



## 2021 KNUE-UNITWIN INTERNATIONAL CONFERENCE



# Design digital learning resources in blended learning: from a case study at the VNU-University of Education toward a theoretical framework

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# Introduction



- Innovation of learning and teaching, especially in methodology in Vietnam education -> digital transformation

- Covid-19 pandemic situation -> online teaching

- Different approaches -> blended learning and flipped classroom

- Important of transformation of DLR into digital form

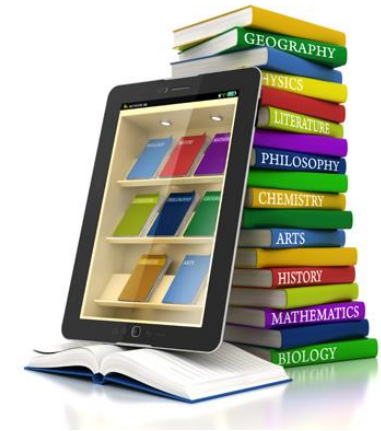
How to evaluate a DLR?

# DLR – a key concept

- DLR are understood as all materials for learning research and teaching purposes
- It refers to all the learning resources that use electronic data to store text, image, sound, video, animation and other forms of information in optical, magnetic, flash memory and other non-paper media carriers, and transmit or reproduce them through the network, computer or terminal (Chen, 2012)



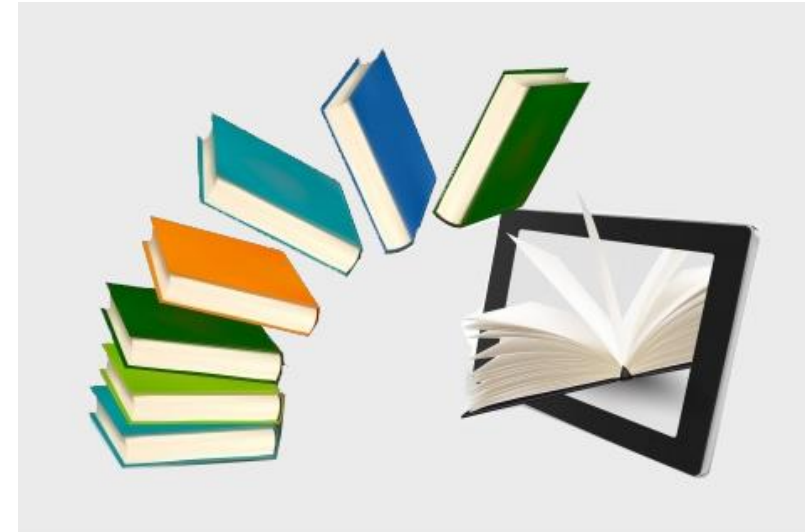
| Years   | Content  |
|---------|--|
| In 1997 | Refers to those people, materials, tools, facilities, activities etc., that students can make meaningful connections to <sup>(4)</sup> .   |
| In 2000 | A series of internal and external supporting conditions that can influence and change people's cognitive structure or promote the change of people's cognitive structure <sup>(5)</sup> .  |
| In 2001 | A multimedia material that can be processed digitally and run in a multimedia computer network environment. It enables digital learning by motivating students to find and process information through autonomy, collaboration and creativity <sup>(6)</sup> .   |
| In 2002 | Anything that enables learners to gain knowledge or accelerate the speed and efficiency of learning can be called resources for learning <sup>(7)</sup> .  |
| In 2005 | Refers to information, technology, and the environment that can be provided to learners to help and facilitate learners' learning <sup>(8)</sup> .   |
| In 2006 | All hardware devices, software tools, knowledge information, and application services that have a meaningful connection to the teaching process <sup>(9)</sup> .   |
| In 2007 | Refers to the source of funding for learning, including all kinds of software materials and hardware systems that support the teaching process, and broadly includes all the people, finances, things etc., that can serve the purpose of teaching <sup>(10)</sup> .   |
| In 2009 | Digital learning resources refer to multimedia information resources that can be learned and arranged according to the characteristics of learners, can be operated on a multimedia computer or in a network environment, and can be learned independently or cooperatively by learners and can be widely shared <sup>(11)</sup> .   |
| In 2011 | The sum of all the elements that can be used by learners in the learning process, including information, materials, equipment, personnel, places, etc <sup>(12)</sup> .  |
| In 2012 | Digital learning resources refer to the sum of various learning resources that can be utilized by computer networks, specifically, it refers to all the learning resources that use electronic data to store text, image, sound, video, animation and other forms of information in optical, magnetic, flash memory and other non-paper media carriers, and transmit or reproduce them through the network, computer or terminal <sup>(13)</sup> . |



