

# Aspects of differentiation in teacher education: Exploring student teachers' experiences

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## ABSTRACT

It is well accepted that not only the ability but also the positive disposition of teachers towards various teaching practices (including differentiated teaching) can be largely traced back to their initial education and training. Therefore, the beliefs and experiences of future teachers for planning and implementing differentiated teaching activities are worth exploring. Based on the above, the purpose of the current study is to explore the beliefs and experiences of future teachers in differentiated teaching. The participants ( $N = 142$ ) were undergraduate students of a Greek university, who, during a six-month compulsory practical course, planned and implemented in schools a two-hour differentiated course. In particular, the difficulties they encountered in planning and implementing differentiated teaching were investigated, as well as the positive way in which they considered it to contribute to their teaching profile. Data were collected through the participants' responses to the course's open-ended evaluation form. Data were analyzed by two independent raters using qualitative analysis. Main findings have shown that the participants encountered difficulties in planning appropriate teaching activities based on the students' learning readiness, while challenges have emerged during teaching related mainly to class management. The participants believe, however, that the whole process has contributed significantly to their teaching skills as well as their motivation for using differentiated teaching and for teaching in general.

**Keywords:** Differentiated teaching, teaching practicum, teacher education, teaching methodology.

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## INTRODUCTION

### Differentiated teaching

Student heterogeneity poses increasing challenges for teachers, who are called upon to manage this broad ability spectrum through heterogeneous support approaches such as differentiated teaching (Tomlinson, 2015). Educators' role nowadays involves curriculum and material adaptation to students' needs, providing equal opportunities for high level education (Ismajli and Imami-Morina, 2018) as well as support for the maximization of all students' learning potential (Morgan, 2014). Theoretically, differentiated teaching is based on these qualitative differences of students' learning readiness, interests and learning profile. It draws upon conclusions on these features' initial assessment and the consequent lesson planning (Kaplan, 2009) through setting specific

learning outcomes expected for each learner (Evans and Waring, 2011). Educators can then differentiate on certain aspects of the teaching-learning process, such as content, process, and product (Tomlinson, 2014). These adaptations seem to have an effect on the classroom's organization as well (organizational differentiation) affecting learning corners, desk set-up, technology utilization (Kokkinos et al., 2020) and the overall classroom climate (Valiandes and Neophytou, 2017). Actually, differentiated teaching is about the transformation of the teaching-learning process in a dynamic, pleasant, self-regulated and effective procedure (Koutselini, 2008; Tomlinson, 2015). Ultimately, Tomlinson (2014) defines differentiated teaching as a teaching philosophy that is based on the hypothesis that students learn more effectively when teaching is adapted

to their various learning readiness levels, interests and learning profile.

### **Teacher education**

Differentiation of teaching, while considered to be highly democratic and effective for all, is also regarded as being a quite complex teaching approach. For this reason, according to the relevant literature, both in-service and pre-service teachers maintain a dubious attitude towards it, recognizing its pedagogical feasibility but also having strong resistance to its adoption.

This kind of beliefs, however, are considered to be formed mainly during their initial education and training and seem to influence significantly their pedagogical decisions and actions in the classroom (Chant et al., 2004; Levin and He, 2008; Pham and Hamid, 2013). It should be mentioned, though, that most teachers have little or no experience with how to differentiate instruction (Dee, 2011; Harbort et al., 2007) as few teacher preparation programs provide in-depth information on effective, responsive instruction and consequently on differentiated teaching (Tomlinson et al., 2003). Teacher education seems to be insufficient in preparing future educators for the challenging reality of the teaching profession (Korthagen et al., 2006) as there is a gap between theory and practice (Kessels and Korthagen, 2001; Loughran and Berry, 2005), mainly due to the strong emphasis given by teacher training syllabi on academic knowledge. This element has many negative implications for the gradual formation of student teachers' professional profile. Therefore, traditional pedagogical behavior, without much attention for the individual learner and its differentiated teaching support, emerges as a result (Korthagen et al., 2006).

