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INITIAL TEACHER TRAINING AND THE NATIONAL PLAN FOR DIGITAL EDUCATION (NOP - ESF)

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This paper focuses on new teachers who attended the Italian National Plan for Digital Education (NPDE) training courses between 2015 and 2017. Started in 2016, the NPDE was further developed thanks to the contribution of the 2014-2020 National Operational Programme for the School, "skills and learning environments" which supported 275 NPDE local training hubs in order to organize four training modules aimed both at new teachers and the more experienced ones. This paper analyses the feedback provided by the 1,342 new teachers who filled in the evaluation questionnaires handed out at the beginning and at the end of the modules. The objective of this chapter is to highlight the relations between the preferences expressed by the new teachers within the initial skill assessment and the issues raised in the final questionnaires about the perception of the training programme.

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1 Introduction

Education and vocational training are deemed important not only for personal development but also as a contribution to social inclusion and cohesion and are considered crucial in solving unemployment issues.

Indeed, they are the main focus of the European strategy for developing competitiveness and sustainable growth. On 12 February 2001 the Recommendations of the European Parliament and of the Council mention "quality teaching" as a key element for European employment policies. In this respect, the Strategic Framework for Education and Training (ET 2020) includes quality of education and training among its four strategic objectives: *"to ensure high quality teaching, to provide adequate initial teacher education, continuous professional development for teachers and trainers, and to make teaching an attractive career-choice"*[1]. The OCSE TALIS inquiry draws up a programme for effective initial training based upon three integrated elements: *"solid academic knowledge of taught subjects, educational theory, including teaching skills and pupil support during learning, and practical classroom experience allowing the intern teacher to become adept in tackling daily difficulties in the field of teaching and in managing classrooms across a wide spectrum of situations"* (Eurydice, 2016, p. 11).

This specific attention on the educational system, along with the latest changes which affect our knowledge society, its technology and the related accountability models, directly impact on teachers' work and urge them to continuously review their professional skills (Eurydice, 2016); however, the effectiveness of their teaching does not only depend on their continuous professional development, but even more on the initial training. The European Commission's Communication on Rethinking Education[2] "*underlines the importance of the teacher's initial training and invites member states to review its effectiveness and quality with regard to teaching, and to promote the induction phase of the teaching profession"* (Eurydice, 2016, p. 45).

This induction includes a structured training programme which aims at building the identity of the teaching profession (Weiss, 1999; Feiman-Nemser, 2001). This is a very intense phase, when teachers identify difficulties and problems relating to their profession (Huberman, 1989; Veenman, 1984), but at the same time it represents an opportunity to be guided through the double role of teachers and members of the educational community (Kelchternmans & Ballet, 2002; Zeichner & Gore 1990).

[1] Council's Conclusions from May 12th 2009 on a strategic framework for European cooperation in the field of education and training (ET 2020), OJ C 119, 28.5.2009, p. 4.

[2] Commission's Communication to the European Parliament, the European Council, the Economic and Social Committee, and to the European Committee of the Regions, 20 November 2012, on Rethinking Education: Investing in Skills for Better Socio-Economic Outcomes, COM/2012/0669 final.

In almost two-thirds of the European countries, new teachers in the public sector attend mandatory induction programmes outlined within the national policies. Nearly 60% of EU teachers with less than five years' teaching experience, and generally below the age of 40, have been involved in these programmes. With the recent so-called "Good School" reform (*La Buona Scuola* - law no. 107/2015), Italy has started to improve its national educational and training system through measures which include, among the others, the 2016-2019 Training Plan[3] for teachers which sets out national priorities, financial resources, and concrete actions.

Among the latter, one seems specifically relevant to induction programmes: the **National Plan for Digital Education**, which reacts to the 2013 Commission's Communication "Opening up Education through New Technologies". This plan does devote 2 out of its 4 lines of action to initial training provisions:

- In-service training for teaching and organizational innovation
- Technical assistance for primary schools
- Strengthening initial training on teaching innovation
- Training for new teachers.

