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# State of the Art (or Theoretical Considerations) on the efficiency of virtual collaborative work activities in the learning process

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**Estado del Arte (o Consideraciones Teóricas) sobre la eficiencia de las actividades virtuales de trabajo colaborativo en el proceso de aprendizaje**

**Estado da Arte (ou Considerações Teóricas) sobre a eficiência das actividades de trabalho colaborativo virtual no processo de aprendizagem**

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## Abstract

This paper emphasizes the importance of conceiving the curriculum not as a fixed set of predefined programs, but as a provisional description of a continuous process of experimentation in educational practice. In this way, curriculum and learning analytics become a dynamic resource that adapts to the changing needs of students and the demands of society. Curriculum development involves crucial aspects such as content selection and teaching methods. Consequently, the fundamental question of how a teacher applies his or her knowledge in the classroom. Teacher research presents itself as a valuable tool for exploring the ways in which educational principles are applied in specific contexts of action. This approach, known as "Lesson and Learning Study," promotes the idea of the teacher as researcher, fostering a mindset of continuous improvement in teaching. From a professional perspective, this approach has a significant impact on teachers' work, as it contributes to the improvement of their educational practice. By adopting a more investigative approach, teachers can more accurately identify what methods and content work best in their classrooms, which in turn benefits their students. In addition, this investigative attitude can also drive scientific research in the field of education, generating valuable knowledge that can inform more effective educational policies and practices. This dynamic curricular perspective and the promotion of the teacher as a researcher have a positive impact on the quality of teaching and the advancement of educational research, contributing to the continuous development of educational praxis.

**Keywords:** Learning analytics - Curriculum - Education - Research - Education - Research.

**Resumen**

El presente trabajo enfatiza la importancia de concebir el currículo no como un conjunto fijo de programas predefinidos, sino como una descripción provisional de un proceso continuo de experimentación en la práctica educativa. De esta manera, el currículo y las analíticas de aprendizaje se convierten en un recurso dinámico que se adapta a las necesidades cambiantes de los estudiantes y las demandas de la sociedad. El desarrollo curricular implica aspectos cruciales como la selección de contenidos y los métodos de enseñanza. Por consiguiente, la pregunta fundamental de cómo un docente aplica sus conocimientos en el aula. La investigación docente se presenta como una herramienta valiosa para explorar las formas en que los principios educativos se aplican en contextos específicos de acción. Este enfoque, conocido como "Lesson y Learning Study," promueve la idea del docente como investigador, fomentando una mentalidad de mejora continua en la enseñanza. Desde una perspectiva profesional, esta propuesta tiene un impacto significativo en el trabajo del docente, ya que contribuye a la mejora de su práctica educativa. Al adoptar un enfoque más investigativo, los docentes pueden identificar de manera más precisa qué métodos y contenidos funcionan mejor en sus aulas, lo que a su vez beneficia a sus estudiantes. Además, esta actitud investigadora también puede impulsar la investigación científica en el campo de la educación, generando conocimientos valiosos que pueden informar políticas y prácticas educativas más efectivas. Esta perspectiva curricular dinámica y la promoción del docente como investigador tienen un impacto positivo en la calidad de la enseñanza y en el avance de la investigación educativa, contribuyendo al desarrollo continuo de la praxis educativa.

**Palabras clave:** Analíticas de aprendizaje - Currículo – Educación - Investigación

**Resumo**

Este documento sublinha a importância de conceber o currículo não como um conjunto fixo de programas predefinidos, mas como uma descrição provisória de um processo contínuo de experimentação na prática educativa. Desta forma, o currículo e a análise da aprendizagem tornam-se um recurso dinâmico que se adapta às

