldwide have been expanded. In this context, these students should be introduced to differentiated education at an early age. In addition to in-service training, differentiated training modules should be added in universities' curriculum. These trainings should be applied more practically oriented along with theory. Project-oriented training and strategies should be integrated into the curriculum in order to enable gifted students to work in accordance with their potential in the curriculum. The final conclusions, discussions and suggestions reached in the research are presented to be brought to the literature in line with the limitations stated in this study. Some of the limitations that emerged during the study are that the related literature cannot be accessed in printed versions because it is generally abroad researches. Moreover, it is limited with the researches that has been brought to the literature and experimental studies have been made because it is a compilation study. Based on the data obtained despite the limitations of the research, it is an inevitable result that differentiation models should be included in the curricula prepared for both gifted and normal students.

Declarations

Conflict of Interest

No potential conflicts of interest were disclosed by the author(s) with respect to the research, authorship, or publication of this article.

Ethics Approval

This article is a kind of literature review. Because of this, it hasn't got an "Ethics Approval".

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Research and Publication Ethics Statement

- This material is the authors' own original work, which has not been previously published elsewhere.
- The paper reflects the authors' own research and analysis in a truthful and complete manner.
- The results are appropriately placed in the context of prior and existing research.
- All sources used are properly disclosed.

Contribution Rates of Authors to the Article

The authors provide equal contribution to this work.

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