Productive-collaborative Potential of Wiki Activities in Moodle

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Abstract:

The focus is the potentiality of the collaborative-production of Wiki activities in Moodle, available as a backup system to the presence and distance learning on the Education Degree formation at Santa Catarina Federal University. The starting point is the analysis of the education mediated by the Information Technology and Communication presented on the national curriculum as a guideline in public policy for teacher education. Examples of activities conducted in the tool Wiki of Moodle on the course General Didactic are presented as results. Conclusively it emphasizes the potential of these productive and collaborative activities in promoting access to science, technology and innovation to the Education degree.

Key words: Wiki activities, collaborative educational production, teacher education.

1 Science, technology and innovation in teachers education

The technologies are human productions to increase physical strength, the possibility of moving, strengthen the senses, the communication range, the flexibility of interaction and interactivity [1]. To the extent that the schooling process reaches a larger number of people with different expectations and needs, the incorporation of Information and Communication Technology (ICT) will be occupying more space and consequently interfering with the organization process of educational work. Today the production of digital objects is growing due to the publishing possibilities of their content over the Internet and educational use in Virtual Environments for Teaching and Learning (AVEA).

Four years after the publication of the Law of Directives and Bases of National Education (LDB), in Brazil, the discussion on national policies for education of information society started up with the publication of the text "Information Society in Brazil: green book[2]. This document enroll guidelines to increase access to technological mediators, since the solution does not limit itself to schools infrastructure informatization. The "White Paper: science, technology and innovation" launched in 2002 by the Ministry of Science and Technology (MCT) presents Strategic Guidelines to enhance the scientific and technological development in Brazil, among which VII is "Educating for the knowledge society ". This is a challenge that requires "increasing the levels of access and use of Information and Communication Technology (ICT) for different segments of society and Encourage the use of ICT in universal access to scientific and technological education" [3].

It stands out the commitment of educational professionals on the scientific and technological development making the need for them to understand more and more the historical path of production of science and technology as well as the challenges of education mediated by technological innovations. From this understanding, it is inevitable the concern with the elaboration of didactic and methodological strategies that brings out some issues of
ways of communication and information sharing to enhance interaction and collaboration around curriculum content. One of the education tasks, especially when there are mechanisms for communication like the Internet, is to get closer to the subjects of school education as a bet in the production of 'Be More'.

In this sense, the creation, use, and optimization of technological mediators include cultural and social issues that are much broader than connection to information and communication network. The first concerns to the integration of ICT in extra curricular activities in teaching education, especially in the tasks coming from the classroom and preparation of materials. Thus, it requires reorganization strategies, including the administrative spaces in educational institutions.

The innovative use of language as the possibilities of hypertexts and hypermedia must be understood as collaborators in the teaching-learning. A simulation system can constitute a mechanism for technological support in planning and implementing educational activities. However, it is essential that the professor is able to perceive events and situations critically taking the prospect of cultural content and materials. Little has advanced since the computer has been introduced as a technical resource to illustrate lessons guided by methods of information [4].

If ICT has the potential to be used in a pedagogical renovated contexts beyond the education traditional model, it is necessary to invest in the integration of technological mediators since the teacher’s education. The use of technologies interactions and interactivities, simulation and hypermedia animation, virtual research projects, AVEA, videoconferencing, teleconferencing, chat rooms, forums, email and collaborative tools of production can lead to changes in the relationship between of pedagogical teachers and students with the knowledge in the cultural renewal of school knowledge guided by advances in science, technology, and innovation.

According to the policies of both the Ministry of Education and the Ministry of Science and Technology the requirements for the technological education incorporation as competence and skill needed for professional practice, implies guidelines and parameters that provide the interdisciplinary and cross-cutting requirements inherent in the formation of teachers who will work on basic education.