# DLR – a key concept

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- DLR (or electronic learning materials) is a collection of electronic media for teaching and learning, including: electronic textbooks, electronic reference materials, assessment tests electronic materials, presentations, data sheets, audio files, images, videos, electronic lectures, teaching software, simulation experiments and other digitized learning materials. ([Item 2 Article 2, Circular 21/2017/TT-MOET](#))



# A classification of DLR (Jiayang Wang, 2019)

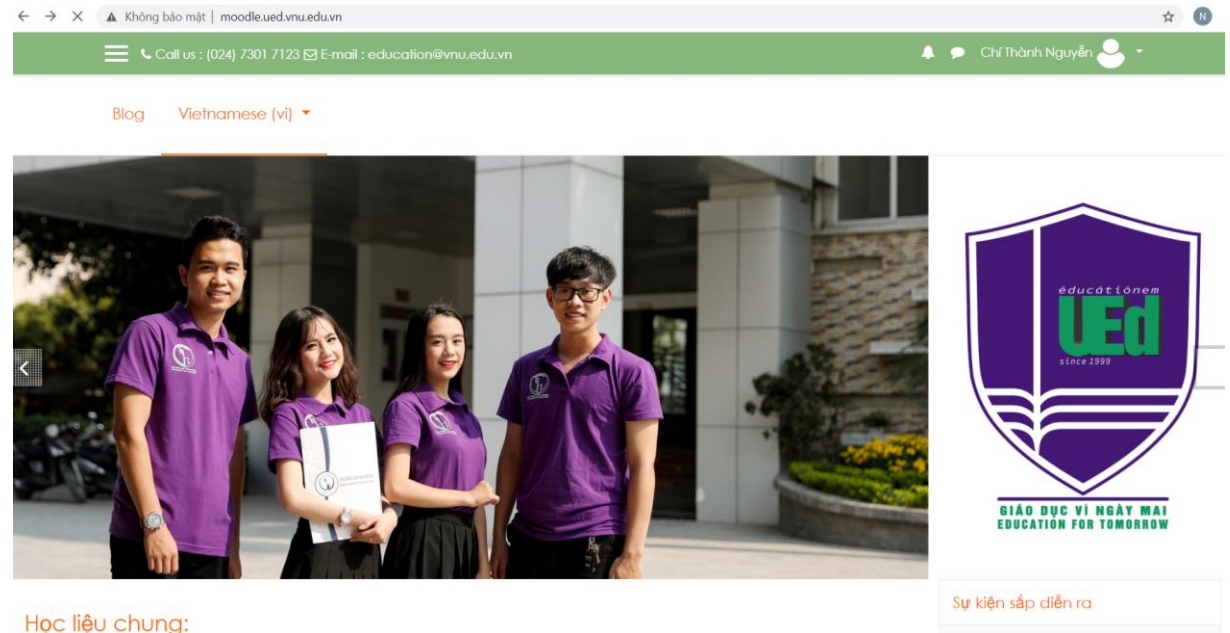
- Basic knowledge
- Auxiliary extension
- Tool software
- Network platform
- Virtual reality
- And generative DLR



