



**Proceedings of the 2nd International Conference
of the Journal Scuola Democratica
REINVENTING EDUCATION**

VOLUME II

**Learning with New Technologies,
Equality and Inclusion**

ASSOCIAZIONE "PER SCUOLA DEMOCRATICA"

**Proceedings of the 2nd
International Conference of the
Journal Scuola Democratica
REINVENTING EDUCATION**

VOLUME II

**Learning with New Technologies,
Equality and Inclusion**

ASSOCIAZIONE "PER SCUOLA DEMOCRATICA"
Via Francesco Satolli, 30 – 00165 - Rome, Italy

Edited by

The Organizing Committee the 2nd International Conference of the Journal Scuola Democratica

<https://www.rivisteweb.it/issn/1129-731X>



Published by: ASSOCIAZIONE "PER SCUOLA DEMOCRATICA"

Via Francesco Satolli, 30 – 00165 – Rome, Italy

Published in Open Access



This book is digitally available at:

<https://www.scuolademocratica-conference.net/proceedings>

© 2021 Associazione "Per Scuola Democratica"



Unless otherwise stated, all contents published are subject to license Creative Commons - Attribution - version 3.0.

<https://creativecommons.org/licenses/by/3.0/it/>

It is therefore possible to freely reproduce, distribute, transmit and adapt data and analysis of the Volume, including for commercial purposes, provided that the source is cited. Images, logos, any registered trademarks, and other content owned by third parties belong to their respective owners and cannot be reproduced without their consent.

How to cite a proceeding from this Volume. APA citation system:

Author, N., Author, S., (2021). Title, in *Proceedings of the 2nd International Conference of the Journal Scuola Democratica "Reinventing Education", VOL. 2, Learning with New Technologies, Equality and Inclusion*, pp-pp

978-88-944888-8-3

Space-Time Variable in the Teaching-Learning Process: Technology Affordances for the Educational/Didactical Relation

Laura Fedeli

University of Macerata, laura.fedeli@unimc.it

ABSTRACT: *The study is focussed on the analysis of the space-time variable in a course on «General Didactics» that was redesigned to be developed online in the second semester of the academic year 2020-2021. Space-time is, thus, here meant as both the opportunities (didactical actions) created by the teacher to activate the teaching-learning process with the support of technology (synchronous and asynchronous tools), and the occurrences (learning actions) of generative processes activated by students. The educational/didactical relation is at the centre of the study and its efficacy has been analysed triangulating the space-time variable with the instructional design choices for the above mentioned course in order to be able to address the efficacy of the relation established between the teacher and the students and among students as peers. The qualitative study aims at analysing how different structures of space-time has influenced the co-construction of an educational/didactical relation among the involved actors (teacher and students).*

KEYWORDS: *Teaching/learning space-time, Instructional design, Technology-enhanced learning, Educational/didactical relation.*

Introduction

The study is focussed on the analysis of the space-time variable in a course on «General Didactics» that was offered online in the second semester of the academic year 2020-2021 at University of Macerata (Italy) within the degree course in Education Science. Space-time is, thus, here meant as both the opportunities (didactical actions) created by the teacher to activate the teaching-learning process with the support of technology (synchronous and asynchronous tools), and the occurrences (learning actions) of generative processes activated by students (Duarte, 2014). The case-study aims at answering to the following questions: «How does technology affect the space-time variable? What implications for the didactical/educational relation?»

When we refer to space-time we address the sense of presence perceived by the students who develop their agency in an interactive learning context, as van Eijck and Roth underline: «Place, as a social

construct, is defined by the perspectives people attribute to it and, in turn, these attributions collectively become the voice by which people are bound up with the places represented» (2010, 878-879). But, sense of presence is also provided by individual and autonomous learning actions that take place in a specific place and time. Students reflections about the management of their presence in the course, the level of their engagement in activities and classes and the sense of affiliation with the peers as a learning community can highlight interesting connotations tied to the educational/didactical relation occurred online.