### **Student teachers' beliefs on differentiated teaching**

Student teachers form their beliefs about teaching and learning quite early. As most research findings indicate, these beliefs are highly resistant to change (Bryan, 2003; Leavy et al., 2007; Raths, 2001; Richardson, 2003) and used by them as a means to judge the efficacy of teaching theories and strategies in relation to personal experience and practicality (Levin and He, 2008; Richardson, 2003). No matter how logical these strategies may seem, preservice teachers aren't eager to confront discrepancies or consider alternative forms of practice in their practicum and their subsequent professional life (Bryan, 2003).

In line with these findings Tomlinson et al. (2003) found that, although teachers may be knowledgeable about differentiation, they seldom employ it and, when it is used, it is not planned and substantive. According to West and West (2016), more training related to practices

of differentiation can lead to more positive attitudes toward that practice. Researchers argue, though, that these problems can be overcome and student teachers' beliefs can change, given that the process of change is participatory, experiential, and related to teachers' practice.

Moreover, research results have shown that student teachers themselves underline the need for adequate academic preparation in differentiating instruction (West and West, 2016). They seem, also, to require multiple opportunities in order to explore, practice, and apply their understanding of differentiation throughout their teacher preparation program and to connect their learning to practicum experiences (McCray and Alvarez McHatton, 2011; Sherman, 2009). On the other hand, some researchers suggest that teacher education does not seem to have significant effect on altering teachers' beliefs and attitudes, because previous experience as pupils, class observation, and schools' overall climate have more influence than teachers' training in shaping the way teachers actually teach (Tillema, 2000).

### **Student teachers' difficulties in planning and implementing differentiated teaching**

Despite the aforementioned differentiation's pedagogical significance, it is regarded by educators (in-service and pre-service) as a rather complex teaching procedure and skill (Deunk et al., 2015), since it poses challenges for them on both lesson planning and implementation. As regards lesson planning, challenges rise for in-service and student (pre-service) teachers related to cognitive/organizational and affective features. Particularly, both educators' groups seem to share extended consensus/concurrence on these challenges' cognitive/organizational causes as they mention limited preparation time (Chan et al., 2002), large class size, lack of resources, and their own lack of skills in differentiation (Chan et al., 2002). It should be mentioned that, contrary to in-service professionals, student teachers seem to focus on the lack of time for learners' initial assessment as the most significant cognitive/organizational difficulty for differentiating their lesson planning (West and West, 2016). On the affective level, difficulties appear for both groups mostly on motivation for differentiation (Callahan et al., 2003; Ruys et al., 2013) as well as lack of self-confidence, lack of self-efficacy and lack of perseverance particularly for in-service teachers (Hawkins, 2009). Still, not sufficient data exist on student teachers' affective difficulties in differentiating teaching.

As far as lesson implementation is concerned, studies indicate that in-service teachers fail to sustain differentiated teaching's use over time (Westwood, 2001).

As can be seen by the above-mentioned research findings, there are evidence connecting teachers' initial education, teaching beliefs and, consequently, specific

difficulties in differentiating their teaching. Little research has been done, however, relevant to student teachers' practicum experiences in implementing differentiated teaching, attempting to find the particular source(s) of their difficulties, challenges they are faced with and the positive learning experience they gain. Based on the aforementioned elements, the problem of insufficient findings on actual student teachers' experiences on differentiated teaching arises. Therefore, the necessity for such an investigation is deemed high in order for a more thorough understanding of the processes relevant to student teachers' differentiated teaching experiences to be explored and consequently valuable feedback to be gained regarding higher education syllabi.

## Methodology

The current study's goal is to explore student teachers' experiences in planning and implementing differentiated teaching in a practicum setting.

The research questions that drove the study were:

1. What are student teachers' difficulties in planning differentiated teaching?

The author hypothesizes that the participants' difficulties in planning will be connected to time management.

2. What are student teachers' difficulties in implementing differentiated teaching?

The author hypothesizes that the participants' difficulties in implementing differentiated teaching will be relevant to managing activities in class.

3. What is the student teachers' positive learning outcome by planning and implementing differentiated teaching?

The author hypothesizes that the participants' professional benefit will be the acquisition of teaching skills.

