Journal of Modern Education Review, ISSN 2155-7993, USA
December 2018, Volume 8, No. 12, pp. 932–938
Doi: 10.15341/jmer(2155-7993)/12.08.2018/007

http://www.academicstar.us

Teacher Training in the Perspective of Education 3.0: An Exploratory Research on Working with Projects in a Brazilian School*

Rafael Faermann Korman, Bettina Steren dos Santos
(Pontifical Catholic University of Rio Grande do Sul, Brazil)

Abstracts: The Digital age requires more and more training of teachers who develop skills consistent with the new demands of society. Among these skills, work with projects presents itself as an alternative to promote collaboration among students, deal with real problems and develop students' autonomy. Such characteristics comprise the Education 3.0, in which the role of the teacher is no more simply a transmitter of knowledge and guardian of the order, but of designer and manager of a complex set of projects. This article aims to analyze the formation of teachers of a private school in the year 2016, in relation to the understanding of work with projects and its importance for contemporary education. As a methodology, an exploratory research applied to 73 teachers was carried out through a questionnaire containing nine closed questions and an open question about the understanding of the proposed activity. On the closed questions, an analysis of variance (ANOVA) was performed using the Microsoft Excel tool. On the open question, a discursive textual analysis was performed using NVivo software. The results showed that teachers, even without the previous explanation about the concepts involving work with projects and considering the little study carried out on the subject in the initial formations, succeeded in appropriating the contents covered, especially by means of the active methodology developed in the meetings. The evaluation of the proposed training with excellent results reveals the appreciation for the theme, by the methodology, but it can also point out that it is possible to work with innovative subjects according to the given approach, which is positive against the necessary changes in the Educational field. The results of this research can be used as future studies on teacher training using active methodologies or from the perspective of Education 3.0 to work subjects considered taboo or complex, to awaken the interest of the teachers.

Key words: teacher training, education 3.0, project pedagogy, project management

1. Introduction

The digital age, symbolized by the consolidation of the internet in society, seems to require different conceptions of school and teacher. According to Pérez Gómez (2015), the teacher must be more a learning tutor, and teacher formation needs more practical courses, creating appropriate learning experiences with critical awareness, reflection and fundamental theoretical notions.

In their study on the main educational reforms of the late twentieth century, Tardif, & Lessard (2011) point

* This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nivel Superior – Brasil (CAPES) – Finance Code 001.

Rafael Korman, Me., Harvard Graduate School of Education, Pontifical Catholic University of Rio Grande do Sul; research areas/interests: data-based decision-making, professional development and teacher training. E-mail: korman.rafael@gmail.com.

out that the teaching profession must evolve according to a logic of professionalization, in the sense of a status recognition by society and also as development by the teacher of a repertoire of specific competences and self-knowledge that contribute to the learning of the greatest possible number of people. According to these authors, in several countries, there is a finding of a high level of stress and lack of time to face all the difficulties encountered in the school environment.

On the other hand, Tardif (2014) points out as one of the major obstacles to teacher training what he calls the "*applicationist* model of knowledge". In other words, the student spends years attending classes in the form of disciplines and fragmented content, then moves on to the internship where he applies this knowledge, and, at the end of his training, he works alone and realizes that many of these contents do not appear properly in their routine.

In line with the need for changes in this framework, Lengel (2013) develops the concept of Education 3.0, defined as the teaching process that makes use of new technologies, considering not only the impact of collaborative and personalized learning coming from the increasing use of the internet, as well as the reuse of learning contents and the recognition of this learning by formal or informal methods. In this way, the student needs to work with collaborative projects to solve relevant issues to society.

Working with projects encompasses a greater range of skills (Hernández, 1998), but initial training is lacking (Ortiz & Clementino, 2014) and there is difficulty in breaking away from traditional models (Prasinski, 2015). Thus, it is in this scenario of changes that this article aims to analyze teacher training in a Brazilian school in the year 2016, in relation to the understanding of work with projects and its importance for Education 3.0.