The space-time of the educational relation between the professor and the students and among students is not only developed through opportunities of interaction and communication, but also thanks to reflection processes, that is through a so called «self-eclipse» of the professor who can «treat silence as a thing in itself, a living phenomenon occupying space and time» (Baurain, 2011, 95); space-times of silence can improve a listening orientation and self-reflection attitudes.

1. The General Didactics course: a case-study

The case-study, object of the analysis, is represented by a first year course taught within the curriculum «Socio-pedagogical educator» of the three-year degree in «Education Sciences». The course, namely «General Didactics», was entirely redesigned by the professor in order to be developed online in the second semester of the academic year 2020-2021 to adhere to the health assurance safety measures required by the COVID-19 pandemic spread.

The 48 hours course that was, normally, taught in a face-to-face learning environment has been organized around 6 weekly hours of frontal and dialogic classes where active student participation is fostered by group works. Collaborative practical activities can facilitate the connection between theory and practice in a discipline which anticipates and roots the basic principles of teaching methodology and strategies. Those hands-on sessions are of paramount importance to introduce students to critical thinking, problem solving and instructional design skills in the framework of a team work practice (Stramaglia et al., 2020; Ubell, 2010).

Since the shift from face -to-face modality to e-learning was forced by the emergency situation, students were not fully prepared to change their perspective as learners to embrace an online teaching process through the available institutional environments.

That means that their idea of space and time of learning had to be reoriented by the professor through a gradual inquiry-based approach to experience available technologies and be able to appreciate their affordances.

The structure of the course was, then, modified to let theoretical and practical sessions be developed using the online learning environments

so to keep real time frontal/dialogical sessions along with the proposal of a set of practical activities to be completed each week, individually or collaboratively (in small groups and/or collectively).

The course was organized with the support of both synchronous and asynchronous online tools: TEAMS videoconferencing tool was used for real-time sessions (teacher' channel; students' channel) and store classes notes and outputs of discussions/group-works that took place as part of the weekly synchronous class; OLAT Learning Management System was equipped with dedicated tools to aggregate the whole learning offer such as the learning path description; the additional study materials (textual resources and/or audio/video inputs), practical activities (assignments with a final outcome/artefact), and the reflection tasks (periodical guided reflections papers).

Exactly like in face-to-face instruction students were left free to choose the level of their engagement in the course: either attending the weekly synchronous class, or participating to the asynchronous activities, or both options. They also could opt for the single activities they preferred to complete according to their feasibility also in terms of home Internet connection and devices. The only request made to students by the professor was an advise to take their responsibility in collaborative tasks by keeping participating in an active way once they accepted to be part of a group work.

The course lasted eight weeks with a 6 hours weekly organization: a synchronous class of 2 hours and a half where students could interact with the professor in real time and they could also interact with peers during open discussions and small groups activities; an asynchronous activity (or two connected mini activities) students could complete during the week; in this case the interaction with the professor occurred in terms of formative feedback, mainly feedforward (Price et al., 2011), to let students improve their performance before uploading the final task's output.

As shown in table 1 the proposed activities aimed at orienting the students on the approach of the two main online environments (TEAMS and OLAT) in order to gradually experience and become familiar with the communication/interactions tools and reach a better awareness of technology affordances by managing autonomously, for example, collaborative writing and videochat tools. From week 4, in fact, the professor created a student channel in TEAMS to be freely used by students' teams for their group works; students gradually moved from activities developed entirely in a teacher-led guided platform (OLAT) to activities that could integrate student-led tools (TEAMS and shared google documents/forms).