The participants of the study were undergraduate students ( $N = 142$ ) of a Primary Education Department of a Greek University (University of Thessaly in Central Greece). The majority of the participants were female (85%) and approximately 22 years old. According to the Department's syllabus, students, during the last semester's practicum of a four-year Bachelor program, are required to plan and implement in affiliated primary schools a two-hour differentiated course in the teaching of Greek as mother tongue. After initial theoretical lectures in university classes, they observe their students in the assigned school class and they level their learning readiness. At the same time, they are in close communication with the regular class teacher on whether students with learning or any other kind of difficulties exist. So the process of levelling their students' learning readiness involves class observation, thorough discussion with the regular class teacher and in some

cases reading students' written texts (limitations due to General Data Protection Regulation). It should be mentioned that the whole process was based mainly on observation due to the Greek legislation system, which makes the use of structured scales and systematic observation protocols in class a very rigorous process. Special permissions must be obtained in order to implement them, which entails a very complex and time-consuming process not apt for the tight schedule of an academic semester. Student teachers then plan their differentiated teaching approach and are supported by faculty members in weekly feedback sessions. During the implementation of differentiated language teaching at schools, student teachers are observed by mentors and faculty members, who provide immediate feedback. After the practicum's end, students turn in a portfolio including their lesson plan, materials used as well as a written reflection on the difficulties and the positive learning outcomes by their differentiated teaching practicum experience.

These written reflection texts were used as an instrument for the study's data collection and included questions concerning planning, implementation and learning outcomes for student teachers through the experience of differentiated teaching. Specifically, the questions were: "Which difficulties you faced in the planning of differentiated teaching", "Which difficulties you faced in the implementation of differentiated teaching" and "What do you consider to be the most important learning outcome you received as future educators from the experience of differentiated teaching".

Overall, data from reflective texts were then analyzed by two independent raters following Bryman's four stages of qualitative analysis. Specifically, these stages are: Stage 1: Looking for ideas within your data, Stage 2: Identify codes and create a schema, Stage 3: Coding, Stage 4: Relation to existing theories and ideas (Bryman, 2001). During the first stage, raw data were inserted in the software as separate files, were read by the raters and a rough search for ideas took place. Then, a preliminary coding system/schema was created based on the reflection and elaboration of the first stage. Afterwards, the final coding of the participants' answers was performed by the two raters independently in order for bias to be decreased as much as possible. The main findings of the final coding system/schema are presented in the results section of the current study. Eventually, the final coding system/schema was related to existing ideas deriving from the existing theory presented in the theoretical background of the study. This relationship is presented in the "Discussion" section of the current study.

It should be mentioned, overall, that data were analyzed using NVivo 10 software and during the coding stage two independent raters worked in order for the results to be more robust. Prior to the analysis, the raters were given some guidelines by the author of the current study. High inter-rater agreement was found on the final

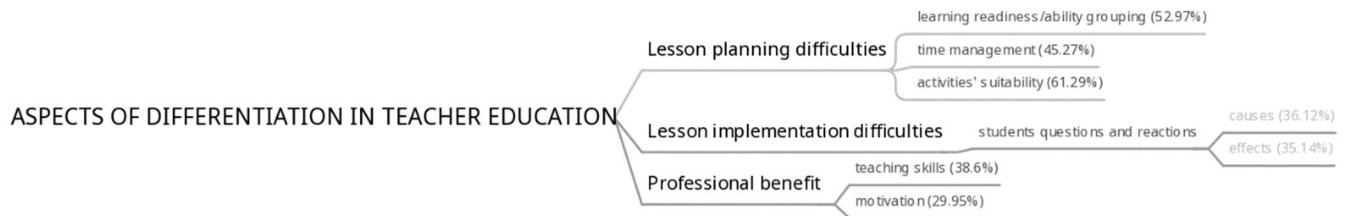


Figure 1. Coding system/schema.

coding process (Cohen's Kappa < .05).

## RESULTS

As regards the first research question (difficulties in lesson planning), the participants gave answers that could be coded first of all under the category "*learning readiness grouping*" (52.97%) (for an overall depiction of the coding system/schema, Figure 1).

Specifically, it seems that the participants faced difficulties in assessing subtle differences in students' learning readiness.

"I found difficulties in grouping students according to their learning readiness, especially because the differences between the middle and high readiness groups were not so evident" (Mary)

Additionally, they mention the element of time as a crucial factor in efficient observation/initial assessment, which also had an effect on the lesson's "flow"

"the three-day student observation was not sufficient for understanding students' readiness and consequently grouping them. Therefore, I was obliged to move during the lesson some students from the high readiness group to the middle one and vice versa" (Jane)

The participants elaborate on the aforementioned notion of time underlining that it actually had a negative effect. This was not only on students' observation but also on the procedure and accuracy of comprehending their readiness level and consequently managing their grouping.