2. The Work with Projects as Teaching Competence

According to Tardif (2014), the teachers' knowledge derive from several sources and have a strong experiential character. In his work, the author tries to understand the origin of knowledge that the teachers must have to practice their profession. Among these knowledge are the experience knowledge, or practical knowledge, which also consider the interaction between the teacher and the other actors, the rules and obligations set out in their work and the functioning of the institution. On these considerations, it is important to stress three points: a) that there is a lag between the initial and the reality of teaching, noticed by the teacher; b) that there is, in the first five years, that the teacher seems to acquire their "fundamental" experience, creating their personal "way of teaching"; and c) that these experiences do not have the same value, since that establishing a relationship between a student and teacher is more important than knowing the rules of the Secretariat, for example. Therefore, it is possible to say that the experience or practice is a process about how teachers value their training to better adjust to their work.

This set of knowledge becomes more complex as the digital society requires a more guiding teacher than an expository one. For Lengel (2013), the role of the teacher is no longer simply a transmitter of knowledge and guardian of order, but a complex manager and designer of a set of projects, students and often changing activities, working in close collaboration with other teachers and professionals from the University and the labor market to ensure that the students' project is pointed to the right direction.

Lengel (2013) sets, still, from the necessity of the development of new skills for the 21st century student, six principles of Education 3.0, according to Figure 1:

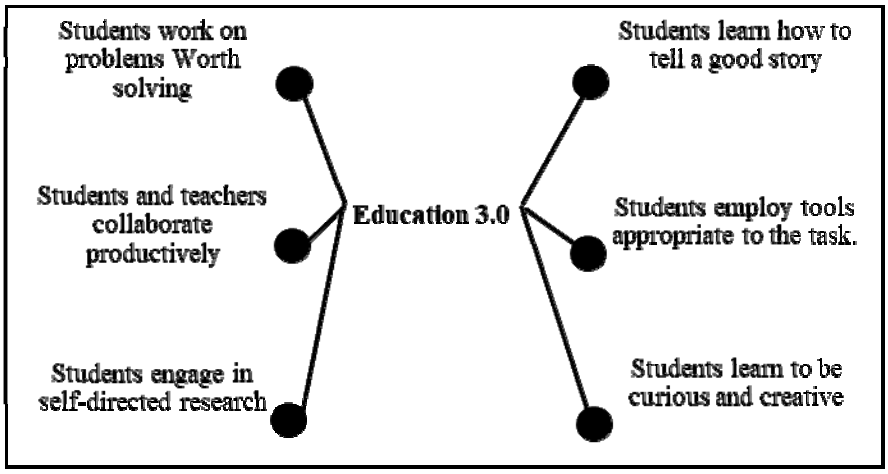

Figure 1 Six principles of Education 3.0
Source: Lengel (2013)

In addressing education 3.0, Bopprê (2013) states that this new concept is based on the interaction of people with technology and learning environments, aimed at solving their dilemmas, and increasingly personalized teaching. According to Lopes and Oliveira (2017), this innovative perspective begins to appear in some higher education institutions (HEI), suggesting:

- abolition of disciplines in favor of projects; competency-based curricular matrices;
- semester modules around integrating projects;
- pedagogical residence;
- career path.

All these aspects have in common the incentive to the competence to develop and to manage projects. Project-based learning (PBL) as a teaching methodology emerges in recent years because of a revolution in learning theories and changes in the world in the 21st century. In short, it can be defined as a systematic method for developing skills through research around real-world issues (Buck Institute for Education, 2008; Bender, 2014).

However, there is still a great deal of ignorance about how to work with projects, both in the pedagogical sense, classroom work (Prasinski, 2015) and project management, transversal to the disciplines and that covers more aspects of school organization (Korman, 2013; Ortiz & Clementino, 2014).

On the one hand, HEIs increasingly require multidisciplinary, multitasking and systems-oriented professionals, that is, who can see how different aspects of the organization interact and influence each other.

3. Methodology

This study occurred through an exploratory research, which, according to Gil (2008), aims to develop and clarify concepts and paradigms. A survey was carried out with 73 teachers for the data collection in a Brazilian private school. It is worth noting, still, that this school started in the year 2015 a deployment process of Education 3.0 in the school curriculum, having as main features the full-time education, the use of new educational technologies and the adoption of active learning methodologies. In 2016, one of the topics of teacher training was "projects and processes management", to perform an alignment in relation to these key concepts for the organization. Over the course of eight months, seven groups of 8 to 12 teachers undertook training in the proposed

theme for seven 1-hour and 40-minute meetings. The proposed activity was mediated by the project manager of the school, by means of active learning methodologies. In the end, each participant received an assessment questionnaire.

