

FORM-ACAO@CONTINUADA: EXPERIENCING INNOVATION (GOOGLE INNOVATOR #BRZ17)

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Abstract: This paper aims to analyze the impact caused by the implementation of the project Google Innovator #BRZ17 entitled “form-acao@continuada: experiencing innovation” and its unfolding in 2018. For this purpose, a bibliographic research, a desk research and a field research were performed. A total of 617 professionals were trained; the project had a positive impact reaching the targets although not fully implemented. The course meets the teachers’ training needs pointed out in the literature and the most important: a relevant group of the participants showed themselves more confident to continue innovating.

Keywords: Continuing Education; Innovation in Education; Google for Education.

Introduction

The project “form-acao@continuada: experiencing innovation” (continuing@form-a[c]tion: experiencing innovation) is a Continuing Education Course directed to teachers and managers that was created as a natural consequence of the route that we are following after the perception we could get with the pilot project “e-du.c@c@o F1.51.C4: an experience from Hybrid Learning”.

The pilot project began in 2016 but became more consolidated as school culture in the following year. Its goal was to suit the learning process to the characteristics of the contemporary society through technologies with particular focus on methodology conducted in the Hybrid Learning. The results obtained were analyzed in academic and scientific papers nationally and internationally presented and published (Fukugauti, 2016, 2017, 2018a, 2018b).

At the end of 2017, the selection process for the international certification for innovative educators was promoted by Google for Education, which is called Google Innovator (Google for Education, 2019). The pilot project in question was enrolled and selected, and the author had the opportunity to participate in the innovation academy in the Google office in São Paulo, where the concept and initial prototype of the training course for teachers and managers was

created during the development from the idea of multiplying what had been initially built with the pilot project.

The concern about the continuing education of teachers to use the technologies as work tools in the school started in the year 2012, when Fukugauti (2012), performing as a Pedagogical Coordinating Teacher in a public state school, developed a project whose work was characterized as "the result of an experience with the junction between technological resources, bureaucratic and pedagogical management, computerization of teaching work, continuous teacher training and action research" (Fukugauti, 2012, p. 46).

At that time, the idea was to computerize the bureaucracy connected to the teaching process by promoting a paradigm shift in the management and teaching work aiming transformations of the reality to get it in a habit. It did happen (Fukugauti, 2012).

However, the subject of study of this article goes beyond the use of technologies in the teaching work though. It's a training course for teachers to use technology and active methodologies in the classroom environment.

In this case, the problem to be solved is the lack of technical and pedagogical preparation of the education professionals and their willingness to change their way of working that is still based on the traditional teaching model, helping them to overcome the failures of the innovation process.

According to the research performed by Fisher, Bushko and White (2017), more than 70% of the teachers interviewed in Brazil reported the continuation of traditional lectures in their teaching.

On the other hand, in the researches made by The Economist Intelligence Unit (EIU) (2015, 2018), just 27% of the teachers reported their confidence in the development of their students' digital literacy; 49% of them pointed that the standard curriculum was rigorously enforced and because it was really strict, time was very short for innovations that required the "21st century skills" during every day teaching. And while 45% of teachers related that they feel themselves empowered to make decisions about the best way to help their students to develop that abilities, 31% feel embarrassed to perform that kind of work.

Therefore, adding such skills to the curriculum in the developing countries is a difficult task due to great dependence on the traditional teaching approach based on mechanic learning (EIU, 2015).

For this reason, in face of the current scenario composed:

- a) By the demands of the contemporary society connected to the information age.
- b) By the students' desire for more dynamic activities in which they could have more participation in classroom and could be prepared for the job market.
- c) By the teachers' desire (although concerned) to promote changes and innovations.
- d) By the lack of continuing education courses that enable educational professionals to try active learning methodologies in practice, before employing them in the classroom, and to apply them in a supervised manner.

Because all of this, the need to offer this course has emerged.