Started in 2016, the NPDE was further developed thanks to the contribution of the 2014-2020 National Operational Programme [4] for the School, "skills and learning environments" (more specifically, its ESF fund) which supported 275 NPDE local training hubs in order to organize four training modules aimed both at new teachers and the more experienced ones. Following modules were proposed: the 30-hour *Governing and Enabling Innovation* (aimed at School Headmasters and Administrative and General Service Directors), the 24-hour *Outlining and Accompanying Digital Innovation* (aimed at teachers with the role of "digital counsellor" within their schools); the 18-hour *Solutions for Integrated Digital Teaching* (aimed at those teachers who belong to the evaluation team), and the 18-hour *Strategies for Integrated Digital Teaching* (aimed at all teachers who wish to attend a training course dealing with the use of digital technology in the classroom).

This paper focuses on new teachers who attended the NPDE training courses between 2015 and 2017 funded by the 2014-2020 NOP.

Thus, our objective is to describe how new teachers approach ICT related

[3] The Plan was adopted by the Ministerial Decree DM n. 797 of 19 October 2016 and belongs to the extraordinary plan for the employment of new teachers included in law no. 107/2015

[4] The NOP contributes to the implementation of the ET 2020 strategy and to the improvement of the national educational system. It is open to all Italian schools divided into the three geographical areas identified by the Structural Funds: more developed, in transition and less developed regions. http://www.istruzione.it/allegati/2014/PON_14-20.pdf.

issues and the concrete use of the devices in the classroom, through the analysis of the training needs expressed in the two different contexts under observation, namely the Local training Hubs and the new Staff Training provisions, measured with two different tools: an evaluation questionnaire of the training courses delivered in the context of the training hubs, and the Skill Assessment tool in that of the New Staff Training.

2 Outline of the new teachers

The majority of the 1342 teachers who took part in the NPDE initial training chose the more general module on *Strategies for Integrated Digital Teaching* (83%), focused on testing and disseminating applications and methods together with active and collaborative learning processes, whilst exclusively in 2015, a few of them attended the modules dedicated to the role of digital counsellor, which implied a more complex training process[5]. In terms of gender and age range, the statistical profile of the new teachers follows the national trend[6]: they are mostly women (72%) aged between 35 and 44 (46%)[7]. 30% of them work in primary schools, whilst another 27% teach either technical-scientific subjects or humanities in the first stage of secondary school. Otherwise, with regard to the higher level of secondary schools, the highest participation was that of staff teaching literature, art, history, philosophy, pedagogy, and psychology (12%).

Analysing each of the three geographical areas of the Programme, when taking into account the type of module chosen, we learn that the highest number of teachers comes from Abruzzo (51% of Transition Regions), Campania (41% of Less Developed Regions), and Lombardy (23% of More Developed Regions).

As endorsed by a recent inquiry on digital skills and training needs of teachers located in the "Convergence Objective Regions (NOP 2007-2013)", pre-primary school teachers hoping for a wider digital training, attended the *Strategies for Integrated Digital Teaching* modules (92% of pre-primary teachers). Information Sciences'[8] teachers who have a higher mastery of digital tools preferred the modules devoted to digital counsellor. On the contrary, technical subjects' teachers chose to further explore evaluation related issues

[5] The digital counsellor (part of the school teaching staff) is responsible for identifying sustainable methodological and technological solutions (integrated learning environments, multimedia libraries, website upgrades, etc.), in order to disseminate digital culture and facilitate participation and creativity of the pupils. The teachers who took part in the digital counsellor training modules were largely male (58%).

[6] See Unità Italiana di Eurydice, La professione docente in Europa.

[7] The category aged 45-54 is also well represented (37%).

[8] According to the new definition of the examination classes, this includes staff who teach mathematics, or information technologies/science.

and attended the *Solutions for Integrated Digital Teaching (evaluation team)* module.

Table 1
NEW TEACHERS (2015-2017) PER REGIONAL DISTRIBUTION, NOP INTERVENTION TYPE (%)

Region	Digital counsellors	Teaching staff	Innovation teams	Total
Transitioning areas	**11**	**10**	**9**	**10**
Abruzzo	67	50	56	51
Molise	17	20	0	18
Sardinia	17	30	44	31
Less developed areas	**37**	**47**	**42**	**46**
Basilicata	0	2	1	2
Calabria	5	8	14	9
Campania	48	41	42	41
Puglia	29	25	22	25
Sicily	19	24	22	23
More developed areas	**53**	**43**	**49**	**44**
Emilia Romagna	20	16	15	16
Friuli Venezia Giulia	0	8	6	8
Latium	27	11	16	13
Liguria	7	4	2	4
Lombardy	17	23	27	23
Marche	0	2	3	2
Piedmont	10	13	12	12
Tuscany	17	15	15	15
Umbria	0	4	2	4
Veneto	3	3	1	3

3 Perception of the NPDE/NOP training provisions

This chapter analyses the feedback provided by the 1,342 teachers who filled in the evaluation questionnaires handed out at the end of the modules.