TAB. 1. *Overview of weekly learning activities.*

	Kind of learning activity
Week 1	Individual task: asynchronous guided analysis of a given educational project (OLAT)
Week 2	Individual task (asynchronous): activity of simulation (OLAT) Collective task (asynchronous): discussion with peers in a forum with a selection of guided inputs to share the reflections about individual task (OLAT)
Week 3	Small group task (asynchronous): video analysis and forum discussion (OLAT) Reflection paper (asynchronous): a guided reflection task to be completed individually
Week 4	Small group task (asynchronous+ synchronous): design and create a need analysis tool (OLAT, TEAMS student channel)
Week 5	Individual task (asynchronous): practicing with the writing process of didactical objectives (OLAT) Small group work (synchronous): practicing with the writing process of didactical objectives (TEAMS professor channel during class) Reflection paper (asynchronous): a guided reflection task to be completed individually (OLAT)
Week 6	Individual task (asynchronous): activity of analysis of autobiographies (OLAT) Collective task (asynchronous): discussion with peers in a forum (OLAT)
Week 7	Pair work task (asynchronous+ synchronous): case-study analysis and design of an educational project (OLAT, TEAMS student channel) Small group work (synchronous): design an educational activity (TEAMS professor channel during class)
Week 8	Individual task (asynchronous): analysis of a docuseries (OLAT) Collective task (asynchronous): discussion with peers in a forum (OLAT) Reflection paper (asynchronous): a guided reflection task to be completed individually (OLAT)

Online activities were designed to let students approach some of the theoretical principles of the discipline through a guided set of tasks that required students a substantial effort in terms of: (1) critical thinking and analysis, (2) teamwork and interaction dynamics with peers (3) adaptive behaviours towards technologies. The alternation of individual tasks and collaborative tasks had the objective to offer anyone the chance to be engaged in activities he/she could manage in preferred times and modalities and, at the same time, the possibility to make student face the opportunities and potential barriers of collaboration and, specifically, online collaboration.

Among the available activities there were three reflection tasks which were required at the end of week 3, 5 and 8 with different inputs that students could either use as a guided path or not; reflections were the only course's outputs that didn't receive any feedback by the professor; the papers were not assessed, since their value was to be found in the experience of a reflective attitude towards a professional identity development.

2. Research design

The qualitative study aims at analysing how the instructional design choices have offered different teaching/learning space-time opportunities and has influenced the effective co-construction of an educational/didactical relation among the involved actors (teacher and students). The course represents, thus, a case-study (Yin, 2013) where the educational/didactical relation is at the centre of the analysis and its efficacy has been interpreted triangulating the space-time variable with the students' response at the beginning, at the end and all along the learning path in the General Didactics course.

Data were, in fact, collected at different phases and with different tools:

- an anonymous questionnaire submitted at the beginning and at the end of the course;
- participant observation: during the course activities;
- students' artifacts as outcomes of the assignments during the course;
- students' feedback in forms of written reflection papers.

Specifically the two questionnaires were built around the following inputs:

- initial questionnaire: experience about e-learning; availability to be engaged in activities and motivation, expectations about the course;
- final questionnaire: level of engagement in online activities and satisfaction; preferred environments and tools for communication and interaction during the course; perceived support and feedback provided by the professor; approach towards individual and collaborative activities; approach toward reflection tasks.

Participant observation was conducted by the professor to monitor students' collaborative dynamics in asynchronous tools (e.g. forum) and synchronous group work during the class. Students were not under observation in the TEAMS students' channel since they managed by themselves their space-time of interaction. Moreover the outputs themselves were a useful source of data mainly in collaborative writing tasks were online documents stored all inputs and comments by group members.

In order to be able to address the efficacy of the relation established between the teacher and the students and among students as peers the qualitative study was run using a content analysis approach (Bardin, 2000): the coding process brought to a set of interpretative categories which were discussed in their dual connotations related to learning space-time opportunities fostered by technology and relationship building.