First of all, the teacher is the one who plans and promotes the learning process of the students, so he/she should be the protagonist of every change and innovation in the classroom.

Second, because without a proper training that enables the teachers to take risks, make mistakes and correct them to learn with the mistakes and improve by practicing in a process of continuous interaction building his/her own skills, nothing will change

Third, because among the continued training courses in the market today, in the vast majority of cases, only the theoretical knowledge and examples of experiences has been brought to light. Through the practical expertise point of view this kind of approaches haven't showed many positive results in relation to the changes in the pedagogical strategy of the teachers.

The survey data performed by Fisher, Bushko and White (2017) show that 79% of the people interviewed stated that it is still a challenge for teachers to have access high quality professional development. Additionally, during their visits to schools they found it difficult to find teachers who were interested in joining the search for new hybrid models.

As a recommendation, the authors state that every effort in the training of the teachers should aim a full immersion in how and why the technology can support a very educative model and not only in a conceptual training. Teachers need to experience learning from a hybrid model so that they can use one in the classroom with their students, like one of the teachers highlighted in the research.

In the same direction, the results got by EIU (2015) show that according to the teachers point of view, there is a lack of appropriate training (31%) to enable them to incorporate the "21st century skills" into their pedagogical practice and according to the businessmen point of view, improving the training of the teachers (35%) and maximizing the access to technology in schools and in universities of the country (31%) are changes in the educational system of your country that would bring great benefits to your business.

So, “it requires significant investment in the professional development of teachers to enable them to demonstrate the skills we expect them to inculcate in their students” (EIU, 2015, p. 19). In other words, there should have a complete new interpretation of the teachers’ role that from now on should be teaching the students how to work in an effective way. That means that the new teacher has to change his/her pedagogical training (EIU, 2015).

And fourth, because many students who are in schools today will have professions that are not available yet and the job market needs are more connected to socioemotional competences such as how to solve problems, to teamwork, to communicate, to think critically, to be creative, to be receptive to lifelong learning, to keep values and be ethical rather than giving priority to technical knowledge. For this reason, education must be more practical with transferable skills so that can prepare students to answer to any situation in the future (EIU, 2015, 2018).

Besides, according to information given by EIU (2015), job environments are using teamwork skills more and more; 51% of the executives interviewed pointed a failure in these skills among the youngsters what makes it difficult for your organizations to have a good performance. This failure can trigger a major impact on the performance of the companies and consequently on the economy. That’s why 27% of the employers interviewed said that they couldn’t hire anybody for some top vacancies due to the shortage of suitable candidates.

In addition, 76% of the teachers believe the students would have more benefits with practicing rather than having formal lectures; 40% of the students would like to have more classes in which they could use technology; 26% of the students said they would like to talk more about their own ideas; 24% of students want homework to become more interesting and 44% believe the education system is not giving them the necessary skills to join the labour market of your country (EIU, 2015, 2018).

Thus, restructuring the contents of the existing training courses is mandatory to provide the teachers experience based on the homology of processes, in creating or recreating, trying with mistakes, taking risks to make new things.

Because of the fact that the innovation is something that can not be forced, imposed, it is important that fertile environments are created where it can grow and develop in a natural way in the practice of education professionals.

Therefore, the objective of this paper is to analyze the impact of the implementation of the Google Innovator #BRZ17 project entitled "form-acao@continuada: experiencing innovation" and its unfolding in the year 2018.

Methodological Approach

This study was performed on the basis of:

- a) Indirect documentation supported through bibliographic research and desk research.
- b) Direct documentation making use of a descriptive and quantitative field research, specifically a study of program assessment.
- c) Intensive direct observation through systemically, non-systematically, participant, and individual observation also performed in real life.
- d) Extensive direct observation using screening questionnaires composed by open questions, closed-ended questions, and multiple choices questions - with a display of assessment or valuation, in fact, in action, about intention and opinion (Marconi & Lakatos, 1982).