| Years   | Content  |
|---------|--|
| In 2000 | Material teaching resources, network course library, educational resource management system, general remote teaching system support platform.  |
| In 2001 | Digital video, digital audio, multimedia software, CD-ROM, website, email, online learning management system, computer simulation, online discussion, data files, database.                  |
| In 2010 | "Teaching-oriented" digital learning resources: courseware, case-based; "learning-based" digital learning resources: multimedia materials, literature materials, information learning tools. |
| In 2005 | Electronic books, electronic journals, online data sequences, virtual libraries, encyclopedias, education network communication newsgroups and virtual software eight categories.            |
| In 2013 | Hardware resources, software resources, human resources.   |
| In 2017 | Multimedia and networked digital education resources, generated and open digital education resources, virtual learning resource environment, intelligent learning resource environment.      |

# Initial questions

- What are content of instructions in legal documents from the university?
- What are trainings for lecturers about designing DLR?
- How do lecturer design and develop DLR?



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# Initial questions

- Conclusion No. 98/KL-DU dated on June 4th 2018: Innovating teaching methods and methods in the direction of approaching modern methods: from the school year 2018 2019, 100% courses in bachelor's degree program will apply blended learning approach.
- VNU-Ued has organized 3 training courses for lecturers
- Plan No. 278/KH-ĐHQGHN dated January 25, 2019 of VNU on renovating teaching activities at VNU in the period of 2019-2025

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Số: 278 /HD-ĐHQGHN

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## KẾ HOẠCH

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Hà Nội, ngày 14 tháng 04 năm 2020

## QUYẾT ĐỊNH

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Số: 1345/HD-ĐHQGHN

Hà Nội, ngày 06 tháng 5 năm 2020

## HƯỚNG DẪN

**Đảm bảo chất lượng hoạt động đào tạo trực tuyến  
tại Đại học Quốc gia Hà Nội**

### 1. Phạm vi và mục đích sử dụng

Văn bản này hướng dẫn thực hiện đảm bảo chất lượng hoạt động đào tạo trực tuyến tại Đại học Quốc gia Hà Nội (ĐHQGHN) đối với các chương trình đào tạo do ĐHQGHN cấp bằng.

Các yêu cầu về đảm bảo chất lượng nêu tại văn bản này là sự phản ánh, kế thừa, cụ thể hoá các quy định của Bộ Giáo dục và Đào tạo (Bộ GD&ĐT) về đảm bảo chất lượng chương trình đào tạo (Thông tư 04/2016/TT-BGDĐT ngày 14/3/2016 ban hành Quy định về tiêu chuẩn đánh giá chất lượng chương trình đào tạo các trình độ của giáo dục đại học) và các văn bản quy định, hướng dẫn khác về công tác đào tạo, công tác đảm bảo chất lượng hoạt động đào tạo trực tuyến, đào tạo từ xa của Bộ GD&ĐT và ĐHQGHN.