necessidades em mudança dos alunos e às exigências da sociedade. O desenvolvimento curricular envolve aspectos cruciais como a seleção de conteúdos e os métodos de ensino. Consequentemente, a questão fundamental é a forma como um professor aplica os seus conhecimentos na sala de aula. A investigação sobre os professores apresenta-se como uma ferramenta valiosa para explorar as formas como os princípios educativos são aplicados em contextos de ação específicos. Esta abordagem, conhecida como "Estudo da Lição e da Aprendizagem", promove a ideia do professor como investigador, fomentando uma mentalidade de melhoria contínua do ensino. Numa perspetiva profissional, esta abordagem tem um impacto significativo no trabalho do professor, na medida em que contribui para a melhoria da sua prática educativa. Ao adoptarem uma abordagem mais investigativa, os professores podem identificar com maior precisão os métodos e conteúdos que melhor funcionam nas suas salas de aula, o que, por sua vez, beneficia os seus alunos. Além disso, esta atitude investigativa pode também impulsionar a investigação científica no domínio da educação, gerando conhecimentos valiosos que podem informar políticas e práticas educativas mais eficazes. Esta perspetiva curricular dinâmica e a promoção do professor como investigador têm um impacto positivo na qualidade do ensino e no avanço da investigação educacional, contribuindo para o desenvolvimento contínuo da praxis educativa.
**Palavras-chave:** Análise da aprendizagem - Currículo - Educação - Investigação – Educação

## INTRODUCTION

The learning process focused from its activities has had a series of transformations, which have been focused from the teaching strategies, having as an inexorable transition, the presence of digital technologies and their educational use in the different levels of processes of an educational system, therefore, in the curricular space applied by the teaching staff.

Educational Research in the field of higher education, as in other training areas, faces challenges, which in turn must be treated with continuous reflection, since there is a permanent relationship between two substantive activities: Teaching and Scientific Research.

It is relevant to consider the following: "Within the framework of current university education and the knowledge society, curricular transversality constitutes an alternative to improve the quality of comprehensive training processes and the development of

professional competencies" (Romero Fernández et al., 2021, p. 410). (Romero Fernández et al., 2021, p. 410)..

Based on the above, it is important to say that the curriculum of the professional in training must be constantly analyzed and evaluated, from the point of view of the teacher's research and that of the learner, who must have a scenario built by the educator in which the apprentice learns to do research.

University education in Ecuador's curricula are still focused on content, which leads to reflection on how the university educational process is viewed: teaching, learning and evaluation, often treated as isolated moments, and in the midst of this, it is necessary to develop competencies in students.

Both teachers and students, in their own educational work, develop in a context, in which in one way or another, leads to the fact that in praxis, the university entity is always a researcher, in which teaching is practiced by researching, the teacher himself researches by himself to improve and transform his curricular practice and interaction with his students, in turn, as an effect of their personalization, he has to investigate them, in their characterization, learning styles, ..... to improve their academic processes and the performance of the learners.

As previously stated, consider the following:

"The "learning study" theory is based on a phenomenographic research approach that systematically describes what students learn during a lesson. Here teachers must identify students' "difficulties" in learning, which has also been called "learning cues"; once these cues have been recognized, the teacher can change strategies and improve students' academic performance." (Palencia Salas, 2020, p. 113)

## MATERIALS AND METHODS

The information search was carried out electronically to find relevant scientific production in the following databases: Redalyc, DialNet, Scielo, ERIC and Google Scholar, considering a time span of up to 10 years ago, and Spanish and English languages.

The search terms were: learning process, learning strategies in the knowledge era, lesson and learning study, the idea of the teacher as researcher, learning study theory, and virtual collaborative work activities.

**Table 1.** *Data base*

| Terms | Redalyc | Dialnet | Scielo | Google Scholar |
|---|---|---|---|---|
| **Learning process** | 51172 | 52902 | 3675 | 372000 |
| **Learning strategies in the knowledge era** | 95303 | 8165 | 262 | 52900 |
| **Learning study theory** | 53444 | 2607 | 565 | 16500 |
| **lesson and learning study** | 29159 | 467 | 76 | 204000 |
| **The idea of the teacher as researcher** | 58598 | 1127 | 2 | 18100 |
| **The learning environment and teaching strategies** | 47778 | 713 | 11 | 15900 |
| **Virtual collaborative work activities** | 56811 | 587 | 8 | 15800 |

The articles found were grouped by criteria, selecting those that shed light on the research as such, choosing 20 articles.

**RESULTS**

There is a need to develop student competencies based on established standards together with their professional validity, leading in a certain way to discriminatory factors due to the requirement of certain characteristics and/or qualities, affecting inclusive education.

Researchers Oscar Gutiérrez Huamaní and Delia Ayala Esquivel make a valuable contribution in this regard, which is considered below. (Gutiérrez Huamaní and Ayala Esquivel, 2019, pp. 246-253):

Techno-functionalist positivism has led to the mixing of ideas, concepts and proposals, which makes competence become content, which does not ensure the improvement of the educational system, aspiring to form homogeneous and homologous students, giving rise to the need for teachers to have strategies that allow the development of specific professionalizing performances and not the teaching of content.

