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# Technologies and innovation in secondary schools: rethinking teaching to improve student satisfaction

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**Abstract**

*The use of new technologies is one of the themes at the centre of the educational debate, especially following Distance Education. The Avant-garde Educative Movement gathers schools from all over the country that share experiments based on a model in which the student is at the centre of his or her own educational path, a model capable of promoting meaningful learning. The Self Determination Theory (Deci & Ryan, 1985) highlights the extent to which the satisfaction of the needs for autonomy, competence and relationships contributes to student motivation. The purpose of the present study is to understand whether the rethinking of teaching promoted by widespread use of new technologies has had an impact in terms of student satisfaction. For the analysis, a Multilevel Model was used that assumes as the dependent variable students' satisfaction with their school life from the Clipper Test, a-Portfolio for the orientation of students aged 15–19 (Soresi & Nota, 2003). The scale captures satisfaction with the school experience in terms of preparation received, relationships established and congruence with expectations. Results show that satisfaction increases as the use and frequency of innovative teaching methodologies employed by the teacher increases and as the frequency of use of technological resources employed in the classroom and in homework assignments increases.*

***Keywords:*** *students' satisfaction; technologies; multilevel model; school innovation; evaluation*

## Introduction

In recent decades, studies on school effectiveness and improvement have produced models and theoretical frameworks (Scheerens & Bosker, 1997; Mortimore, 1993; Creemers & Kyriakides 2006) that are now an important reference point for investigations and research in the educational field whose goal is to observe phenomena with a multidimensional and holistic approach. According to this perspective, the processes that are initiated in the various school levels, produce spillovers whose effects affect hierarchically in the levels discussed below (Sheerens, 2018): from the most external represented by the System to that of the individual school, up to the classroom level. Although each level is connected to the other, the links between them in a vertical sense are weak, while those in a horizontal sense are stronger (Sheerens, 2018). In our country, the introduction of technologies for educational use has been supported by national policies since the first National Computer Science Plans (PNI1 and 2[1]) in the late 1980s, with the Teaching Technology Development Program (PSTD - Programma di Sviluppo Tecnologie Didattiche) in the 2000s, thanks to the various editions of ForTic (2005/08) and Cl@assi 2.0, until the recent National Digital School Plan (PNSD – Piano Nazionale Scuola Digitale, 2015). These initiatives have been mainly of a training nature and aimed particularly at teachers in order to acquire tools for the renewal of methodologies and learning environments. The classroom level, which we will examine in this article, is the one that makes teaching practice explicit and defines the quality of the teaching/learning process. The expectations of education on technologies.

[1] The National Plans for Computer Science were launched in 1985 with the intention of introducing computer science in schools. Initially the idea was to accompany the use of computers in the disciplinary field, particularly science, with the passage of time the approach of educational technology has gradually expanded.

## 1. The expectations of education on technologies

The efforts made in Italy in the last 30 years regarding both the training of school personnel in the use of technology, and the facilities reserved for schools to purchase hardware and software, have been important for the professional development of teachers and a renewal of the didactic devices of the school. National legislation has incorporated the thrust of European documents in facilitating the introduction of technology into schools as a means capable of transforming the traditional educational model. As Moricca (2016) notes, technology in school has been pursued with the 'belief that any innovation brings significant improvements to the learning process' (p.178). In general, since its introduction into teaching practice, technology has generated expectations, which have alternated over time and which we can summarise and observe according to three points of view: the first concerns the opportunity pursued, through technologies, of a substantial change in teaching in the design of activities, with a focus placed on the laboratory approach and the use of different languages and codes. The second expectation was placed on the decrease of what for many years has been defined digital divide (Prensky, 2001) which, if reduced, could have represented an important lever for a generational approach with a positive reflection in the relationship between teacher and student, and consequently also in the teaching/learning process. The third is related to student outcomes (Guy, 2020) in terms of improvement, an expectation that from surveys conducted on large numbers (Checchi, 2018) has not produced entirely satisfactory results. On the other hand, the speed with which technology has evolved (ibid., 2016) has strongly affected the difficulty of being accepted as a real tool that facilitates, supports the teacher in their teaching activities. In fact, the succession of inputs from the outside would have predicted a different approach to teaching technologies. What has happened is that, despite the attempt at systemic actions from the following: from the setting up of the laboratory classrooms promoted by the National Plans of the 1980s to the more recent initiative of the interactive whiteboard in the classroom, the use of technologies for teaching activities has occurred on one hand on the push and good will of the teacher or through additional projects to normal daily practice. Probably a greater integration of educational technologies in the school curricula (Ravitch, 2018), would have facilitated and made more effective the process of their use, both because it would have involved all the teaching staff and because it would have had a continuous frequency and not sporadic and occasional as it occurred instead. Although apparently didactics and educational technology seem today to be two constructs closer than some time ago, considering what has been experienced in the period with distance learning (DAD), recent surveys (Ranieri, 2020; Lucisano, 2020) show weaknesses in some areas such as evaluation. How, then, should we consider the possibility and opportunity of integrating technology into our instructional design in a way that effectively contributes to students' educational success?