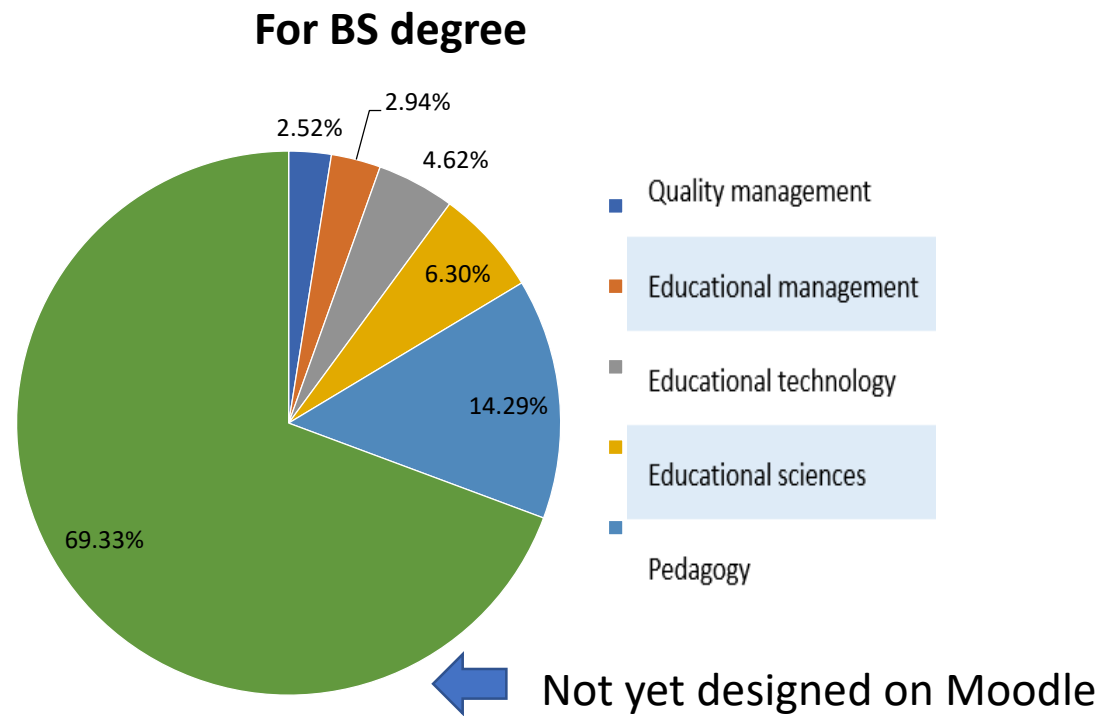
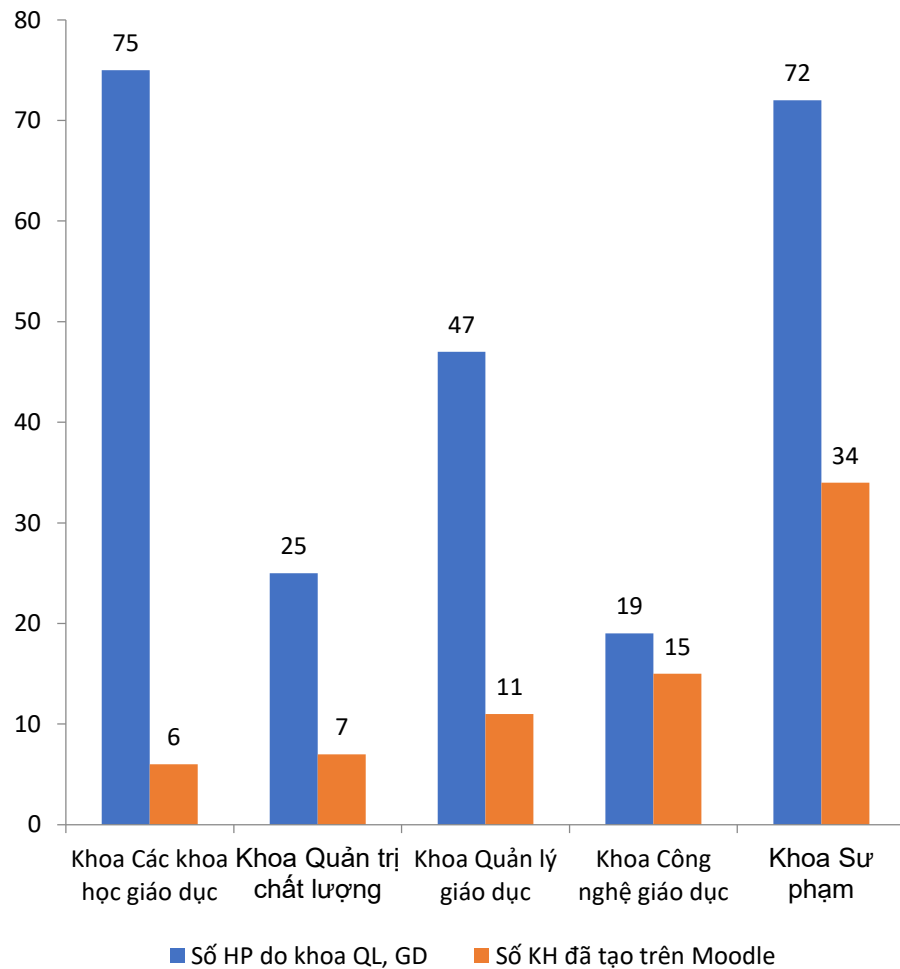
Văn bản này là công cụ hướng dẫn giúp giảng viên, cán bộ quản lý, các đơn vị đào tạo và các bộ phận có liên quan thuộc ĐHQGHN triển khai các hoạt động giảng dạy trực tuyến một cách hiệu quả, đáp ứng được các yêu cầu về đảm bảo chất lượng hiện hành.