Educational didactics should allow the transfer and development of soft skills in addition to the knowledge of the subject itself, so that the dialogue should be aimed at awakening the interest of the learner, promoting mental processes that manage knowledge based on meaningful, active learning and aiming at the development of potentialities, respecting diversity.

Learning does not occur through the transmission of knowledge, but through the emotional component of learning, i.e., intrinsic motivation.

University evaluation should not simply seek academic success, but rather the educational transcendence that accompanies the teacher.

This teaching, learning and evaluation process, as already mentioned, must consider the support and contribution of Information and Communication Technologies (ICT) to manage work spaces and times of educational actions.

Learning analytics

The researcher José A. Ruipérez-Valiente mentions that this area took off in the 2010s: "The area of learning analytics (learning analytics, LA) has taken off during the last decade positioning itself as one of the fastest growing communities within the area of educational research ... An important recognition of the maturity to which the area has reached, is that currently in 2020 the most important conference in the area, Learning Analytics and Knowledge, is located in Google Scholar metrics in the area of educational technologies 1 in sixth position and as the only conference among the 20 most cited sources." (Ruipérez-Valiente, 2020, pp. 85-86)

In turn, the author highlights the following in the same article:

The relationship with educational data mining (EDM) and artificial intelligence in education (AIED), and the growing behavior in Google of these terms, which speaks of the trend to transform education in the world.

The high multidisciplinarity and complexity of the current educational field.

The researcher's input on how to conduct a learning analytics process is very important to consider, he mentions:
"... The process has the following five stages:
Learning environments: What is the context and who are the learners?
Raw data collection: What data should be generated and how to store it?
Data manipulation and feature engineering: What features are needed and how to obtain them?
Analysis and modeling: What analysis and modeling should be implemented?
Educational application: What is the target educational application and user?
In addition, there are other cross-cutting elements that must be taken into account, such as the technologies to be used, learning theories and sciences, user privacy, as well as educational institutions and policies. Finally, depending on the project, it is not necessary to go through all these stages, most research in the area of learning analytics focuses only on steps 3 and 4.
The use of virtual educational environments has facilitated the collection of data for learning analytics, using online learning managers as an integral part of educational ecosystems, as well as other environments such as intelligent tutors, games such as educational gaming and other digital integration tools.
It is in learning environments ...
The learning study
Learning Study was introduced in Sweden in 2003 as part of a research project funded by the Swedish Research Council. Since then hundreds of schools have implemented the model to varying degrees." (Holmqvist Olander, 2015, p. 47)
As an appendix to the foregoing, the following should be noted:
"The model has been developed in Sweden for more than ten years and has been tested in different types of schools, subjects and cultural contexts. . However, the origin of the Learning Study can be traced back to researchers at Hong Kong University and the Hong Kong Institute of Education in collaboration with a Swedish researcher, Professor Emeritus Ference Marton of the University of Gothenburg in Sweden." ". (Holmqvist Olander, 2015, p. 48)
Ference Marton and the research group at the University of Gothenburg are initially working until 2021, however, they continue to work for universities in China and Hong Kong, and in the latter, they are considering since then, the reform of the VITAL project, in

which classes move from 5 levels, to be more cohesive and heterogeneous.

In this sense, a Lesson Study is created, in which a group of educators (3-6) of the same subject, choose a specific class, which is designed considering what the learners should learn, designing a lesson together, appointing one person among the participants to teach the lesson. When an action-research is carried out, the other members observe what is happening and notes are taken, and the findings are then discussed in order to find improvements, correcting and improving the lesson, based on feedback from the praxis of the teachers involved, with another version being carried out by another participant.

The idea of what was mentioned in the last paragraph is that it should take the form of a dissemination format. This organization has its own scientific journal: The International Journal of Lesson and Learning Studies. This idea is expanding, as it is an attempt to cope with student heterogeneity, since it is necessary to consider the critical aspects of content, which a learner needs to discern in order to continue his way of learning, calling this: Learning keys, which vary according to the learning objects, learning groups and the learner's own individuality. ". (Holmqvist Olander, 2015, pp. 49-51)

## CONCLUSIONS

In the present century, the study of teaching and learning is becoming more and more important, so it can be deduced that the "learning study" is a collaborative development of a lesson (it can also be a study unit, a didactic unit, a concrete lesson, a learning activity, ...), which is developed through a series of research sessions of the teachers involved. ), which is developed through a series of research sessions of the teachers involved.