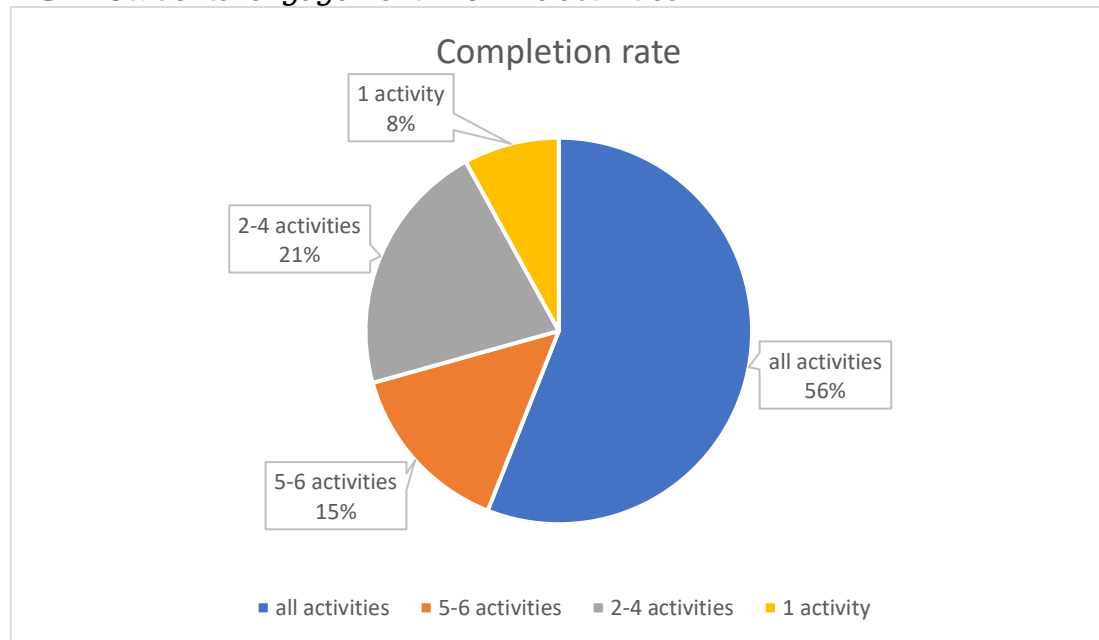
3. Data analysis and discussion

The sample is represented by 105 students of the first year enrolled in the degree course in «Education Sciences», specifically attending the «General didactics» course in the «Socio-pedagogical educator» curriculum.

The triangulation of data was made mainly using the open written answers to the questionnaires, the written reflection papers and the field notes taken by the professor during observation of both written and oral interactions among students in the different space-times of the course activities.

The data collected with the two questionnaires show an apparent imbalance between the initial and the final submission (105 vs 37), but those numbers are actually consistent with the level of students' engagement in the course: just 42 students completed all activities (+ reflection papers) and 33 completed partially the tasks (with at least 1 activity up to six activities, Fig. 1). It is plausible that students who were not fully active in the two learning platforms were not motivated to submit the final questionnaire as well.

FIG. 1. *Students' engagement in online activities.*



In order to understand how students' engagement was affected by the technology-enhanced teaching/learning process the variable space-time was investigated in terms of opportunities of interaction created by the professor with a set of activities, but also in terms of student-led space-times. Specifically student active participation during the course was problematised and seek to understand how technology affected the educational/didactical relation and its efficacy.

The analysis of data let the researcher convey the discussion into three categories, each with a dual connotation: (1) presence/absence; (2) formal/informal; (3) individual/collaborative.

3.1. Presence/absence

The category refers to the implication of professor's presence/absence in the teaching/learning space-times and the balance between her teaching/supporting role and her «fading» to enable/scaffold students' autonomy. Letting students manage their own spaces and modality of interaction (synchronous/asynchronous) means that they «first need to find affiliation with the learning goals and negotiate an identity as a learner who belongs within and understands the classroom practices and relationships» (Willis, 2011, 401).

Students' statements in the questionnaires and reflections showed online asynchronous space-time afforded by forum and collaborative writing tools were addressed as «activators» of participatory dynamics more than synchronous channels as videochats, mostly used for quick communications and negotiations. The students fully experienced to be members of a group work and to be able to collaborate in an effective way (perception of affiliation); those connection helped the construction of a net of peer supporting actions.