In the framework of the 2014-2020 ESF provisions, the European Commission addresses the implementation of proper and systematic evaluation processes to assess the achievement of the proposed objectives. Accordingly, the Italian Managing Authority drafted an Evaluation Plan[9] which outlines the activities to be carried out during the concerned period.

In line with this Plan, and in order to satisfy the need for an adequate data collection, *online questionnaires* were drafted in order to assess *the perception of the training modules*. These questionnaires have a common structure although they vary in terms of contents according to the subjects involved in each module.

The questionnaires were structured into a general section linked to the aims - as set out in the framework of the Call for Projects 6076/2016[10] - and a more

[9] The Evaluation Plan is part of the EU Ruling 1303/13, art. 114.

[10] Call for Projects 6076/2016 – Aimed at the Local Training Hubs identified for in-service training in the innovation of teaching and organizational methods – with the objective of financing the sub-actions related to action 10.8.4

specific section associated to the module attended.

The questionnaires asked participants a feedback on several aspects of the training received, with the following objectives:

- Acknowledging their general level of satisfaction;
- Assessing to which extent the training delivered was in line with participants' expectations;
- Assessing to which extent the training delivered positively motivated participants to the use of innovative technologies and methodological approaches.

The questionnaires were handed out before and after the modules' attendance; they are structured, standardized, and developed according to the most classical scaling techniques, used to surveying perceptions and opinions. They propose items against which participants express a score from 1 to 10.

This analysis aimed at assessing the level of knowledge of the NPDE after attending the module and its related usefulness for teaching; at the same time, the perceived benefits of the modules' contents were embedded within the two dimensions of their "effects on teaching" and "professional impacts".

With regard to the first dimension, the proposed aspects are connected to the themes tackled within each module, and by the NPDE overall provisions[11], while the second dimension includes aspects relating to the level of teachers' autonomy, their motivations, and self-confidence[12].

Results underline that teachers deemed useful the training contents firstly in strengthening their motivation towards the implementation of teaching innovation through digital technology, and in improving digital skills to be spent in concrete teaching actions.

On the contrary, those elements related to the development of digitalization of school administration and promotion of open data management have been judged as less useful also considering that these appear rather far from the overall teacher's profile.

"Training of school teachers and training in innovative technologies and methodological approaches" and to the implementation of specific training provisions.

[11] In detail, the themes are: strengthening the knowledge of the NPDE; promoting PTOF (Training Offer Triennial Plan) planning in line with the NPDE; strengthening the motivation to implement teaching innovation through digital technology; promoting the learning of digital solutions to be concretely applied in the classroom; promoting the creation of digital profiles (coherently with the NPDE) in the school; promoting Bring Your Own Device (BYOD) policies; promoting the development of the digitalisation of school and teaching administration; promoting the open sourcing of school data and services to private citizens and enterprises; promoting the planning and realisation of team work models.

[12] In detail, the themes are: improving personal level of professional autonomy; strenghten personal motivation; improving self-skill confidence; starting and consolidating relationships with colleagues, with a view to share and compare professional experience; developing new web-based projects with course colleagues.

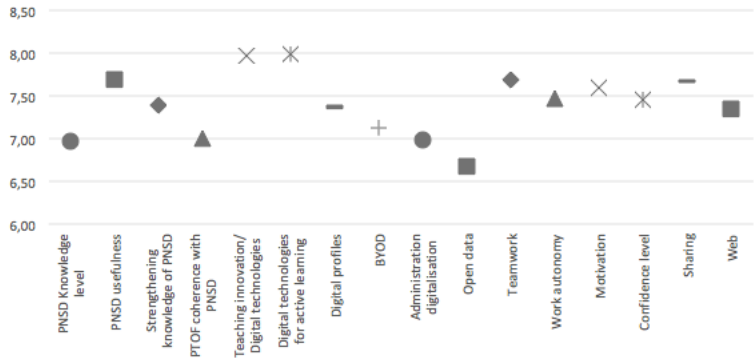

Fig. 1 - Effect on teaching and Professional impacts (average value)

It is possible to identify a few significant meaningful findings in relation to the gender of the participants and the educational stage they teach in[13].