The sampling that is non-probabilistic by typicality was the technique used in the sample due to the characteristics of the data collecting. The Project is also derived from a case study developed by an action research because intentional changes happened in the environment in question (Marconi & Lakatos, 1982; Severino, 2007; Thiollent, 1986).

The collected data have qualitative and quantitative nature and were organized and presented in tabular form. The quantitative data were analyzed through descriptive and inferential statistics – nonparametric hypothesis Chi-square test (Marconi & Lakatos, 1982).

Results

After the innovation academy of the certification process Google Innovator #BRZ17, with the initial prototype in hand time was right to have it structured in details considering the real implementation context and making all the plans for giving complete form to the idea.

Now we have the 4-module course as described in the Table 1.

Table 1
Modules of the course

Modules
<ul style="list-style-type: none"> ● Module I – Google apps and its functionalities (Design Thinking);

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- Module II – Hybrid Learning and its models;
 - Module III – Problem Based Learning and by Projects and its steps;
 - Module IV – The Maker Movement and its characteristics;

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- Duration of each module: 8 weeks / 40 hours;
 - Weekly activities: 5 hours - 3 hours in site and 2 hours of distance learning
 - Total course duration: 165 hours - opening class included
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At first, the idea was to offer one edition of each module of the course during the year of 2018 (Modules I and II in the 1st semester and Modules III and IV in the second semester), but due to operational issues and demand we could offer two editions of Module I and just one edition of Module II.

At the end of each module, we asked the participants to answer an assessment questionnaire so that they could think about the course and give us their opinion about the learning process they had just concluded.

However, not all participants in the course modules replied to the evaluation questionnaire. Of those enrolled, 91 professionals in total, 82.42% completed the modules and 85.33% of them had answered the assessment questionnaire.

The results were positive as long as we had more than 4 in 5 enrolled participants finishing the course and answering the questions, what makes any generalization based on these data to be more reliable.

The collected results about the assessment of the modules showed us the approval of the participants:

a) All the answers given used only 2 of the 5 grades suggested (Very good - 76.83% ± 29.10%; Good - 23.17% ± 29.10%), what was confirmed observing the grades given (9.18 ± 0.58).

b) When questioned if they would indicate the course to other professionals all of the participants said yes (Yes - 100%).

c) Almost all of them said that they had enjoyed the experience (Enjoyed - 95.00% ± 4.40%).

d) Almost all of the participants now believe that the methodologies used in the modules (Module I - Design Thinking; Módulo II - Hybrid Learning) can bring innovations in the school (97.77% ± 3.87%).

e) Most of them intend to use that methodologies in the future (96.67% ± 5.77%).

f) Last but not least, all of the participants stated they have learned something new (100%).

Table 2
Some opinions about the course

Participant	Opinion
23	The course broadened my vision to seek solutions to problems I face in school.
49	I had the opportunity to learn a several Google tools and apply them in the classroom, including replicating them with teachers during ATPC, the classes became more dynamic with students participating and interacting with colleagues and reducing the use of the cell phone during activities. Some teachers were very enthusiastic about applying the tools in their classes, the coordination and direction support the use of these tools to improve the learning and dissemination of information to the group of teachers.
50	The course, besides providing innovative knowledge for the classes, inspired the planning of creative classes to the point of being mentioned by the students themselves that the math classes, even being a dull discipline, in this third bimester became fun. When I arrived in the room, they would ask, "What are we going to do today?" This has inspired me to always think of something different or to do the lesson in a different environment.
56	Learning how to work with Hybrid Learning motivated me to promote different classes and with that I could see that the students became more interested and began to interact more with me.
58	I have a good experience with technology, however, I got an incredible baggage. I had already done the course about the Hybrid Learning, but this one far exceeded what I did.

For assessing the impact of the course in teachers' everyday life, the participants were asked about the use of technological resources and only the Hybrid Learning models. The Design Thinking was a method used in order to change the mindset of the professionals and not as a resource to be used in classroom because it was not the objective of this implementation phase, what does not constitute an impediment to this happening.