"I think that we may have used more time, not only for students' observation but also for testing them through various procedures, so that we have a fuller understanding of their strengths and weaknesses" (Catherine)

Time seems to have affected also the lesson planning

process, since the participating student teachers had to synchronize in the class three different readiness levels.

"Time dedicated by students to work on exercises was something that also posed challenges. I found the process of creating three separate levels of exercises quite challenging and difficult, which all students should finish on the same time" (Lilly)

The main concern of the participants though seems to be correlated with class management issues, an element that has appeared during their lesson implementation and will be also discussed further on

"I have been trying to create three separate worksheets that students should finish simultaneously, so that they won't rise from their desks and prevent the others from finishing" (Penelope)

Therefore, it looks that all these references can constitute another category which could be named "*time management*" (45.27%).

Broadening their reflection, the participants underlined their concern regarding the suitability of the activities they were planning.

"Another challenge I was faced with was the feeling of uncertainty concerning the activities' suitability, in the sense that I was not sure if the activities would be helpful enough for my students and if there would be any cognitive benefit by these activities whatsoever. The planning of my differentiated lesson was a long process after all, because of constant reviewing" (Anne)

It appears though that this whole process offered them teaching skills

"I wanted to utilize comics in my differentiated lesson and it seemed that I couldn't find suitable ones on the internet. Therefore, I was engaged in the process of creating by myself some parts

of the worksheets in order for them to correspond to my students' taste and sense of humor" (Monica)

Therefore, these references seem to contribute to the formation of a new category for difficulties in planning differentiated teaching. This category could be named "*activities' suitability*" (61.29%).

As regards the second research question (difficulties in lesson implementation), the participants gave answers that were related mostly to class management issues stemming from the differentiated approach to teaching during their practicum experience. Their answers could be coded first of all under the category "*causes for students' questions and reactions*" (36.12%). Specifically, the participants seem to have encountered a somewhat reactive behavior by students during the lesson. Most participants attribute it possibly to insufficient initial assessment, which caused a mismatch between the perceived/assessed level of readiness by student teachers and the students' actual level of readiness.

"Students of the low readiness group had a hard time writing what the activity required. So, they needed my guidance in writing short but complete sentences. On the other hand, some high readiness students needed more guidelines in order to write their own text." (Natalia)

The aforementioned situation had other aspects too, such as creating the feeling of unfairness to students because of the different work process among the groups.

"Most students grumbled and murmured because of the different worksheets and thought that what was happening was unfair. That happened because they either thought that other groups' sheets were easier, either they hadn't the same sheet as their friends, either because some children had the opportunity to work in pairs while others hadn't. I won't say that I didn't expect that. Students are used all these years to work in a different way in class and that wouldn't change in the two weeks' time of the practicum." (Ina)

Secondly, what caused these difficulties in managing the class had also specific and evident results that posed additional challenges to the participants and can be coded under the category "*effects of students' questions and reactions*" (35.14%).

Some of the participants in order to face the situation had to make adaptations during their teaching.

"During the implementation of differentiated language teaching I was faced mainly with class

management issues. There was noise and upheaval because students were asking for help but without trying accordingly and an overall confusion prevailed. What's more, I was forced to change groups for two students on the fly, because they didn't have after all the learning readiness I thought they had." (Amanda)

Others faced another manifestation of students' reaction:

"Although I had already explained the meaning of the activity to them and that three different worksheets would be given, students started to choose the sheet they wanted and exchange them with their friends, something that held back the whole process and caused significant time loss." (Erica)

However, creative response to these students' reactions was given by some of the participants:

"As it was expected, the class was in turmoil for a few minutes but things got quieter when I explained to them that I have created these different activities so that they wouldn't be boring and they were given to them randomly." (Nikki)

As regards the third research question (positive learning outcome from planning and implementing differentiated language teaching), the participants' answers could be coded, firstly, under the category "*teaching skills*" in the first place (38.6%). Specifically, differentiated teaching seemed to contribute to the participants' lesson planning skills and competence.