Next, a questionnaire containing nine closed questions was applied on the following topics:

- lesson planning;
- content worked;
- clarity of language and communication;
- use of didactic resources;
- class time;
- appropriation/knowledge;
- of the concept of systemic thinking; appropriation/knowledge;
- of the concept of project management; appropriation/knowledge;
- of the concept of process management; active learning methodology (working on content without the prior exposure of the teacher/facilitator).

The questionnaire was proposed to identify the teachers' understanding of the training activity performed. The items present in the assessment form were chosen through a brainstorming between the conducting teacher of the activity, responsible for the training, and the direction of the school. Nine evaluation items were collected on the activity, using a 5-point Likert Scale (value 1 for "lousy" and value 5 for "excellent"). It was also aimed to identify alternative observations by means of an open question, entitled "Comments, criticisms or suggestions".

All the teachers present in the training were submitted to the research. After the end of the meeting, the teachers fulfilled the printed evaluation form, without identification, and handed it to the driver of the activity.

The data referring to the objective questions were tabulated in a Microsoft Excel spreadsheet, a tool that was also used for the elaboration of the graphs. The open question "comments, criticism or suggestions" was evaluated through the discursive textual analysis of Moraes (2003) to generate the categorization of the corpus materials, using the NVivo software as a support tool. The results obtained are presented in the following section.

4. Results

The following section will present the results from this survey. Firstly, the analysis about the open question "Comments, Criticisms or Suggestions". Then, the results obtained from the data analysis in Excel for the quantitative items.

4.1 Open-Ended Question Analysis

The profile of the participants was quite varied, with teaching representation of early childhood education, elementary education and high school. A total of 73 questionnaires were collected, and 48 teachers wrote some answers to the open question - the other 25 left blank.

The discursive textual analysis led to the creation of three predominant categories in the responses of the 48 comments:

a) 25 (52.1%) referred to the "quality of the methodology", which may be linked to the degree of innovation of the dynamic with active methodology.

b) 8 (37.5%) mentioned the "time issue": given the high-quality score, the lack of time probably refers to the desire for more time, not bad planning.

c) 10 (20.8%) were related to the "importance of the theme", which can reveal at the same time the perception of the relevance of the work with projects and the lack of study of this theme in the initial formation.

Figure 2 generated by NVIVO software shows the distribution of the teachers' assessment comments about the categories of analysis.

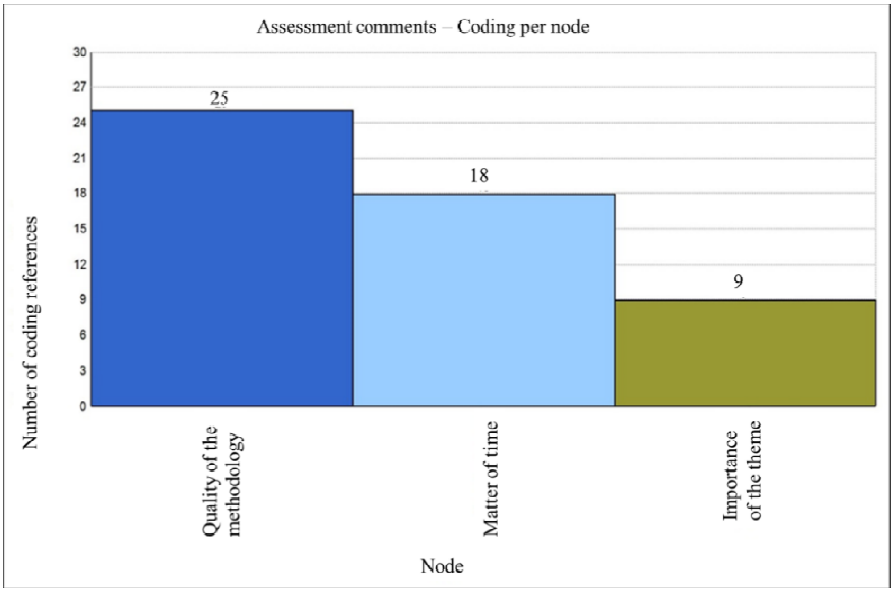

Figure 2 Number of Assessment Comments per Category of Analysis
Source: the authors.