Lai et al. (2019) conducted a systematic review trying to understand how the use of technology has been evaluated in the literature and although it was difficult to compare the studies as each proposed different dimensions and categorisations, the results brought out some themes that were treated more such as: learning, behaviours, technological tools, learning environments and design. Callaghan and colleagues (2018) identified supporting teacher–professional development as an important key to strengthening their expertise related to the use of technology games in teaching, in order to achieve a positive spillover into student learning (Clark et al., 2016). Guy (2018) in an experiment on the conscious use of media verified that there is an effective improvement in digital competence with important changes on habits with respect to media use and indirect positive effects with respect to satisfaction.

Although the previous school effectiveness approach places the emphasis primarily on student learning (Rosa, 2013), if we expand the meaning of effectiveness to include satisfaction and motivation, recent surveys are beginning to appear that note the positive effects of technologies in school (Fakhruddin et al., 2019; Wekerle et al., 2020; Coppola & Zanazzi, 2020; Fadda & Vivanet, 2021). In agreement with Bower (2017) therefore, it is necessary to adopt a critical perspective towards technology in order to capitalise on the opportunities it offers us to the maximum, remaining anchored to rigid positions, in fact, makes little sense, especially if we think of what has happened regarding the latest events related to the pandemic that has seen sides for and against the use of technologies (Ranieri, 2020) and that add little to the scientific debate.

## 2. Context, objectives and hypotheses of the study

The Covid-19 pandemic has highlighted even more how, as learning environments and how new technologies are used change, similarly it changes aspects such as motivation, satisfaction with one's own experience and ways of relating to others. Satisfaction of one's own needs and intrinsic motivation are aspects that correlate with meaningful learning and provide the basis for the development of 21st-century skills (Ryan & Deci, 2020). According to the Self-Determination theories (Deci & Ryan, 1985), the satisfaction of autonomy, competence and relationship needs enables individuals to be motivated and passionate about what they do. It is therefore even more important to understand how teaching methodologies and learning environments can foster student satisfaction and motivation in order to promote the development of key competences and combat school dropout (Salikhova et al., 2020). In this context, the use of technology can improve students' motivation and therefore learning (Ryan & Rigby, 2019), especially where it promotes a sense of agency that allows the student to develop their skills more than they would have done without the digital tool (Immordino & Yang, 2017). Factors such as satisfaction with one's own needs and intrinsic motivation improve commitment to persevering in study even in distance settings, especially where the use of new technologies can better satisfy students' need for autonomy (Jeno et al., 2019).

This article is part of a broader framework of studies carried out by the research group aimed at investigating how and whether the use of new technologies can be a lever for changing teaching methods and improving students' motivation and study strategies.

In a first research, documents produced by secondary schools with widespread and daily educational use of laptops or other mobile devices (at least 80% technology on the desks) were analysed (Carro & Mori, 2015). The analysis of the self-assessment reports (RAV – Rapporto di AutoValutazione) showed that all the schools surveyed were characterised by important projects involving reflection on the use of new technologies in terms of participation in training by teachers and shared planning processes. In terms of results, these schools had fewer student dropouts, better results in standardised tests than schools with the same socio-economic-cultural status (ESCS) index and higher percentages of pupils going on to university or entering the world of work than schools in their home provinces. To confirm the hypotheses, in these schools the widespread use of new technologies was associated with an engagement in rethinking classroom teaching: this aspect may have had an impact on the motivation of students who may have perceived the school as being closer to their needs, less distant from the tools they use in everyday life and less boring.