In this manner, the teachers education need to offer some support to reflection on the potentialities and implications of integrating technological mediators in pedagogical work. The integration of technological mediators in the processes of teacher education is largely oriented by education public policies as the National Curriculum Guidelines for the Basic Education of Teachers (DCN) in the articulation of interaction and communication in various fields of professional knowledge, the development of autonomy intellectual autonomy and professional, interdisciplinary, knowledge to be taught the philosophical knowledge, educational and pedagogical that pin down the educational activity.

The DCN points out that the mentoring pedagogical program is essential for the teaching activities and there is a primarily need to prioritize the preparation for "the use of information technologies and communication methodologies, innovative support strategies and materials, as well the development of collaboration habits and teamwork [5].

Investing in teachers’ education in all areas of knowledge, addressing the potential mediators of computer technology to cultural renewal of school knowledge requires the acknowledgment of the assumptions, values, and practices. Taking advantage of the potential from the hypermediatics of ICT to achieve a more interdisciplinary education and enhance the collaborative influences the didactic-methodological school, extracurricular proposing tasks, developing, and updating teaching materials.

Integrating computer technology in teachers’ education is possible, besides including the national curriculum guidelines and indicators of the literature on the subject, to promote an investigative process about what and how to teach [6]. Materials hypermediatics, simulation
systems, animations and videos, for example, can be allies in the technology planning and implementation of curricular activities. However, it is essential for teachers to be trained and structural conditions to create, store, and access information and digital documents as an enhanced monitoring process, contributing to the improvement in the didactic-methodological and pedagogical mediation, including the school community.

If the technological mediators become better understood and systematized the specifics teaching work, students will be able to provide educational policies and technological renovation. Thus, ICT can enhance the educational process as they develop and provide tools for searching, collection, and selection of information and knowledge. This means to expand the integration of information technology in the educational process to enhance the understanding of the interface between science, technology, and innovation.

The work of teachers and students, both in normal courses and distance ones, must surely be questioned because of the innovative teaching methods that can be achieved with the integration of ICT in teaching-learning process. When it is understood the potential of technological mediators can acquire from technological pedagogical mediation notice the need to strengthen relations: form and content, teacher and student, school and society, teaching and research, dialogue and collaborative production.

2 Virtual Environments for Teaching and Learning (AVEA) in the presence and distance teachers education

Enabling education for the "knowledge society" with a view of implementing solutions designed to increase access to ICTs encouraging their use in the universalization of science and technology education, as the White Paper, has been happening with the development of the teaching-learning and research mediated by Virtual Environments for Teaching and Learning (AVEA) on-site courses and distance of teachers education [7, 8].

Currently, teaching, research, and extension is mediated by AVEA Moodle, available as a support system for students in <www.moodle.ufsc.br> and for distance education courses in <www.ead.ufsc.br>. Among the actions stands out in this text as a thematic focus, the potential of this AVEA in curricular activities in the General Curriculum in courses and distance learning classroom of teachers at the Federal University of São Paulo between 2008 and 2009.

The integration of an AVEA in curricular activities in the General Curriculum has at the same time a conceptual and operational meaning in courses for teachers because the discipline’s object is the Education with all its theory and methodology and with its retrospective and prospective interface with other disciplines in undergraduate programs.

All school situations mediated by AVEA experienced during the last two years in the various courses for teachers (Pedagogy, Literature, History, Geography, Philosophy and Mathematics) are marked by innovation in its interface with technology because it is the first real contact with a student AVEA and especially with-productive collaborative tools like Wiki. The uniqueness of the pedagogical intervention in AVEA on teachers’ formation signals the need for investments in the process of university education. The socio-cultural context of households, the world of work, and the leisure time is largely marked by technological innovations, where the potential for interaction, collaboration, and educational production are still far from the scene of teacher education.

Given this reality, the results have been satisfying in the experiments with the use of AVEA in courses for teachers, although, they are different ways in which students have some technological support as elements that are some kind of dialogue obstacle between them and the teachers. The investigative teaching practice in Moodle, combined with the reflection provided from the data collected with the research tool application such as questionnaires
Colles Moodle, legitimizes the argument about the need to train education professionals to act in a more world globalized world, where cultural renewal and scientific-technological takes very fast steps.