In the first case, male teachers declare a better mastery of digital skills in terms of *elaborating information, communication, content creation, and security issues*[14]. Inversely, female teachers assigned higher scores to other course contents such as *NPDE knowledge*, p*romotion of the coherence between PTOF and the NPDE*, *improving the motivation towards implementing teaching innovation through digital technology* and to other aspects of the professional scope (*Strengthening motivation*, *improving the level of self-confidence in own skills*).

Considering the educational stage, primary school teachers are the most enthusiastic in terms of perceived usefulness, whilst secondary school ones are the most critical.

[13] These relations were analysed via the use of variance analysis (ANOVA), a statistical technique which allows for the comparison between two or more groups of data based on the internal and external variabilities of the groups (Levine D.M. *et al.*, 2002).

[14] Regarding these four digital skills, the self-positioning levels were Basic user, Autonomous and Advanced.

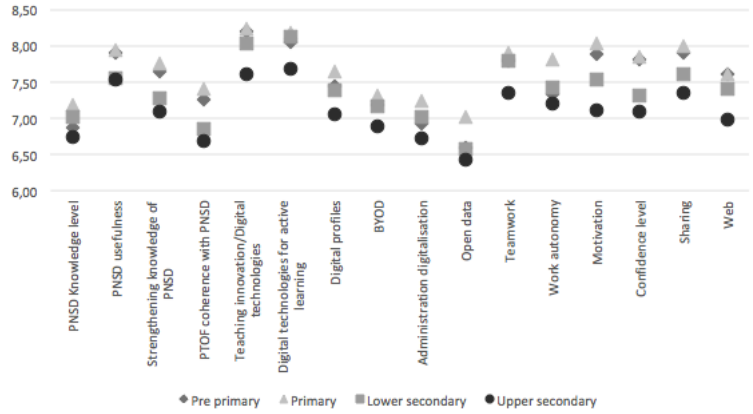

Fig. 2 - Effect on teaching and Professional impacts per teaching stage (average value)

In order to understand whether the training offer was perceived as helpful and relevant to daily teaching, the relation between the previous level of knowledge of the NPDE and the relevancy of its learning outcomes has been studied. The level of this relation is rather low. This means that a greater level of knowledge of the NPDE does not necessarily imply the perception of a greater relevancy of the course contents to daily teaching activities, or a consequent professional development.

The analysis of the relation between the "effects on teaching" and "professional impacts" dimensions shows a strong association between the motivation to implement teaching innovation through digital technology, and the improvement of the professional autonomy level, professional motivation and self-skill confidence.

Finally, teachers highlight how their improvement in digital learning goes together with a rise in the level of professional autonomy.

As a further in-depth level of reflection, we analysed the principal elements[15] in order to gather into a single dimension the two macro-categories (effects on teaching/professional impacts) and assign an overall scoring to each teacher. This allowed to compare the teachers' opinions and identify those differences which occur according to the various teaching stages: as already underlined the more critical scores are assigned by those teachers who work on the higher educational stages.

[15] The Analysis of principal elements transforms a group of inter-related numerical variables into a smaller number of items called principal elements, allowing a better synthesis of the information mastered (Di Franco, 2005).

4 New teachers between Skill Assessment and the NPDE

> "*The teacher must be given the opportunity to continue to systematically reflect on his or her teaching practices, to carry out research, to evaluate the effectiveness of educational practices and to modify them in necessary, to evaluate his or her needs with regard to further training, to work in close collaboration with colleagues, teachers, and the local community"* (OECD, 2014)

In this framework, Skill Assessment tools are important devices to develop a reflection on personal abilities and consequently plan the individual professional development and that of the more general learning environment (Mangione & Pettenati ,2017).

The skill assessment tool used is made up of 47 descriptors, structured around 9 dimensions and 3 areas of competences (Teaching, Organization and Professionalism) which outline the professional profile of the teacher[16].