Comments on the "quality of the methodology" may be related to the degree of innovation of the dynamics. This occurred because no activity has been based on a lecture on the topic and that has allowed the teachers to exchange experiences with each other and built solutions. That is, according to Pérez-Gómez (2015) what teacher training must seek in the Digital age.

The "matter of time", that is, of a short time, can be seen by both the perspective of the topic was to the liking of the public and more time was desirable, as by the look of it, for everything that has been worked on training, the time was short, or bad. Analyzing the notes assigned by teachers and the reference in the comments on the quality and importance of the subject, it can be concluded that the dominant issue is the desire for more training moments with this theme. Nevertheless, it is resuming what Tardif (2014) points in relation to fragmentation of the work and training of the teacher: though this small moment of training is appropriate, it may be, still insufficient to account for the full development of the teacher and your anxiety in the face of the changes that the 21ST century requires.

Last, comments on the "importance of the theme" may be, at the same time, the perception of the importance of working with projects and the lack of study of this theme in the starting line-up, as shown by Ortiz & Clementino (2014). As the teacher must become increasingly a curriculum designer (Lengel, 2013), skills such as working with projects are essential.

4.2 Closed Questions Analysis

A statistical study of analysis of variance (ANOVA) was carried out to evaluate whether there were significant effects between the number of meetings and the assessment topics of the 73 questionnaires. Table 1 shows the average scores of all teachers per assessment topics and by date. Table 2 presents the two factor

ANOVA without replication.

Table 1 Summary of the Average Scores per Assessment Topics in Each Date

Meeting	Meeting 1	Meeting 2	Meeting 3	Meeting 4	Meeting 5	Meeting 6	Meeting 7	Average
Lesson planning	4.900	5.000	5.000	5.000	5.000	5.000	5.000	4.986
Content worked	4.800	4.900	5.000	4.636	4.875	4.909	4.917	4.862
Clarity of language and communication	4.900	4.900	4.909	5.000	5.000	5.000	5.000	4.958
Use of didactic resources	4.900	4.800	5.000	4.909	4.625	4.636	4.917	4.827
Class time	3.600	4.300	4.000	4.000	3.750	4.455	4.833	4.134
Appropriation/knowledge of the concept of systemic thinking	4.500	4.700	4.454	4.727	4.750	4.909	4.667	4.673
Appropriation/knowledge of the concept of project management	4.500	4.900	4.636	4.727	4.750	4.909	4.750	4.739
Appropriation/knowledge of the concept of process management	4.400	4.900	4.545	4.636	4.750	4.909	4.750	4.699
Active learning methodology (working on content without the prior exposure of the teacher/facilitator)	4.600	5.000	4.909	4.818	4.750	5.000	5.000	4.868
Average	4.567	4.822	4.717	4.717	4.694	4.859	4.870	

Source: the authors.

Table 2 Two Factors ANOVA without Replication

Source of variation	SS	dl	MS	F	P-value	F crit
Rows	34.435	72	0.478	2.713	6E-11	1.314
Columns	35.574	8	4.447	25.226	2E-33	1.954
Error	101.537	576	0.176			
Total	171.546	656				

Source: the authors.

Data on Table 1 show that the assessment about the project activity was considered excellent in all the meetings, with a grade always above 90% (4.5). The answers about the appropriation of the knowledge of the worked concepts were also considered excellent, with average scores of 4.673, 4.739 and 4.699, even without prior teacher exposure of these definitions. Therefore, the methodology used, in agreement with the discursive textual analysis, also had a very high regard of teachers, with an average of 4.868.

It is also possible to conclude from the ANOVA results that is a significant effect of the meetings (rows), regardless of the columns (meetings). In other words, analyzing Table 1, it is possible to see that in Meeting 1, regardless of the assessment topic, there is a difference in the scores given in this meeting comparing to the other meetings. One cause of this discrepancy could be related to the fact that this was the initial meeting, in which the facilitator of the activity still does not have enough confidence whether planning will be effective. Anyway, even being the meeting with the worst score level, the average score was still 4.567, which is above 90% of approval.