The first challenge of inserting a AVEA as mediator technology that can enhance the teaching-learning process is to confront this component with the students. Most students understand that the use of AVEA means more time to study; in fact they don’t know that the possibilities for interaction and collaborative educational production. In this case, expose and explain the public policy curriculum has been an alternative that enables the necessary understanding about the conceptual and operational bases of the profession.

Moodle is the AVEA used at UFSC in the different ways on presence and distance learning. Its use has been extended since 2004 with the start of activities and preparation of teaching materials for Physics and Mathematics course at distance learning in the context of the Pro-Undergraduate. Currently, it extends to the distance courses offered under the Brazil Open University (UAB) [8].

The institutionalization of Moodle as a Support System for Presence Students from UFSC counts with the integration of the academic undergraduate and postgraduate students from the School Administrative Department (LAD), so that data concerning to the subjects, their teachers and students enrolled are incorporated into the database, which later it is not necessary to re-register. To use Moodle as a mediator to help support the modality presence learning, it is sufficient that the teacher asks the availability of relevant teaching department.

The approach to educational issues, teaching, cognitive or socio-cultural that are brought up when discussing the implications of technological mediators as a AVEA in the teaching-learning reflect that there is no without the collaborative production or collaborative production without the mediating sustained resources and didactic-methodological interaction. The pedagogical intervention occurs under the sign of the situations of teaching and learning planned in advance, implemented, reviewed, and redesigned according to the dynamics and characteristics of school knowledge prioritized, multi-referenced, practices and materials [8].

Technological mediators as AVEA can enhance the teacher's role in the teaching-learning process, but this requires conceptual innovation and practice in two levels: the mobilization for the development and use of mediators increasingly efficient and systematic, and at the same time, renewal steps of educational and methodological work of the staff and students.

The challenge for teachers is to notice the changes caused by technological mediators since the hypermedia materials to the possibilities of interaction and collaborative production in virtual and communities enviromental. The process of pedagogical work mediated by various forms of communication need to approach more the new way of being, thinking, and acting of the subjects. Therefore, the challenge is to organize privileged spaces for the educational process to increase the opportunities for interaction and collaborative educational production around the knowledge mediated by ICT.

The practice with the inclusion of ICT in curricular activities in teacher education shows that the AVEA characterized as mediators to support school work supporting teaching, learning, and research since the plans and evaluation are carried out constantly. Indicators that allow the movement of the action-reflection-action come from active involvement in classroom and extracurricular activities mediated by ICT such as teachers, students, and researchers in courses for teachers.

The stages of planning, implementation, registration, evaluation, and redesign implies on the concerns thematic delimitation and the elaboration of strategies for solving problems such as the integration of ICT in courses for teachers. Teaching, students and investigative practice with AVEA notice that teachers and students do, diagnose, deliberate, produce and investigate collaboratively their school activities as they carry out different tasks.
The use, the problem-solving, and the development of a computerized tool in curricular activities from teachers’ formation courses only investigative and challenging educational meaning because: a) the performance of tasks by students and teachers is associated with the operation of interactive tools and educational collaborative production b) there are interfaces between the various modules (hypertext, activities, communication, profile and materials) featuring the school work in a network with internal and external interconnections c) teachers and students have different profiles triggering different levels of investigation, comprehension, and depth areas of work d) the bibliographies that support activities are available in electronic forms in addition to printed materials, e) the tools of research and evaluation, and the results of the records produced and analyzed serve to minimize the difficulties in learning and improve teaching practice and methodology f) journeys from performance of the productive and collaborative activities and interactions allow the materials re-elaboration previously planned orienting the sequence of the planning.

3 Collaborative Educational Production in Wiki activities in Moodle

The increased access to ICT through the use of the AVEA presence and distance courses of teachers’ formation is bound to challenge the universality of science and technology education in line with the policies of MEC and MCT. From this perspective, to promote access to science, technology, and innovation in courses for teachers involves the challenge of collaborative educational production.