This study was extended by means of research (Mori & Panzavolta, 2019) aiming to describe the memory styles, study strategies and cognitive styles of students in the classrooms of the schools analysed above compared classes in schools with the same ESCS, but which did not make widespread use of new technologies. From the results obtained using standardised psychological tests, the biggest differences are not found so much between classes that 'officially declare that they use Information and Communication Technology (ICT) and those that do not', but among students who declare that they actually use it to do their homework on a daily routine. They score higher on the visual memory scales and the global memory index. In addition, students who report using ICT for homework show a more visual learning style than those who report not using it. However, students who report not using ICT either to do their homework or in the classroom appear to have greater consistency between the study methods they consider effective and those they use in everyday practice. The greatest limitation of this study, however, is that it did not investigate which teaching methods were implemented in the classrooms with a high use of new technologies, to be able to describe the processes in greater detail.

Using in part the same psychological tests, but trying to overcome this gap, a research-training study was conducted to explore whether and how in secondary school classes in which the Flipped Classroom was adopted for 80% of the school time, the competence of 'Learning to learn' through technological resources was supported and effective study strategies were used (Rossi et al, 2018; Turchi et al., 2018). The results[2] showed that students in these classes have an ability to recognise effective study strategies, to process materials strategically and to self-assess above the average of the Italian normative sample. Motivation is also higher.

This research was then expanded through a survey that attempts to read innovation in Avant-garde Educational (AE) Movement schools through the perception of the main actors (teachers, students, school managers and parents), to understand what changes have taken place in terms of learning motivation, well-being and active participation of students. Secondary schools that are part of the AE Movement participated in the study: the innovation proposed in this context promotes an idea of school that brings with it a paradigm shift, overturns the conception of school based on the transmission of knowledge in favour of a school in which the active learner is at the centre of its educational path (Wyse & Ferrari, 2018). In a first analysis carried out on the students' results in terms of motivation and evaluation of their school experience (Mori et al., 2020), it emerges in these schools a particular attention to the collaborative aspects of learning, with a rather wide use also of new technologies, although traditional teaching methods remain very widespread. There is also an association between students' perceptions of the functioning of the school and the level of innovation of the school: those who rate their school as good also indicate its innovative character on the aspects investigated. Moreover, those who give very high scores in these dimensions (a small part of the sample) are also those who obtain higher scores in psychometric tests investigating their satisfaction with their life as a student and their awareness of how best to organise their study.

This study investigates the above results and aims to understand if and how teaching practices that included a widespread use of new technologies and a rethinking of the organisation of the technological and/or virtual spaces of the school even before the pandemic had an impact in terms of student satisfaction: in fact, it is hypothesised that a context in which technology was accompanied by a reflection on a methodological-organisational change in teaching could really intercept students' needs.

## 3. Methodology, sample and tools

The Research Evaluation of innovation processes in secondary schools of the AE stems from the need to read innovation in schools through the perception of teachers, students, headteachers and parents, and to understand what didactic and organisational changes have occurred and what are the facilitating and impeding factors of innovation of schools. The research uses mixed methods, quanti-qualitative tools (Creswell & Clark, 2017) and it involved four phases:

- Definition of the theoretical framework of reference organised in four macro-dimensions and sub-dimensions (Nardi, et al. 2020) and the individuation of the sample schools belonging to the AE;

[2] The results were presented at the Didacta 2018 conference by researchers.

- Development and test of instruments (questionnaires, standardised tests and interview) with upper secondary schools that did not belong to the sample. In order to ensure triangulation between different data sources, the instruments have been based on our framework and macro-dimensions;
- In field survey (2019/2020) for the administration of one questionnaire and two psychometric tests (AMOS/Clipper) to in-person students, one questionnaire and one psychometric test (MESI) to online for teachers, semi-structured interview with DS, online questionnaire to President of the School Council, representing the parental component); data analysis of result; and
- Qualitative in-depth study (interviews and focus groups with teachers).

The sample was selected during the 2019/2020 from the universe of 800 schools belonging to the AE: secondary school, which had been experimenting two innovative practices called 'ideas', for at least two years. From an initial analysis of the database 243 schools were found to be suitable, at the end of the verification of the requisites and of the adhesion to the research, the explanatory survey (Creswell & Piano, 2017) was carried out with 52 schools (20 high schools, 10 technical institutes, 3 professional institutes and 19 higher education institutes with various addresses) that responded to all the tools. For each institute were involved: the headteachers; 3 teachers who have been experimenting ideas for at least two years; students from at least 3 experimental classes of different years, mainly III, IV and V; the President of the School Council, representing the parental component. In total: 113 classes, 50 school leaders, 144 teachers, 1,880 students and 43 President of the School Council participated in the survey.

