# Mobile Learning in Higher Education: A Classification Framework for Learning Applications

Pedagogical Design

Content-based

**Function-based** 

Applications:

Social Apps, Creation Apps

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Results

### **Problem**

Despite their being frameworks for mobile app classification for PK-12 education, a framework for Higher Education is missing.

Additional, the existing frameworks lack the technological aspects for the applications.

### **Definitions**

Mobile Learning: "any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologie" [1].

Mobile (learning) applications: applications which can be used to assist in learning. They do not need to be for learning specifically.

Pedagogical Design: "plan or scenario that defines the format, content, and structure of the environment, the delivery systems, and implementation strategies" [2]. Instructional approach: A strategy used to instruct students.

### Method Databases: IEEE, ScienceDirect, Socrative Year range: 2008-2021 Search Terms: "m-learning", "mobile learning", "app\*", "pedago\* approach", "technological approach", "classification", "higher education" **Inclusion Criteria** 352 Initial papers Higher educational setting Mobile learning is applied Use of an application for -9 non-English, educational purposes -41 conference Use of an mobile device for documents, educational purposes -11 duplicates **Exclusion Criteria** Mobile device is a laptop / -245 inclusion/ netbook exclusion criteria Mobile device is stationary Mobile device is a wearable -4 not applicable Lower- or adult educational setting The paper is not in English 37 papers The article is not an (E)book Table 1: Inclusion and exclusion Figure 1: literature search and paper selection. criteria

## **Research Question**

What are the different types of HE mobile (learning) apps, and what might be a pedagogically and technologically sound framework to classify these apps from a teaching and learning perspective?

- 1) What are the different types of mobile (learning) apps for HE, and what is their
- 2) How can the HE mobile (learning) apps be classified considering the pedagogical and technological dimensions?

## **5** Abbreviations

SRS: Student Respond System

AR: Artificial Reality

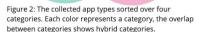
LMS: Learning Management Systems

SNS: Social Networking Sites **SLN**: Social Learning Network

PWA: Progressive Web App

**GPS**: Global Positioning System

## App types Conference I MS SNS SLN Office Virtual Note taking Learning



### Instructional Approach

Skill-based Applications: Practice Apps: Practice Apps, Organization Game-based-, Collaborative-, Apps Active-, and blended learning

# **Organization Apps:**

Applications: Personalized-, blended Organization Apps, Social learning, and Multi-purpose Apps

### Social Apps:

Applicable to any instructional approach

> **Creation Apps:** Active learning

### Mobile Platform

Web: Practice Native: Practice and Social Hybrid: Organization, Social,

Web Native

Figure 3: No. of applications per

platform represented in

percentages.

and Creation Download Hvbrid: All but AR and GPS

SLN + LMS: Discuss, Message

Web: Assess, Gamified.

Native: All but Ouerv and

Share, and Organize

and Organize SNS: Message, Organize,

**Features** 

Download, and Upload SNS + Office + Note taking:

Create, Share and Consume Practice Apps: Assess and

Gamified



### **Function-based** Content-based Skill-based SNS Hybrid LMS Conference Presentation Office SLN Note Native taking Learning Virtual games Modeling SRS

**Framework** 

Figure 4: The eleven app types distributed over their respective category, pedagogical design, andmost common mobile platform.

[1] O'Malley, C., Vavoula, G., Glew, J., Taylor, J., Sharples, M., Lefrere, P., Lonsdale, P., Naismith, L., & Waycott, J. (2005). Guidelines for learning/teaching/tutoring in a mobile environment. [2] Lowyck, J. (2002). Pedagogical design. Handbook on information technologies for education and training(pp. 199-217). Springer.



Text App types









Creation apps