Therefore, the analytical and reflective highlight in this text revolves around the activities potentialities carried out with the Wiki tool in Moodle. Its difference from the other tools such as forums, chats, and blogs is the permanent contributions of all participants in the same production, historicizing the production process of the group, the monitoring of teachers and / or tutors, and the diversity of tools Resources available in Moodle for the availability of reference materials such as hypertext links, internal and external text files, videos, images, and sound in various formats.

The availability of the materials used in each class, at meetings or video conferences, organization of tasks between classes, options for sharing records and reports of observation of activities of the Practice as Component and Course (PCC), news forums related to the collaborative production in Wiki allows students to experience a new pedagogical intervention with the support of a technological mediator such as AVEA Moodle.

For the purposes-productive objectives in the Wiki to be achieved successfully, the teacher's role is vital in the organization of schedules, the dialogue orientation about of the prioritized contents in the selection of materials, the evaluation systematization system. The mediation framework is supported by teachers and students with the teaching and learning knowledge. A work that necessarily implies the overcoming of common sense about the knowledge objects recognized as technology-scientific.

The hipermidiatic practice that supports the pedagogical mediation around the productive and collaborative activity in the Wiki implies the availability by the teacher with clear guidelines and support resources. The monitoring during the implementation needs to focus on the criteria established, in the curriculum guidelines related to public policies, the coherence of conceptual relationships, proper use of reference materials, and also the skills development around specificities of the technological tool. Moreover, the mediating role of the teacher requires the questioning of the productive course that at times appears more or less collaborative in different groups.

It is important to say that the mediation sustained in AVEA Moodle can be enhanced by the hipermidiatic practice and optimized the organizing character of the work from the teachers and students in activities Wiki. This is due to the possibility of providing resources
through the creation of web pages in their own environment, links to internal files or to external pages, write scripts and orientation step-by-step, and especially to keep track of the collaborative – productive route historicized on the Wiki tool.

The investigative exercise around the productive-collaborative potential Wiki activities in Moodle as promoting access to science, technology, and innovation in present courses and distance of teachers allow to establish as sustainable support pillars principles such as: a) a contract teaching, b) didactic transposition c) Interdisciplinary and Mainstreaming ed) Integration Task.

a) In a Wiki activity the Didactic Contract is a central axis, as it is necessary to lay down clearly the rules of work between teachers and students as the example shown in Figure 1. In this case, the teacher must first develop a planning activity in accordance with the sequence of curricular content prioritized establishing clear objectives to be achieved by the activity. The purpose of the activity has to be shared with students and they need to understand them so they can activate properly with the challenge of both production and collaboration.

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**Figure 1: Guidelines in Wiki Activity**

b) The principles of the Didactic Transposition come into play when the Wiki activities is part of the didactic time when is planned by the teacher and the appropriate support materials and guidelines are provided.

Moreover, according to the didactic transposition, a Wiki activity requires attention and care with Time Learning. This means that to produce and collaborate require time to organize and study on the exercises and the applicability of main knowledge of the discipline. It is essential that the groups can afford space and time to carry out the proposed activity during the school time discipline whether presence or distance. In Figure 2 we highlight the history of the collaborative production of a Wiki group of Moodle having a number of
versions (59) to illustrate that the qualitative result of the object produced by the members of each group requires a process of organization (in this case, the group produced a first project) and periodic overhaul.

Figure 2: Historical educational collaborative production al in Wiki activities in Moodle

c) The implementation of the conceptual and operational interdisciplinary activities are present in a Wiki activity in a way that the students constantly use in the different curriculums already studied at other times during the course and also when the teacher provides support materials and directions of research that highlight the interface with the knowledge of other disciplines.