Table 3
Impact of the course in teachers' everyday life

Criteria	Goals	Modules				
		I – 1st Ed.	I – 2nd Ed.	II	I – 1st & 2nd Ed.	I & II
Using Google for Education	100.00%	96.70%	100.00%	100.00%	98.35%	98.90%
Using cell phone in an integrated way	100.00%	76.70%	91.70%	81.80%	84.20%	83.40%

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Using shared files at work	75.00%	80.00%	83.30%	90.90%	81.65%	84.73%
Using Google Classroom with students	75.00%	46.70%	41.70%	90.90%	44.20%	59.77%
Using some of the apps used during the course	75.00%	70.00%	66.70%	90.90%	68.35%	75.87%
Using Hybrid Learning models in classes	100.00%	---	---	100.00%	---	---
	χ^2	5.065	2.077	4.045	6.868	4.566
	ρ	0.281	0.722	0.543	0.143	0.335

To perform the activities in site or distance learning, the participants were asked to use their own institutional account Google for Education provided by Secretary of Education of the State of São Paulo.

The use of Google for Education was assessed through the enrolling of the participants with their institutional accounts in the module classes that were created in the Google Classroom application, and we could check that almost every participant used their accounts (98.90% \pm 1.91%).

The use of cell phones in an integrated way with other devices was assessed considering the fact that the participants had added their institutional accounts in their own devices. That allowed the access and the possibility of edition and management of the files and activities using both cell phones and computers. In this case, 4 in 5 participants confirmed the integrated use strategy (83.40% \pm 7.63%).

The use of shared files through Google Drive happened many times during the site meetings of the modules, so we decided to analyze its generalization in the work environment at the very moment. In this sense, 4 in 5 participants made use of shared files at work (84.73% \pm 5.59%).

The use of Google Classroom with students, which in the case of the managers participating in the modules was asked to consider the use in training activities with teachers, is also a generalization of the use of the application in the work environment because it was used as Virtual Learning Environment (VLE) in the modules, that means it was a daily practice for the teachers and managers who were playing the student role.

In the two editions of Module I, less than half of the participants made use of the app at work (46.70%; 41.70%), nevertheless, in Module II, almost all of the participants did (90.90%).

In average, a bit more than half of them confirmed the generalization of learning at work ($59.77\% \pm 27.08\%$). The difference of the results obtained in Module II in relation to the two editions of Module I occurred because the participants were asked to apply classroom activities as part of their assessment. However, all of the participants who hadn't made use of Google Classroom stated they intend to use the app in the future (100.00%).

The use of any of the apps used during the course, as well as the two previous criteria, is a generalization for the work environment derived from the experiences during the activities in site. As a result, most of the participants of the two editions of Module I (70.00%; 66.70%) and almost all of the participants of Module II (90.90%) used some app in the work environment. In average, 3 in 4 participants confirmed the generalization of learning ($75.87\% \pm 13.12\%$).

The use of Hybrid Learning models in their classes was analyzed just in Module II because the use in real activities in the classroom was required to complete the course and receive the certificate. All of the participants (100.00%) said they had used the models of Hybrid Learning in activities with the students. The models are: Flipped Classroom, Lab Rotation and Station Rotation.

Comparing the results to the goals for each criteria we have:

a) Despite during the first edition of Module I just one goal was reached, and just 2 during the second edition, the other results were very close to the objectives.

b) In Module II, 5 in 6 targets were reached and the only criterium that failed had a result close to the goal.

c) When we link the results of the two editions of Module I, just one target was reached, and when we link the results of the two editions of Module I with the results of Module II, just 2 of the targets were reached, but the remaining results also get close to the desired targets.

In this case, in general, although the targets haven't been fully achieved, there is not a statistically significant difference between the targets and the results ($p > 0.05$). So, we can infer that statistically the targets were reached.