"Through differentiated teaching I had the chance of dealing with each student separately, assessing his/her readiness and needs as accurately as possible and think about my expectations about him/her. Through this process my teaching creativity was enhanced too, as I was constantly seeking new ways of approaching teaching activities." (Anastasia)

Many participants focused on more specific issues, such as, again, the element of time.

"In my opinion, the most important learning outcome I got through the experience of planning differentiated teaching was the fact that I gained a more accurate sense of time and its contribution, so that teaching would be effective and substantive." (Joanna)

Additionally, differentiated language teaching seems to have contributed -apart from lesson planning- to lesson implementation as well, as some of the participants

mentioned that:

“Now I know how to maneuver in different situations. My critical thinking was boosted through this whole process of selecting and creating activities fit for my students’ needs and skills. I felt that I offered something more, that I broadened some children’s horizons and gave them self-confidence. Above all, my patience was doubled.” (Vicky)

Others reveal different issues that according to them form significant features of learning outcome through differentiated language teaching and, overall, seem to contribute substantially to teachers’ professional competence.

“I think that differentiated teaching offers the teacher the opportunity to see his/her whole class as a whole team and at the same time each individual learner as a unit. You try to find out your class’s function and rhythm through a constant process of each student’s needs’, abilities’ and weaknesses’ assessment.” (Penelope)

According to the participants, the connection between theory and practice of teaching is key in realizing the positive learning outcome stemming from the implementation of differentiated teaching. Particularly, they mention specific issues connected to the realization of learning processes.

“I found out in practice what I only knew in theory, that all learners are ready to learn when they will be given the suitable conditions in which their already existing capabilities will be boosted and come to surface creating at the same time fertile ground for the formation of new ones.” (Emma)

“I realized that each learner has his/her own rhythm and learning needs and that he/she is not obliged to adapt to what we, as teachers, try to impose.” (Ava)

“Everything is about knowing your students well and having built with them a mutual trust relationship. Also, you must be able to assess their specific learning features so that you can guide them to what is the most optimal learning path for them. Differentiated teaching is not something that happens once each month and that’s it.” (Isabella)

The participants also mentioned the element of the quality of interaction in class, which affected motivation both for students and student teachers (29.95%).

“The sense of success that my students felt

through the process of differentiated teaching had also an impact on me, because I was motivated positively as well. You are boosted through the children’s effective task completion and you realize that students are motivated through differentiation and respond to learning stimuli because they work on their level and evolve through their own unique way. I managed to feel that success.” (Evelyn)

“Differentiated teaching offers to the educator the opportunity to realize the students’ level through their mistakes and also be motivated him/her-self through their effectiveness.” (Victoria)

## DISCUSSION

The goal of the current study was the investigation of student teachers’ involvement in the planning and implementation of differentiated teaching in a practicum setting. In line with Bryman’s (2001) stages of qualitative analysis, the findings should now be discussed also in relation to existing theory.

Regarding the first research question (what are the participating student teachers’ difficulties in planning differentiated teaching), it should be noted that data could be categorized under three major and distinct categories, which contribute to the causes of the participants’ difficulties in planning differentiated lessons. Firstly, the readiness grouping method as well as time period caused significant difficulties not only in the later phase of creating suitable activities for each group but also in class management as well. This finding seems to be in line with those of West and West (2016), who have indicated that student teachers -contrary to in-service teachers- focus on lack of time for initial assessment which will ultimately lead to effective grouping. Another major issue rising from the data categorized under “time management”, concerns, on the one hand, the small amount of time that was available for the participants to prepare and plan their lessons within the framework of their teaching practicum, a constant teachers’ demand and “complaint” (Chan et al., 2002). On the other hand, they were faced with the challenge of planning their lesson in such a way so that all three groups would complete their work simultaneously and no time would be left in class so that noise and murmur will take place. This is actually not a simple effort and supports the complexity of the whole differentiation’s process found also by other studies (Deunk et al., 2015). Additionally, the actual activities’ suitability was another issue of major concern for the participants regarding their difficulties in planning a differentiated lesson. The limitations connected with the two previous categories (readiness grouping and time management) affected their ability and competence in planning differentiated lessons. Therefore, the participants were in doubt whether their planning would be successful. It should be mentioned that under the