According to the ANOVA, it can be noticed that there is a significant effect of the assessment topics (columns), regardless of the meetings. That is, analyzing Table 1, the scores in the column “Class Time”, regardless of the meeting, are slightly lower than the other topics. This result is aligned with the answer given by the teachers in the open questions analyzed previously.

After conducting the qualitative and quantitative analysis of the results, it is possible to infer that, although the theme of projects is still unknown, and little explored in teacher training, especially in relation to project

management, the approach of the active methodology, from the perspective of Education 3.0, can favor learning and awakening to the development of the theme. Even with little work time, if the activity is developed to promote the protagonism of the participant, use their previous knowledge and promote autonomous learning, even non-prioritized subjects can become relevant and stimulating.

5. Final Considerations

The results showed that teachers, even without the previous explanation about the concepts involved in working with projects and considering the little study carried out on the subject in the initial formations, managed to appropriate the content addressed, especially through the active methodology developed the meetings. More than that, they pointed to the need to work with the theme for a longer time, given the importance identified in relation to this subject.

The evaluation of the proposed training with excellent results reveals the appreciation for the subject matter, by the methodology, but it can also point out that it is possible to work with innovative subjects, according to the approach given, which is positive in the face of the necessary changes in education. In this way, the challenge for the teachers who participated in this training is to seek with autonomy the necessary knowledge in this new moment that our society is passing through.

The results of this research can be used as future studies on teacher training that use active methodologies or from the perspective of education 3.0 to work on topics considered taboo or complex, to arouse the interest of the teaching staff. As a suggestion for further researches, the teacher could be followed in classroom to verify whether the new concepts about projects that were learned are put in to practice in classrooms.

References

Bender W. N. (2014). *Aprendizagem Baseada em Projetos: Educação Diferenciada Para o Século XXI*, Porto Alegre: Penso.

Bopprê V. (2013). "Educação 3.0 é a tecnologia que integra pessoas", Porvir. 26 mar. 2013, accessed on 11th May 2017, available online at: http://porvir.org/educacao-3-0-e-tecnologia-integra-pessoas.

Buck Institute for Education (2008). *Aprendizagem Baseada em Projetos: Guia Para Professores de Ensino Fundamental e MÉDio*, Porto Alegre: Artmed.

Gil A. C. (2008). *Métodos e Técnicas de Pesquisa Social* (6th ed.), São Paulo: Atlas.

Hernández F. (1998). *Transgressão e Mudança na Educação: Os Projetos de Trabalho*, Porto Alegre: Artmed.

Korman F. R. (2013). *Projetos para Escolas na Prática*, Porto Alegre: Autonomia.

Lengel J. G. (2013). *Education 3.0: Seven Steps to Better Schools*, Teachers College Press.

Lopes M. and Oliveira V. (2017). "Cursos de Formação de Professores Mudam Currículo e Usam Novas Metodologias", Porvir. 17 mar. 2017, accessed on 7th May 2017, available online at: http://porvir.org/cursos-de-formacao-de-professores-mudam-curriculo-usam-novas-metodologias.

Moraes R. (2003). "Uma tempestade de luz: A compreensão possibilitada pela análise textual discursive", *Ciência & Educação*, Vol. 9, No. 2, pp. 191–211.

Ortiz F. C. and Clementino A. (2014). "A gestão e o empreendedorismo nos cursos de formação docente", *Revista Eniac Pesquisa*, Vol. 3, No. 2, pp. 214–227.

Pérez gómez Á. I. (2015). *Educação na era Digital: A Escola Educativa*, Porto Alegre: Penso.

Prasinski M. E. T. (2015). "Avaliação no ensino de ciências: Estudo da implantação da pedagogia de projetos em escola pública de ensino básico da região metropolitana de Porto Alegre", Dissertação de mestrado, Porto Alegre: PUCRS.

Tardif M. (2014). *Saberes Docentes e Formação Profissional* (16th ed.), Petrópolis, RJ: Vozes.

Tardif M. and Lessard C. (2011). *O OfÍCio de Professor: História, Perspectiva e Desafios Internacionais* (4th ed.), Petrópolis, RJ: Vozes.