## Case study at VNU-University of Education for 2018-2019 academic year

| No           | Faculty                | Total      | On Moodle     |            | On Moodle   | On Moodle           |            | Training course |
|--------------|------------------------|------------|---------------|------------|-------------|---------------------|------------|-----------------|
|              |                        |            | BS            | MS         |             | BS                  | MS         |                 |
| 1            | Quality management     | 50         | 25<br>(2)     | 25         | 17          | 7 (2,5)<br>28.0%    | 8          | 2               |
| 2            | Educational management | 110        | 47<br>(3, 44) | 63         | 12<br>10.9% | 11 (2, 9)<br>23.4%  | 1<br>1.6%  | 0               |
| 3            | Educational technology | 19         | 19            | 0          | 17<br>89.5% | 15 (3, 12)<br>78.9% | 2<br>(KSP) | 0               |
| 4            | Educational sciences   | 119        | 75<br>(8)     | 44         | 8<br>6.7%   | 6<br>8.0%           | 2<br>4.5%  | 0               |
| 5            | Pedagogy               | 117        | 72<br>(57)    | 45         | 38<br>32.5% | 34 (33,1)<br>47.2%  | 4<br>8.9%  | 0               |
| <b>Total</b> |                        | <b>415</b> | <b>238</b>    | <b>177</b> | <b>95</b>   | <b>73</b><br>30.77% | <b>17</b>  | <b>3</b>        |

- 590 account, including 100% lecturers accounts
- 113 comments (8 comments of lecturers, 105 comments for students).

## Case study at VNU-University of Education for 2018-2019 academic year



## Case study at VNU-University of Education for 2018-2019 academic year

| <i>No</i>    | <i>BS courses according to majors</i> | <i>Total</i> | <i>On Moodle</i> | <i>Percentage</i>    |
|--------------|---------------------------------------|--------------|------------------|----------------------|
| <i>(1)</i>   | <i>(2)</i>                            | <i>(3)</i>   | <i>(4)</i>       | <i>(5) = (4)/(3)</i> |
| 1            | GD1&GD2                               | 82           | 47               | 56.1%                |
| 2            | GD3                                   | 156          | 26               | 16.7%                |
| <b>Total</b> |                                       | <b>238</b>   | <b>73</b>        | <b>30.7%</b>         |

| <i>No</i>    | <i>Notes</i>  | <i>SL</i> | <i>Percentage</i> |
|--------------|---|-----------|-------------------|
| 1            | Full content ( <i>Intro, Syllabus, DLR, forum, Topic/content, assessment...</i> ) | 15        | 20.5%             |
| 2            | Not yet complete  | 34        | 46.6%             |
| 3            | No content  | 24        | 32.9%             |
| <b>Total</b> |   | <b>73</b> | <b>100%</b>       |

## Case study at VNU-University of Education for 2018-2019 academic year

### Positive points

The university has promulgated regulations, mechanisms, policies and sanctions to encourage lecturers/students to teach-learn Blended Learning:

There is an incentive mode for courses with high interaction and efficiency;

100% of teachers have an account on Moodle;

100% of learners have an account on Moodle and agree to use it throughout the course

### Negative points

Issues of intellectual property, copyright, copyright.