The objective of this chapter is to highlight the relations between the preferences expressed by the new teachers within the initial skill assessment and the issues raised in the final questionnaires about the perception of the training programme. Thus, this analysis aims at understanding the relationship between the declared professional needs and the actual training received on digital technologies, also through a comparison with the opinions of the more experienced teachers.

The educational system has been witnessing a sudden development of the ICT devices for the last decades, thus the experts started to analyse the level of integration of those technologies in the professional practice of teachers. (Muscarà & Messina, 2014).

Therefore, the related training provisions became an important issue for Italian teachers. According to the 2013 TALIS Survey, this is one of the most important training needs, pointed out by the teachers, both in relation with the teaching implications and for the concrete use of ICT devices in the professional environment.

Going back to the results of our analysis, the highest and lowest scores are those related to the dimension of "effect on teaching". Indeed, the *motivation to develop teaching innovation through digital technology* and the *improvement of digital skills to be spent in concrete teaching actions* are the items with the highest values. This result is confirmed by the answers given by the trainees – independently of their experience – where the scoring on motivation within the second dimension is the highest.

On the other hand, the *development of the digitalisation at school and*

[16] For an in-depth look at the initial Skill Assessment template, see the following link: http://neoassunti.indire.it/2018/toolkit.html.

teaching administration, *promoting open sourcing school data and services to private citizens and enterprises* and *promoting the coherence between PTOF projects and the NPDE* are the aspects on which the training course seems to have had the lower impact (see above chapter 2).

Indeed, teachers' openness to the use of ICT in their daily work is actually influenced by several factors both intrinsic and external (Rogers, 2000; Ertmer, 1999; 2005). The outlined model of the *Technology Acceptance* (Bagozzi *et al.*, 1992; Davis *et al.*, 1989, Venkatesh *et al.*, 2003) identifies among the intrinsic factors, the perception of usefulness and that of user-friendliness of the ICT devices.

Our empiric evidences confirm the statistically meaningful relations between the concrete use of the learning outcomes, the level of helpfulness of the ICT devices in the professional context and their user-friendliness. A direct consequence of the latter can be considered the self-assessment process of the digital skills.

Indeed, less than the 30% of teachers consider themselves as "advanced users", although varying according to the kind of skill assessed.

In general, male teachers declare a better mastery of all digital related issues (fig. 3).

Finally, about 95% of the teachers plan to concretely use the learning outcomes of the training received, in their classrooms.

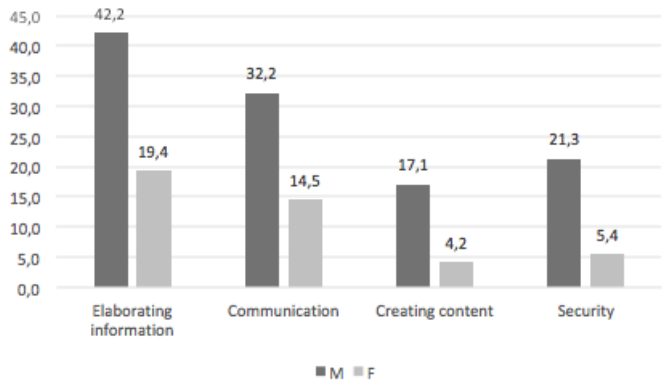

Fig. 3 - Digital skill self-assessment: Advanced users per gender

Considering the initial skill assessment carried out, the items related to the three competence areas, Teaching, Organization, and Professionalism have been further analysed. For each area, we identified three ranking levels of teachers' self-assessment with regard to personal work experience.

Within the Teaching area, teachers declare to be highly skilled only in 10% of cases, whilst most of them place themselves at the average level. On the contrary, in the Organization and Professionalism areas about a half of the teachers place themselves at the highest skill level.