The Project implementation aroused interest on Pedagogical Coordinating Teachers of the Pedagogical Atelier (PCNPs in Portuguese) of the Board of Education of the Region of Americana, what prompted a workshop to train them to use Google Classroom and Hybrid Learning in June 5th, 2018.

This action of unfolding of the project had the participation of 12 PCNPs that answered to an assessment questionnaire in January 2019, some time after the workshop.

The PCNPs who took part of the workshop approved the action (Very good - 91.70%; Good - 8.30%; Grade - 9.58 ± 0.51). In the opinion of one of the participants (Participant 67), “the workshop was a driving force that has leveraged many courses in the Board of Education and has brought an extremely positive impact in the utilization of technology in the school environment”.

Besides, 4 in 5 used Google Classroom (83.30%) and 3 in 4 used the Hybrid Learning models (75.00%) (Flipped Classroom, Lab Rotation and Station Rotation) in their training courses for teachers in 2018. A total of 530 teachers participated in these courses, which had contact with both the app and the methodology from the student's point of view, which may generate interest in using in the school with their students.

When the PCNPs were questioned about the replicability of their training actions, less than half were able to say if teachers started using the app (41.70%) and the methodology (41.70%) with their students in the school, which suggests the need to elaborate a strategy for assessing the impact of these actions. On the other hand, those who knew how to answer this question stated that 110 teachers started using Google Classroom and that 97 teachers started using the Hybrid Learning models in the school.

Considering all the results presented, in total, adding the participants of the course modules, with the PCNPs who participated in the workshop and with the teachers who participated in the Pedagogical Atelier courses taught by the PCNPs, 617 professionals were trained in the use of applications and of active methodologies in the learning process.

Of these, 149 started using Google Classroom and 119 started to use the Hybrid Learning models with their students, but these are not the exact numbers, they can be much higher because more than half of the PCNPs couldn't tell how many teachers started using these resources in the classroom.

Analyzing all the results presented, the course "form-acao@continuada: experiencing innovation", until the present moment, had a significant positive impact, reaching all the goals, surpassing the initial expectations and producing unfoldments, even not having been fully implemented.

Thus, what was just an idea, a yearning, began as a small pilot project within the classroom and eventually became official on the Board of Education of the Region of

Americana, taking unimagined proportions from the replicability point of view and generating a positive impact promoting changes in school culture as a consequence.

Conclusion

The biggest challenge of the teachers today, is to prepare the students to face the future. Technological advances have been growing so fast that has been making a lot of changes in the job market as well as in the society as a whole what makes it impossible to preview the demands.

For this reason, it's necessary to build the habit of learning in an autonomous, collaborative, shared and lifelong way, immersed in a technological environment, so that students are able to deal with a world that they do not know yet. The traditional classroom is not able to provide students with an adequate training for that context.

In front of this, the teacher assumes the central role in the process of changing reality within the classroom, and should be responsible for creating alternatives innovating the pedagogical practice with the use of technologies an active learning methodologies.

However, to occur that it's necessary for teachers to participate in formative experiences that allow them to learn and develop the skills and competences in the same way they should do with their students, since it was found during the course that most of them present the same difficulties and the same behaviors as students when faced with differentiated strategies in the classroom.

The course analyzed in this paper, considering all of the above, meets the teachers' training needs, which have been pointed out in the literature, looking to prepare them to design learning experiences that integrate the skills that the students need to learn and develop with the curricular contents required by education systems.

In this process, technology provides the fundamental tools that broaden the horizons of the classroom by extrapolating its physical limits, allows the integration of different educational techniques and strategies, boosts active learning, the awakening of cognition, and the use of active methodologies, facilitating interaction, engagement and communication.

Finally, the most important of all is that a relevant group of the course participants and their unfoldments overcame their limitations and difficulties, tested new technologies and methodologies in the practice leaving behind the fear of making mistakes and failing, innovating in their classrooms and have obtained both positive and negative results, making

them understand that innovation is a continuous and iterative process, feeling themselves more confident to continue innovating.

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