Learners are not aware of the University's policy, are not excited to participate in the learning process, IT skills are not good, ...

The online training system has many shortcomings: The interface is not "eye-catching", not user-friendly / easy to use, not fully updated with functions (reports, comments, ...



# Case study at VNU-University of Education for 2019-2020 academic year

48 faculty courses  
On Moodle



| Học liệu/Ressouces |            |                    |          |
|--------------------|------------|--------------------|----------|
| Video              | Powerpoint | Tài liệu/Sách/Book | Link/Web |
| 314                | 63         | 614                | 429      |

| Thảo luận/Khảo sát |        |
|--------------------|--------|
| Forum              | Survey |
| 167                | 34     |

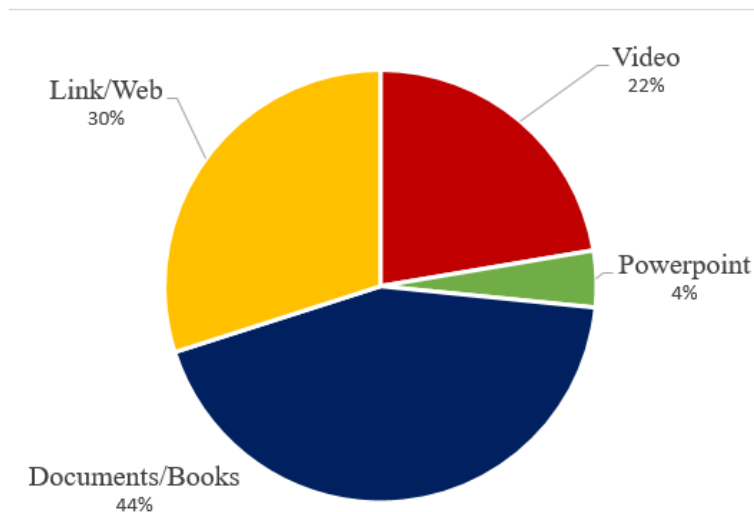
| Nhiệm vụ/Task      |             |
|--------------------|-------------|
| Cá nhân/Individual | Nhóm/Groups |
| 222                | 60          |

| SV/Students |       |       |       |
|-------------|-------|-------|-------|
| Năm 1       | Năm 2 | Năm 3 | Năm 4 |
| 1469        | 127   | 164   | 304   |

| Tổng/Total         |      |
|--------------------|------|
| Học liệu/Ressouces | SV   |
| 1420               | 2064 |



- In 34 modules using Forum, there are
- Under 30 comments: 20 modules
  - Between 30 and 60 comments: 8 modules
  - More than 60 comments: 6 modules



- 46 out of 48 modules provided compulsory resources
- 37 out of 48 modules provided reference resources
- 2 out of 48 modules have not provided resources

# Case study at VNU-University of Education

The collected data showed that most of the courses provide documents or books in the form of text (approx. 44%). Then, Link/ Website provided more references for learners (approx. 30%).

To visualize impart knowledge, 446 videos were used in teaching (approx. 22%). Videos were used mainly in the modules related to “Professional ethics in the field of education”. In this course, students have studied for 4 years, so the number of resources are huge and varied in each semester.