It is of feedback that, "In Sweden, and early on in Hong Kong, the Learning Studio was considered a form of "design experiment" rather than a form of action research." (Elliott, 2010, p. 223)However, educators were provided with spaces for the development of their curricula, giving rise to the theory of variation, as a pedagogical proposal of action research, oriented to learning and very much dependent on the educational authorities and their management of resources, time and personnel involved in this professional educational research, and therefore on the situation of the institutional Scientific Research.

The idea of the teacher as researcher vindicates the idea of teacher autonomy in the face of the imposition of standardized curricula.

In this scenario, it should be emphasized that teacher research demands a self-critical posture and a personal willingness to submit the work to the assessment of other educators, in order to be in a practical professional community, rather than to engage in solitary activities.

The need for collaborative research to support teaching among the educators involved contributes to the educational innovation of the university center. This research should be understood as a form of curriculum development, which happens to be a context for teachers' scientific research. Not linking teacher research to curriculum development prevents educators from speaking meaningfully of their shared contribution, so curricula should not be prescribed programs to be researched, but rather as provisional descriptions of experimentation in practice.

It can be said then that: "... curriculum development encompasses issues such as content selection and teaching methods, and is concerned with the question "how does the teacher know how to manage what he or she knows? The task of teacher research in this context is to explore ways of applying principles in specific contexts of action." (Elliott, Lesson and learning Study and the idea of the teacher as researcher, 2015, p. 32)

This proposal contributes to the improvement of their educational praxis and therefore their scientific research.

## REFERENCES

Elliott, J. (April 15, 2010). The "study of teaching and learning": a globalizing form of teacher research. *Interuniversity Journal of Teacher Education*(68), 223-242. Retrieved 19 de Agosto de 2023, from https://digitum.um.es/digitum/bitstream/10201/122325/1/El%20estudio%20de%20la%20ense%c3%b1anza%20y%20del%20aprendizaje%20una%20forma%20globalizadora%20de%20investigaci%c3%b3n%20del%20profesorado.pdf

Elliott, J. (December 3, 2015). Lesson and learning Study and the idea of the teacher as researcher. *Interuniversity Journal of Teacher Education, 29*(3), 29-46. Retrieved August 19, 2023, from https://www.redalyc.org/pdf/274/27443871003.pdf

Gutiérrez Huamaní , O., & Ayala Esquivel, D. (June 15, 2019). The teaching - learning - evaluation process (PEAE) a university didactics. *Horizonte de la Ciencia , 11*(20), 243-254.

https://doi.org/https://doi.org/10.26490/uncp.horizonteciencia.2021.20.781

Holmqvist Olander, M. (October 21, 2015). Learning Study. From the study of teaching to the study of learning. The Learning Study movement in Sweden. *Interuniversity Journal of Teacher Education*(84), 47-59. Retrieved August 19, 2023, from https://redined.educacion.gob.es/xmlui/bitstream/handle/11162/115885/Dialnet-LearningStudyDelEstudioDeLaEnsenanzaAlEstudioDelAp-5319647.pdf?sequence=1&isAllowed=y

Palencia Salas, V. (May 15, 2020). Research in the educational practice of teachers. *Educación y ciudad*(38), 107-118. https://doi.org/https://doi.org/10.36737/01230425.n38.2020.2321

Romero Fernández, A., Álvarez Gómez, G., & Estupiñán Ricardo, J. (December 2021). SCIENTIFIC RESEARCH IN HIGHER EDUCATION AS A CONTRIBUTION TO THE MODEL. *Revista Universidad y Sociedad, 13*(S3), 408-415. Retrieved August 19, 2023, from https://rus.ucf.edu.cu/index.php/rus/article/view/2498/2452

Ruipérez-Valiente, J. (February 17, 2020). The Learning Analytics Implementation Process. *RIED. Revista Iberoamericana de Educación a Distancia, 23*(2), 85-96. https://doi.org/https://doi.org/10.5944/ried.23.1.26283. https://doi.org/https://doi.org/10.5944/ried.23.1.26283