The results produced in Wiki Activities acquire the interdisciplinary character, especially when the focus on presence courses and distance learning for teachers is the development of teaching materials. The possibility of authoring a teaching material that can be implemented in basic education challenges students to incorporate references, activities, and suggestions of the object use produced in more than one discipline.

The transversality should be addressed by the consistency of a Wiki activity with Transversal themes advocated by public policy curriculum as the National Curricular Parameters (PCN). From this perspective, it is important to realize that a Wiki activity needs to be thematized, so it will not lose the conceptual prioritized focus, limiting the focus of production in the group or limit the situations of the productive and collaborative tool. Figures 3 and 4, taken as cuttings of an object produced collaboratively in a Wiki activity, possible to understand a little better the specificity and relevance of interdisciplinary and cross-disciplinary and conceptual foundations of educational production performed.
d) The logical integration of different tasks in a particular discipline has been a mobilizing element that has generated success in the development of the Wiki activity in presence courses and distance teachers education.

The distance Bachelor’s Degree in mathematics, for example, the collaborative wiki was associated with the development of a text that could be incorporated as a theoretical foundation in the Report of research activity in schools of basic education to practice as a Curricular Component (PCC). This enabled the organization of groups in terms of reading support resources (texts, elaboration of the report and a more systematic thinking about the research data collected in the schools of basic education).

On the presence courses in teachers education, the Wiki activity is also limited by the records of observations of PCC in basic education. In addition, the differential in these courses is that the Wiki activity has a productive focus for the construction of educational material that will be a reference for the individual preparation of a Lesson Plan. Hence, the Wiki activity integration occurs with the PCC lessons and gain a prospective component such as Lesson Plans that could be implemented in Internship Curriculum with the application of the material produced in the Wiki activity, as shown in Figures 3 and 4.

The integration of the tasks ends up providing once again the interdisciplinary character as many groups can establish links with research activities, reading, and creations demanded as homework, required in other disciplines. This integrator character is new for many students, as over a graduation course they carry out many activities that are not included in the curriculum sequence. This ends up being a challenge for the teacher when preparing the guidelines of a Wiki activity with a promoting perspective of scientific and technologic education.
The principles of the didactic contract, didactic transposition, interdisciplinary and cross-cutting, and integration of tasks set out a series of actions that need to be implemented by teachers and students during the production of collaborative educational. Each of these aspects becomes more understandable in the teaching practice in that the Wiki activity is associated with search features and evaluation. Therefore, it can be used tools such as questionnaires available in Moodle itself.

Along the collaborative production way, besides the supporting resources (material) and an indication of research reference in the environment, it was used the Colles Moodle questionnaire as a tool for Evaluation Research. The results indicated that the greatest difficulties in collaborative - production educational activities are still the interactivity and the support of colleagues, as shown in Figure 5. Categories such as the relevance of the themes, tutors and teachers, situations of critical reflection and understanding are highlighted with frequent occurrence.

The use of tools of Evaluation Research provided on the AVEA allow a investigative process about the understanding of objectives of the activities, the implementation of the rules established on the didactic contract, and clarity of guidelines and support materials available and the nature of collaboration achieved during the various tasks of the discipline.
According to the pillars discussed as central Wiki activities and the examples previously presented, it can say that they are mobilizing elements of a collaborative-productive educational activity:

- planning in advance by the teacher;
- sharing the objectives of the activity with the students;
- setting the collaborative – productive parameters on the didactic contract;
- organization of resources and support materials;
- integration with the Task’s totality (retrospective and prospective discipline);
- thematization of the activity in accordance with the national curriculum policies;
- prediction of space-time conditions for carrying out the activity;
- attention to the unprecedented nature of the collaborative production;
- association of the activity with investigative procedures throughout the process.