Online asynchronous tools (forum, wiki, feedback assignment box) offered an enhanced space-time of interaction between the professor and the students. They underlined that being able to receive and give inputs about the assignments at any time during the week was an opportunity for:

- The teacher to follow the process and not just read the final output (perception of recognition of their engagement);
- The student to ask for help if necessary (perception of support).

The space-time of the individual reflections occurred thanks to two *dispositifs* (Vinatier, 2009): the guided reflection papers and the interactions occurred during the feedforward. Both space-times were mentioned by most students as relationship building opportunities: «I'm enthusiastic since at the end of the course I recognize the beauty of those diaries. Actually it seems that they afford a strong connection between the professor and the learner that goes beyond the simple class»; «with feedback during the week the professor demonstrated that she was beside us and we were not left alone with our doubts; also when she used to spend the first part of the class giving a general feedback on the past week completed activities we had the chance to compare our understanding of the activities with the ones of our peers, in this way we could have an additional perspective or reading key for future activities.»

3.2. Formal/informal

The educational relation and the student agency in relationship building merge two dimensions: formal and informal, the formal/structured space-time of the teaching-learning process is connected and affect, in a

reciprocal way, the relationships which occur outside the course and consequent learning. The impact of the sense of presence and affiliation is one of the variables that were identified by students, in the initial questionnaire, as aspects that they could hardly find in online courses; the activation of an educational relation with professors and the connection with peers seemed to be broadly affected by the impossibility to «live» the student life through its places and rhythms.

Relationship building is not necessarily easier in physical face-to-face environments, but, instead, it is fostered by common goals and collaborative activities (Dixon, 2010; Fedeli, Pennazio 2021; Hillyard et al., 2010; Swanson et al., 2019). Students underlined that group work run at a distance helped them understand with whom of their peers they would have built a friendship and not just a temporary collaboration to accomplish an assignment. It is surprising that a number of students reported to have made their first friendships at university during the course of General Didactics that was located in the second semester, while the courses in the first semester were partly run in face-to-face physical classes at the university building. Most respondents underlined the value of those relationships to activate a mutual support in terms of orientation and learning processes.

The reflections made by students highlighted how the connections with classmates began during the course activities, but progressed also in the out of class space-times and this situation was addressed as a positive connotation of distance learning. At a distance, in fact, students had to make a big effort in understanding each other through online communication channels that are different from the ones they are used to, especially asynchronous ones.

3.3. Individual/collaborative

The assumption that learning is both an individual and social process (Salomon, Perkins, 1998; Wenger, 1998) has been widely investigated also in e-learning and in instructional technology studies (Harasim, 2017; Hill et al., 2009). Online technologies can create a variety of space-times that goes well beyond the dualism individual/collaborative since, as we have seen, cover also the asynchronous dimension; interaction and communication dynamics, in fact, when applied in an online collaborative activity require students to identify a balance between the enhanced learning space-times opportunities.

If students reported and showed that individual activities did not cause any difficulty, online collaborative activities needed a deeper process of negotiation of spaces and times to apply team building skills. Mostly when interacting through asynchronous tools students perceived the need to develop a self-regulation competence to express themselves, make others' accept different viewpoints and reach a shared decision. Students reported to have appreciated different patterns of participation (in pairs/in small groups, etc.) that let them visualize learning as a social practice and a shared responsibility.

The individual tasks as well were relevant opportunities to reflect on the relation between autonomy, space-time and social attitudes; students asked themselves if having the chance of freely modulate their learning space and time in a number of activities helped them acquire a major awareness on how to manage space and time when working collaboratively.

Conclusion

Space-time of learning is to be seen as both opportunities provided by the professors (e.g. tasks, feedback, etc.) and students' actions in direction of an autonomous management of their learning process (e.g. study time, reflection time, etc.).