Finally, 4% Powerpoint were provided in the modules



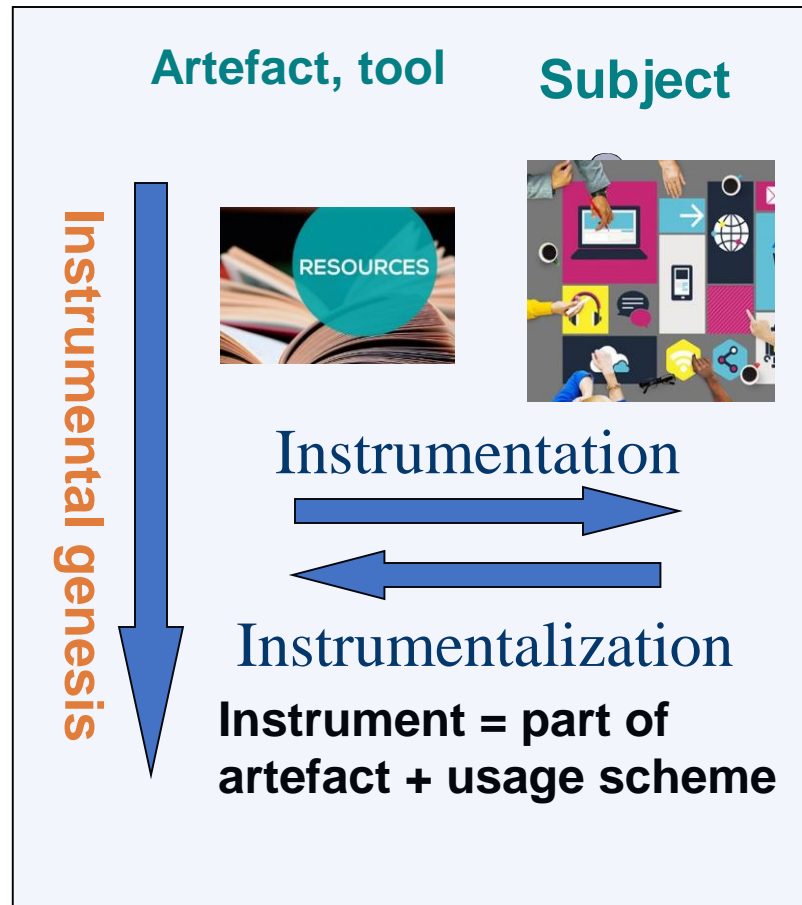
- Basic knowledge: xxxx
- Auxiliary extension: x
- Tool software: xx
- Network platform: x
- Virtual reality:
- And generative DLR: x

# Toward a theoretical framework

**Scale of Evaluation the Quality of a DLR**

| Item            | Characteristics   | Scale     | Notes |
|-----------------|---|-----------|-------|
| Content         | The learning materials designed in a clear structure (subject - section-topic -segments)                                | ① ② ③ ④ ⑤ |       |
|                 | The learning materials are closely aligned with the objectives of the courses   | ① ② ③ ④ ⑤ |       |
|                 | There are a distinction between the main learning materials and the supplementary learning materials                    | ① ② ③ ④ ⑤ |       |
|                 | Combine a variety of learning material formats  | ① ② ③ ④ ⑤ |       |
|                 | The learning materials present activities that create interaction between learners and learners; learners with teachers | ① ② ③ ④ ⑤ |       |
| Graphics        | The graphic techniques of the learning materials design in favor of information and pedagogy                            | ① ② ③ ④ ⑤ |       |
| Copy right      | Clear origin  | ① ② ③ ④ ⑤ |       |
|                 | Clear licence   | ① ② ③ ④ ⑤ |       |
| Vieo/Simulation | Appropriate length (5 minutes au maxim)   | ① ② ③ ④ ⑤ |       |
|                 | Appropriate unit content (5 to 9)   | ① ② ③ ④ ⑤ |       |
|                 | Graphic and content   | ① ② ③ ④ ⑤ |       |
|                 | Reading and audio aspect  | ① ② ③ ④ ⑤ |       |