The following tables give information about the main characteristics of the sample at various levels of investigation: Schools, Classes and Students.

Table 1. School typology, classes, students and territorial distribution

| | Schools'territorial distribution (Absolute and percentage value) | High school classes (absolute and percentage value) | Technical classes (absolute and percentage value) | Vocational classes (absolute and percentage value) | Number of classes (absolute and percentage value) |
|---|---|---|---|---|---|
| North | 17 = 32.7% | 15 = 13.27% | 17 = 15% | 2 =1.76% | 34 = 30% |
| Centre | 10 = 19.2% | 6 = 5.3% | 13 = 11.50% | 6 = 5.3% | 25 = 22.12% |
| South | 25 = 48% | 39 = 34.51% | 6 = 5.3% | 9 = 7.96% | 54 = 47.78% |
| Total | 52 =100% of the sample | 60 = 53% of the s. | 36 = 31.85% of the s. | 17 = 15% of the s. | 113 = 100% of the s. |

Regarding the dropout rate, the comparison between the average dropout rate of the institutions in the sample compared to the national one in the three-year period 15/16–16/17 shows a trend in line with the national one but the sample dropout rate is on average a percentage point lower than the national one.

In the second table are proposed the main information regarding the 1,880 students of the sample classes.

Table 2. Student's profile

| Number of students | Territorial distribution | Gender | Age | Nationality |
|---|---|---|---|---|
| 1,880 students | 660 North<br>352 Centre<br>868 South | Males 49.7%<br>Females 50.3% | From 15 to 19 years: 98%<br>From 12 to 15 and 20 to 24 years: 2% | Italians: 95.69%<br>Foreigners: 4,31% |

The analysis in this article is based on the data collected through the questionnaire and a standardised psychometric test (Clipper).

The instruments (questionnaire and test) have been prepared with a coding that guarantees the anonymity of the students, but at the same time the possibility of uniquely tracing the answers of the questionnaire and tests to the same student.

The student questionnaire consists of 36 questions organised into two sections. The first one collects the information for defining the student's profile such as personal characteristics and related to their family of origin and the student's activities and interests in free time and with a thrust on the use of ICT. The second part of the questionnaire investigates aspects relating to three dimensions of the reference framework with the aim of understanding how students perceive the changes implemented in their school about didactic, organisation, use of spaces, tools and technological resources. On the dimension 'transformation of teaching and learning practices', the questions posed to the student focus on the diffusion and frequency of use of different teaching methods (from the traditional to the most innovative); the presence and frequency of use of technologies at home and/or at school for classroom lessons or homework (e.g., online training environments, digital resources, tablets, smartphones); the type of content and topics addressed (e.g., topical issues, conflict management, stereotypes); the organisation of the class and working methods during lessons (e.g., students organised in

level groups, interest groups); the configuration of the space and furnishings (e.g., island desks for work, spaces inside or outside the classroom for individual study); the evaluation practices used (e.g., tests, self-evaluation, peer evaluation) and object of the evaluation (e.g., knowledge, digital skills, creativity).

The last dimensions investigated by the questionnaire are the 'Organisational development' (governance styles of the school and the support of the staff organisation to innovation) and the 'Openness and interrelation with the outside world'. The first one explores the theme of the change of the learning environment: questions investigate in the school the presence, the frequency and the methods of use of innovative spaces. The last dimension investigates the openness of the school, the interaction with families and their participation and the involvement in school projects and activities.

As we will see in the multilevel model, 'sum' variables were used with the aim of approximating and summarising the information content of the set of items in a single variable. In particular, the variables derive from the questions relating to the dimension 'Transformation of teaching and learning practices'. The questions in this section provide multiple response items with a 4-point Likert scale relative to frequency of use. The response methods were numerically recoded by assigning values from 1 to 4. We then proceeded to construct the corresponding variable Sum for each question

As anticipated, the students also completed a psychometric test of the CLIPPER battery.