“activities’ suitability” category the participants mentioned the “instructional objectives’ achievement” the least. This finding possibly indicates that the participants, while planning their differentiated lesson, partially ignored what had to be achieved according to the language syllabus and gave priority to challenges risen by the reality of the classroom, such as classroom management issues. Overall, it should also be underlined that the findings suggest that time and sufficient initial assessment seem to prevail and cause a “domino effect” for difficulties in planning and implementing differentiated teaching. Also, the category of “teacher preparedness” is not so highly ranked by the participants, possibly due to the fact that they are pre-service and not in-service teachers and therefore are more enthusiastic about the teaching profession, are in a different life phase, have not yet formed their professional identity/profile etc.

As regards the second research question (what are the participating student teachers’ difficulties in implementing differentiated teaching), it should be mentioned that the participants’ main difficulties were related to class management issues stemming from features/weaknesses of the planning process. The previously analyzed features of inaccurate (in some cases) readiness grouping, created an inaccurate “chart” of the participants’ classes and therefore their inability to categorize their students properly, create suitable activities for each group and manage the time needed for the completion of their writing tasks. This situation provoked constant questions by the students during the lesson, self-made changes among groups, noise and a general upheaval. All these, combined with the participants’ inexperience, created a rather unpleasant situation mainly attributed to the open-ended and not so systematic approach of student grouping during the initial assessment procedure. These findings suggest that an accurate, triangulated and sufficient initial assessment procedure is crucial not only for the successful implementation but also for the planning of differentiated teaching. Surely, the fact that class management issues hadn’t been foreseen by the participants confirms in a powerful way that planning is the basis on which educators’ inventiveness and profile will be based in order to effectively support students’ learning needs. Finally, it must be underlined that students were not used to working in such a differentiated approach; therefore, they were surprised by this new and somewhat radical approach to teaching and learning and maybe this is another underlying reason for them not wanting the worksheet given to them by the participants. This shows that although educators’ goal is to maximize their students’ potential, through “one-size-fits-all” teaching actually have the opposite result. Differentiated teaching is a whole different approach to teaching and learning as well as a “renegotiation” of the curriculum and cannot be done occasionally. Overall, these findings offer indications of student teachers’ difficulties in implementing differentiated teaching, elements that were

not sufficiently studied before contrary to in-service teachers’ implementation difficulties (Westwood, 2001).

As far as the third research question is concerned (what is the student teachers’ positive learning outcome by planning and implementing differentiated teaching), the participants found that the main positive learning outcome they gained through their differentiated teaching in a practicum setting was that of acquiring teaching skills and motivation. Regarding teaching skills, the mentioned mainly issues related to lesson implementation possibly because they have not yet fully understood the positive learning outcomes deriving also from lesson planning. Perhaps, due to the fact that their lesson planning proved to have been somewhat problematic, they have not ranked it very high in the framework of their practicum experience. However, this finding is rather surprising because the process of lesson plans’ constant reviewing advanced the participants on a metacognitive level and contributed to their acquiring stronger lesson planning skills. Also, the element of motivation seemed to have contributed to a successful learning experience for the participants. It seems that the current study’s findings are in line with those of others’ which support the notion that teachers continually re-invent themselves professionally through purposeful lesson preparation and analysis, colleague feedback, self-reflection, and on-going professional development, reading, and questioning (Subban, 2006). The added value of the current study is that the same elements seem to be evident for student teachers as well. Moreover, the affective level (motivation) has not been explored until now with the current study offering initial data on this topic.

The current study comes with certain limitations mainly regarding the convenience sampling on which data were collected. Another limitation was the process on which the students’ features were assessed. As it was described above, there are difficulties in implementing structured scales and systematic observation protocols in class and this whole situation creates an incomplete mapping of students’ abilities spectrum. What is more, the current study emphasizes on the role of a sufficient, accurate and triangulated initial assessment during the planning process in order for the implementation of differentiated teaching to be successful. Maybe protocols have to be agreed upon and instituted by university departments before any other action. The crucial role of initial assessment that the current study had highlighted has to be taken very seriously under consideration by higher education stakeholders. As such, it would be desirable to plan a professional development trajectory or redesign the teacher-training curriculum to enhance this skill in (beginning) teachers (van Geel et al., 2019).

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