These conceptual foundations are illustrated with examples (Figures 1, 2, 3 and 4) of the collaborative Wiki activities carried out in Moodle. The examples refer to the collaborative production in the Wiki tool available in the General Curriculum discipline of presence courses and distance teachers education at Santa Catarina Federal University. This collaborative - productive activity associated to insertion situations of basic education schools and conceptual reflections, provides a theoretical-practical to the discipline, which the hours includes 20 hours of practice as a Curricular Component (PCC), according to the Guidelines National Curriculum for Teachers of Basic Education (DCN) of 2002. Each of the images captured from Moodle allows us to understand the meaning that mobilizing elements get to the collaborative production on way of the proposal, implementation, monitoring, guidance and validation of productive activity-collaborative.

Work in groups on the Wiki is supported on the topic of the course and therefore, one of the criteria for validation of the final production of the group is contemplating the didactic and methodological framework of a teaching resource that could be implemented in situations of teaching and learning related to the internship requirement in subsequent stages of the
course. That is, the final production of the group is the result of a process of didactic transposition. In the same line, another criteria and focus guiding of the work is that the collaborative production is thematized from the curriculum guidelines contained in the National Curriculum Parameters (PCN).

The samples are the result of collaborative - productive Wiki of AVEA Moodle developed in the Bachelor's Degree Geography course at UFSC. This production was thematized from the guidelines of the PCN of Geography of the 3rd and 4th cycles of basic education and supported by cross-cutting issue Environment. The productive movement of the group resulted in creative production, which organization of content is illustrated by images captured on Internet sites and / or extracted from software like Google Earth. The choice of this theme for educational collaborative production allowed the group to address concepts and controversial issues with a wide background, since the university is situated on the island of Florianópolis in Santa Catarina. It became possible to find a variety and abundance of information and reference materials in various languages on the theme mangroves.

The production of the group was organized and historicized in the Wiki tool in the environment to access and contribute from all participants, which the group of 4 members had a total of 59 versions over the period of work that revolved around two months. There was also a formatted file (which is extracted the image in Figures 3 and 4) allowing a version for printing and distribution at the time of implementation of a Lesson Plan about the content on the internship opportunity.

4 Collaborative – productive potentiality of the Wiki activities in Moodle

Initially, it was discussed in the text need to consider the knowledge of the process of scientific and technological courses for teachers in both classroom and distance. "Education for the knowledge society" is supported by a process of discussion and legislation in public policy from both the Ministry of Science and Technology and the Ministry of Education. Thus, science, technology, and innovation should be incorporated as central pillars of guidelines for courses of teacher education.

The pedagogical intervention potentiated by the Virtual Environments for Teaching and Learning (AVEA) such as Moodle has been the option to carry out collaborative-productive educational activities in presence courses and distance teacher education, starting from the assumption that the interface between science, technology, and innovation requires the production and collaboration as two grounds.

In this sense, the creation, use, and optimization of technological mediators for cultural and social inclusion involves the integration of Information and Communication Technology (ICT) in curricular activities in school spaces in teacher education, especially, in the tasks arising from the didactic objects education-(materials). From this scenario, it is possible to use languages with innovative advances in hypermedia and hypertexts included as allies and mechanisms for technology support in planning and implementing educational activities.

The methodological didactic organization of the lessons and presence and distance meetings, extracurricular proposing tasks, creation and updating of teaching materials, and especially use of the potential of hypermedia educational resources helps to increase the educational production collaborative in Wiki activities in AVEA. Investing in teachers’ education in all areas of knowledge, addressing the potential mediators of computer technology, can strengthen the questioning of ideas, values and practices around the science, technology, and innovation in presence courses and distance teachers education.
The universal access to science and technology education acquires a special sense when it comes to courses for teachers because it involves renewing curriculums because of the skills and abilities to pursue the teaching profession.

Likewise, the production and collaboration fundamental are not from a random process, but they are marked by the scholastic world. This is a collaborative - production educational systematized by pedagogical intent, by the knowledge that necessarily need thematize the activities, the observation of the rules established on the didactic contract, the history of the process according to the records that show the challenge of balance time teaching and learning, beyond the innovative component that the use of a AVEA generates in the teaching-learning process.

References:


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