The Test Clipper, a Portfolio for the orientation of students aged 15 to 19 (Soresi & Nota, 2003) brings together a series of analysis tools. In our research we used 4 of the 8 Clipper questionnaires in order to understand the interests and attitudes about the future of the students in the sample, their sense of self-efficacy, decision making, problem-solving skills and ability to manage their emotions and situations. The object of our contribution as we will see are the results derived from the questionnaire 'My life as a student' that evaluates seven factors of school satisfaction with respect to:

- school experience
- decision-making autonomy
- relationships with classmates
- for your current situation
- relations with family members
- the acknowledgements received
- the support received

## 4. Models and results

The problem of the implication of hierarchical levels and their significance is one of the concepts developed by Gras (2000) in the field of implicative statistics: in various disciplinary fields (sociology, demography, etc.), it often happens to analyse phenomena characterised by a hierarchical structure, whose data are presented at several levels: individual, family, relational, territorial, social and so on.

Individuals interact with the social context to which they belong and are therefore influenced by the characteristics of the groups to which they belong. In turn, the properties of these groups are affected by the influence of individuals.

In these situations, individuals (microunits) and groups (macrounits) are considered as a hierarchical system observable at different levels: this leads us to an analysis of the interaction between the variables that characterise individuals with those that characterise groups.

In our research, multilevel regression models have been used, which, just like standard regression analyses, aim to model the relationship between a variable response (in our case, student satisfaction) and a set of explanatory variables. The difference is that multilevel modeling involves units of observation at different levels.

The use of a multilevel regression model is advisable whenever the units (called first-level units) on which the phenomenon under study is found are naturally aggregated into different groups (second-level units), which in turn can be aggregated into third-level units and so on: in such cases it is reasonable to assume that the variability of the phenomenon depends not only on individual explanatory variables (or first-level units), but also on the fact that a certain individual belongs to a certain group with peculiar characteristics that distinguish it from the other groups (Chiandotto & Varriale, 2005).

In the specific case treated, the students (first-level units) are naturally aggregated into classes (second-level units) (Goldstein, 2003).

The multilevel model has been estimated with STATA 12 software and allows to quantify the variability in the different levels of the hierarchy.

As an estimate of the models, we report the percentage reduction in between and within variance obtained in each model compared to the null model.

1. Variability between groups, expressed by the variances of random effects (between classes):

a. Reduction between = 1– (variance between MODn schools/variance between MOD0 schools).

2. Variability within the group (within class):

a. Within reduction = 1– (variance within MODn schools/variance within MOD0 schools).

The use of the multilevel regression model appears appropriate for the analysis of data obtained in the context of research carried out in the field of education, when it is proposed to detect the existence of differences between school classes (second-level units), each of which houses a certain number of students (first-level units), based on the individual

measure of a variable Y (satisfaction) detected on each student, taking into account the fact that the characteristics of the students and those of the classes may be relevant in determining the observed value of the satisfaction variable.

Multilevel analysis to explore the relationship between the variables was conducted on a sample of 1,747 students drawn from 113 classes. The dependent variable chosen is represented by the student's satisfaction, referring to the satisfaction that students in each class expressed with their life in the school.

The explanatory variables used to explain the dependent variable were chosen, based on the suggestions provided by the knowledge of the phenomenon and the conclusions resulting from the descriptive analysis performed.

The set of regressors includes two different levels of aggregation: student-related variables (gender, age, sum variables); variables at the level of the school (territorial area, address type, dropout rate, foreigner rate and school population). There are no regressions in the model explicitly referred to the class (for example, number of students in the class or average value tests Invalsi or characteristics of teachers who teach in the class). However, the variability observed on the student-level response variable, through multilevel model estimation, allows us to evaluate the effect due to the variability of classes, net of the effects given by students and school regressors.

The intraclass correlation coefficient tells us that the class effect accounts for about 9% of the total variability of Y. We will now go into detail on the main results of the analysis in order to verify the hypothesis of a correlation between the use of innovative methodologies, tools and resources and student satisfaction.

Looking at the saturated model, which includes all the regressions at the same time, both at the level of the students and the Institutes, we report the first- and second-level significant variables ($p$-value < 0.0001), the value of which is indicated by the sign (+ or –) the coefficient that reveals whether explanatory variables increase or decrease student satisfaction.