When the teaching /learning process occurs online through digital environments and tools the space-time seems to be enhanced by affordances offered by technologies and the case-study here described shows the following results:

- technology enables an effective learning context when a set of space-time opportunities are designed in terms of practical activities to be developed by students: online interaction helped students exercise agency within a system of accountabilities (*direct affordances*);
- different patterns of participation in terms of collaborative activities (focused at the level of the individual learner, pairs of students, group based or whole-class based) allowed students make a flexible use of available space-time according to the task and required outcome (*mediated affordances*);
- a balanced use of synchronous and asynchronous tools made students reflect on different dimensions of «time» and «space» when interacting and encouraged them in taking a more active role in relationship building.

References

- Bardin, L. (2000), *L'Analyse de Contenu*, Lisbon, Ediçoes 70.
- Baurain, B. (2011), «Teaching, Listening, and Generative Silence», *Journal of Curriculum Theorizing*, 27(3), 89-10.
- Dixon, M.D. (2010), «Creating effective student engagement in online courses: What do students find engaging?», *Journal of the Scholarship of Teaching and Learning*, 10 (2), 1 – 13.
- Duarte, E.M. (2014), «Together and Apart in the Time of Study: Teaching, Learning, Listening in Online Courses (An Application of the Technology of Difference)», *JPSE: Journal for the Philosophical Study of Education*, II, 55-72.

- Fedeli, L. and Pennazio, V. (2021), «Drivers of student engagement in a global emergency period: some reflections on transition from face-to-face to online learning», in L. Gómez Chova, A. López Martínez and I. Candel Torres (eds), *INTED2021 Proceedings 15th International Technology, Education and Development Conference*, Valencia, IATED Academy, pp. 691 – 697.
- Harasim, L. (2017), *Learning Theory and Online Technologies*, New York, Routledge.
- Hill, J. R., Song, L. and West, R.E. (2009), «Social Learning Theory and Web-Based Learning Environments: A Review of Research and Discussion of Implications», *The American Journal of Distance Education*, 23(2), 88-103.
- Hillyard, C, Gillespie, D., Littig, (2010), «University students' attitudes about learning in small groups after frequent participation», *Active Learning in Higher Education*, 11 (1), 9–20.
- Price, M., Handley, K. and Millar, J. (2011), «Feedback: focusing attention on engagement», *Studies in Higher Education*, 36, 879–896.
- Salomon, G. and Perkins, D. (1998), «Individual and Social Aspects of Learning», *Review of Research in Education*, 23, 1-24.
- Stramaglia, M., Deluigi, R. and Fedeli, L. (2020), «Dinamiche-didattiche laboratoriali e spazi educativi. Logiche comunicative e assetti relazionali degli educatori in formazione», *Rivista italiana di educazione familiare*, 2, 245 – 267.
- Swanson, E., McCulley, L.V., Osman, D.J., Scammacca Lewis, N. and Solis, M. (2019), «The effect of teambased learning on content knowledge: A meta-analysis», *Active Learning in Higher Education*, 20, (1), 39–50.
- Ubell, R. (2010) (Ed), *Virtual Teamwork: Mastering the Art and Practice of Online Learning and Corporate Collaboration*, New Jersey, Wiley.
- van Eijck, M. and Roth, W. M. (2010), «Towards a chronotopic theory of «place» in place-based education», *Cultural Studies of Science Education*, 5(4), 869-898.
- Vinatier, I. (2009), *Pour une didactique professionnelle de l'enseignement*, Rennes, Presses universitaires de Rennes.
- Wenger, E. (1998), *Communities of Practice. Learning, Meaning, and Identity*, Cambridge, Cambridge university Press.
- Willis, J. (2011), «Affiliation, autonomy and Assessment for Learning», *Assessment in Education: Principles, Policy and Practice*, 18 (4), 399-415.
- Yin, R. K. (2013), *Case study research: Design and methods*, Thousand Oaks, CA, Sage publications.