# Instrumental approach learning action using tools



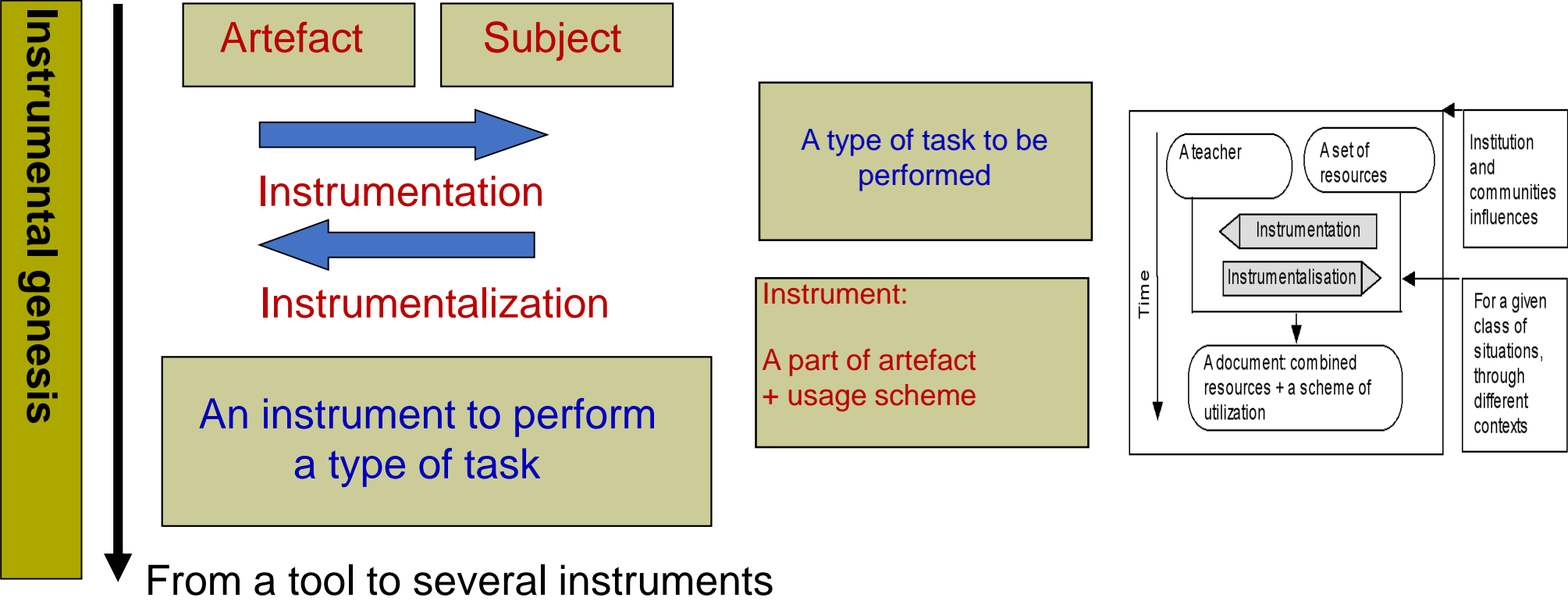
Artefact, tools -> Instruments (Rabardel + Vérillon 95)

**Two processes:**

- *instrumentation*
- *instrumentalization*

So the instrument is an **entity mixture** formed by a part of the *technical tool* (artefact) and by the *usage schemes* which result from *the construction* of the subject in an activity to perform a type of a given task.

# Instrumental approach for learning activities with tools



# Important remark

A technical object does not become instantly an instrument, even when the subject views it as such. First it is just an object, or an tool (artefact) [...]. Only in the evolution of the relationship between user with the object that the tool will be formed in a complex “instrumental genesis” [...]. **Activities with instrument will simultaneously affect the types of knowledge approaches and the knowledge will be built through these activities. [...] Inevitably, that leads to dialectical relations between the instrumental genesis and the learning of mathematics.** (Lagrange, Artigue 1998)

# Research questions for future works

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Technological constraints when building DLR

Pedagogical constraints when building DLR

The role of technology in building DLR

The interaction between the document and the usage scenario

The concept of teaching in building DLR

Community participation in building DLR

The process of transforming digital resources into digital learning materials

Number and type of DLR in each courses