From the analyses it emerges that the satisfaction grows with the increase of the use and the frequency of innovative didactic methodologies employed by the teacher (+0.48); with the increase of the use and the frequency of technological resources used during the lessons (+1.15) and digital devices/resources used for home tasks (+1.16). Satisfaction, on the contrary, decreases as the age of the student increases (–56).

Table 3. Explanatory variables for students

| Students | Explanatory variables | Estimate coeff. | P.value |
|---|---|---|---|
| | Age | –0.5643448 | 0.000 |
| | Gender | 0.3763947 | 0.160 |
| | Use of ICT in leisure time (communicating, informing, playing, buying...) | –0.0170526 | 0.248 |
| | Teaching methodologies «innovative» (peer-tutoring, role-playing, didactic laboratory – monthly frequency) | 0.4826376 | 0.000 |
| | Activities carried out with the help of ICT (use of pc/tablet to perform tasks at home or in class, do simulations, coding, robotics, ... – monthly frequency) | –0.0365342 | 0.298 |
| | Use of technological devices in class (3D printer, mobile phone, tablet/pc, audio acquisition tools, ...) | 0.1551385 | 0.197 |
| | Use of digital resources during lessons (educational software, slides, pdf, audio, video, ... monthly frequency) | 0.1503858 | 0.000 |
| | Use of resource devices to perform tasks at home (mobile phone, USB stick, Internet connection, ... – monthly frequency) | 0.1630445 | 0.000 |

Table 4. Explanatory variables for schools

| Schools | Explanatory variables | Estimate coeff. | P.value |
|---|---|---|---|
| | Typology Technical Institute | 0.2880738 | 0.667 |
| | Typology Professional Institute | 0.2627558 | 0.656 |
| | Territorial area Centre | 0.2004626 | 0.725 |
| | Territorial area South | –0.1749873 | 0.806 |
| | Rate of abandonment 1718 | 2.263563 | 0.844 |
| | Foreign rate 1819 | –0.0823014 | 0.162 |

The school effect is present and significant, as shown by the significance value of LR (LR test vs. linear regression: chibar2(01) = 54.08 Prob >= chibar2=0.0000) and allows us to affirm the importance of variability and influence both within the class and between different classes.

Table 5. School Effect

| Random-effects parameters | Estimate | Std. Err. | [95% Conf. Interval] |
|---|---|---|---|
| CODCLASSE: Identity | | | |
| sd(_cons) | 1.516914 | 0.1810495 | 1.200513 – 1.916705 |
| sd(Residual) | 4.906755 | 0.0858541 | 4.741336 – 5.077944 |

LR test vs. linear regression: chibar2(01) = 54.08 Prob >= chibar2 = 0.0000

## 5. Discussion

These results can probably be explained by the fact that student satisfaction increases with the use of laboratory methodologies or peer tutoring, resources and technological devices that are generally more used in the classroom by the teacher, that is, when the activities are situated and the subject is involved responsibly, thus promoting meaningful learning (Novak, 2001). There is no correlation, however, between increased student satisfaction and the use of technological tools that have a reduced diffusion within the school and are not used in teaching activities on a regular basis (3D printers, the use of simulations, coding, robotics, etc.).

About the decrease in satisfaction related to the increase in the age of students, it is possible to hypothesise that students are more satisfied with the use of innovative methods and tools in the early years of entry to secondary school when a state of novelty persists (wow effect, i.e., the stimulus given by the novelty of the introduction of the tool) in their use. Where the stimulus given by the technology is not supported by a strong commitment of the teacher, apathy towards the technology or even rejection can take over (OEDC, 2015).

## Conclusions

The multilevel model allowed us to explore previous studies conducted by INDIRE had confirmed that schools with a high investment in new technology activated processes typical of effective schools (Carro & Mori, 2015; Rossi et al., 2018; Ghavifekr & Rosdy, 2015). Membership in AE increased awareness of developing a systems approach aimed at innovation at both the organisational and instructional levels. Specifically, this contribution suggests that student satisfaction improves if the frequency of using innovative methodologies and technology resources in the classroom increases (Venkatesh & Abrami, 2006; Lepp et al., 2014). In addition, the variability within and across classrooms found in the study shows us that it is important to pursue a reflection on the need to promote a culture aimed at change that invests the forum school and is not limited to the goodwill of the individual teacher (Razinkina et al., 2018).

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