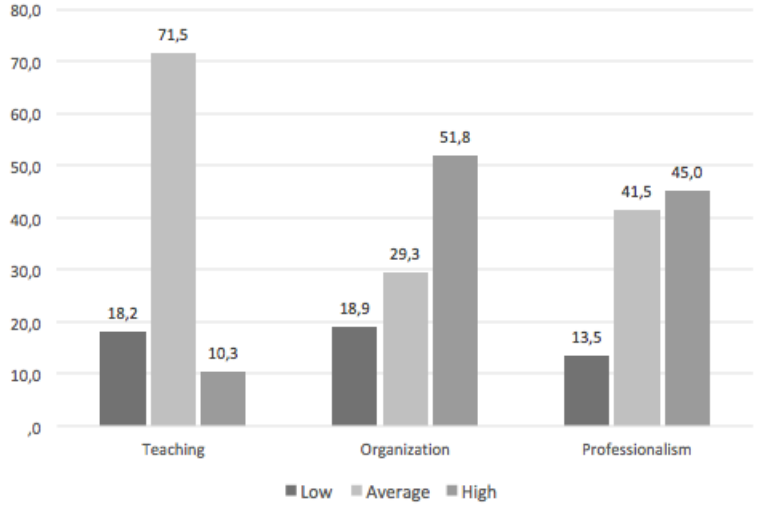

Fig. 4 - Skills Assessment: Areas of expertise

Going into the detail of the skill families, we notice that in the **Teaching** area many teachers show difficulties in setting up learning schemes. In accordance with the findings highlighted by Magnoler, Pettenati *et al.* (2017), teachers are particularly weak with regard to three aspects: properly *mastering the key concepts of their subject in order to sufficiently outline an educational path fitting to each pupil and to the overall class*; *identifying obstacles to learning and the reasons behind them*; *identifying those aspects that are functional to learning*.

Confirming the data gathered in the NPDE questionnaire, about a half of the new teachers declare to be able to take advantage of the opportunities offered by digital technologies to improve learning processes and supporting their pupils.

In the area of **Professionalism**, the most widely selected family of skills is that of *Taking on the ethical obligations and issues of the profession*, particularly those related to the respect of rules, roles and commitments undertaken within the professional context, and mutual loyalty, cooperation and trust as key points for the professional choices. Again within the area of Professionalism, it is interesting to acknowledge that 70% of teachers declare that their digital skills are developed enough to support their pupils in the use of technology (Magnoler

et al., 2017).

If we compare the area of technology with the digital skill self-assessment, we notice that the teachers who identify themselves as "advanced" users are also the most likely to declare to be able to take advantage of the potential of digital devices and the internet to collaborate effectively and productively with other colleagues and/or experts (72% versus 59% for plainly autonomous users and 42.5% of basic users).

With respect to the dimension of taking c*are of continuous professional development*, we observe a low level of self-confidence in the capacity to make evident and thus share with different actors (school headmasters, parents, colleagues) their improved expertise, as well as the difficult to draw from the reflection on the problems that affect teachers, useful elements to innovate teaching practices. Indeed, these aspects only gather 30% of preferences.

In the area of **Organization**, teachers' preferences do not focus on specific families of skills. Although the 52% of teachers place themselves at the higher level in this area, some of the items are scarcely selected. Indeed, less than one third of the teachers declare to be able to identify the elements of innovation which would benefit their school context, while slightly over one third of them feels open to the dialogue and joint research with their colleagues regarding their own professional practices.

Furthermore, only the 29% of the surveyed teachers would be able to propose and manage consultation moments with pupils to improve the school's organization, whilst as little as the 23% feel able to effectively master current educational issues and manage a group of parents on such themes. Regarding the choice of these items, there are important differences among the various school stages: they were addressed by the 66% of the higher secondary school teachers: exceeding the figure related to other colleagues even to 10 percentile points.

In short, there is no difference between new teachers and more experienced ones in their approach to the use of ICT devices in teaching.

However, it appears necessary to reflect on this category: the concept of "new teacher" needs to be questioned as it does not *count* the years of precarious employment which strongly characterise the teachers within the Italian educational system. Still, in-service training is perceived by the surveyed teachers as a useful moment for an overall reflection on their profession, regardless their level of experience.

Concerning the training module attended, the positive perception of its usefulness in terms of motivation to implement teaching innovation through ICT and the learning of digital skills to be concretely used in the classroom, confirm the importance of training in this field. However, this should take into account the needs outlined in the initial skill assessment directly connected

with the organization of the learning environment, where thus, according to Braukmann (1993) the focus is on technology as a method, in other words as an overall educational strategy which supports learning processes.

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