Assignment Report

Interaction design requirements, design-informing models and work barriers

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Requirements

These are the requirements that have been extracted from the contextual analysis and the key observations from the interviews. Requirements represents the needs that users have expressed during the interviews and that will be useful to know how to design for the final user experience.

⚡: work barriers

# 1	
Requirement:	**Older people need help to supplement their learning ⚡**

Source node ID:	• H-Older People
	  ○ L-5-Z
	  ○ L-6-M

Rationale:	It is harder for older users to remember material, they need to take notes or review them, so it's easier to grasp.

# 2	
Requirement:	**Need for quality material**

Source node ID:	• L-Pain Points
	  ○ L-5-SG
	  ○ L-5-SG
	  ○ L-12-N
	  ○ L-5-Q
	• N-Liking about Learning
	  ○ L-4-SG

Rationale:	Difficulty in assessing the reliability and quality of online learning sources.

# 3	
Requirement:	**Need for personalized learning**
Source node ID:	● L-Pain Points ○ L-8-Y ○ L-5-R ● S-How to Teach ○ T-2-M
Rationale:	The teaching should be as relevant as possible to the situation of the student.

# 4	
Requirement:	**Users need to have well-prepared and good teacher**
Source node ID:	● L-Pain Points ○ L-14-B ● N-Liking about learning ○ L-13-B ● S-How to Teach ○ T-18-R
Rationale:	Need to know if teacher is prepared, has a good teaching quality and knowledge about the topic and knows how to teach. Teacher needs to be inspiring.

# 5	
Requirement:	**Users need to be able to practice and do exercises**
Source node ID:	● L-Pain Points ○ L-4-L ● N-Like about Learning ○ L-13-SG ○ L-13-R
Rationale:	Users want to apply what they have learned.

# 6	
Requirement:	**Opportunity to learn daily**
Source node ID:	• A-Time ○ All-A
Rationale:	Users need to learn daily

# 7	
Requirement:	**Need to form good groups** ⚡

Source node ID:	• C-Group Learning
	  ○ All -C
	• S-How to Teach
	  ○ T-9-M

Rationale:	People need the option to be able to learn in groups, to stay motivated: people who get-on with each other learn much better.

# 8	
Requirement:	**Choice for one to one learning**

Source node ID:	• D-Learning from someone
	  ○ L-7-HG
	  ○ L-8-Z
	  ○ T-11-M
	  ○ T-11-U

Rationale:	Preference for one-to-one learning, because people need an expert and one-to-one guidance to learn efficiently.

# 9	
Requirement:	**Need to know the course topics**
Source node ID:	● I-Motivation for Learning ○ L-10-Y ○ L-10-R ○ L-10-UAF ○ L-6-B ○ L-Z-8 ○ L-6-UAF ● T-What you can teach ○ T-6-M
Rationale:	Access to courses relevant to professional career and to a wide variety of topics.

# 10	
Requirement:	**Need to have courses material**
Source node ID:	● I-Motivation for Learning ○ L-6-Z ○ L-4-M ● S-How to teach ○ T-18-B ○ T-2-SG
Rationale:	Courses need to be satisfying and fun: they need to have case studies, examples and hands-on exercises.

# 11	
Requirement:	**Course content should be divided**
Source node ID:	● B-Methods to Learn ○ L-9-B ○ L-5-HG
Rationale:	Material has to be divided into smaller amounts more manageable.

# 12	
Requirement:	**Need for a visual feedback**
Source node ID:	● B-Methods to Learn ○ L-7-R ○ L-1-R
Rationale:	Visual feedback is important for users who prefer visual learning.

# 13	
Requirement:	**Need for a digital platform**
Source node ID:	● G-Digital Learning ○ L-7-R ○ L-1-R
Rationale:	Convenient access to learn.

# 14	
Requirement:	**Searchable information in a digital platform**
Source node ID:	● G-Digital Learning ○ L-1-SG ○ L-1-HG
Rationale:	Need for searchable content and one point of access to information.

# 15	
Requirement:	**Access to books**
Source node ID:	● E-Traditional Learning ○ All-E
Rationale:	Users need books for reference and reading.

# 16	
Requirement:	**Users that teach need to be compensated**

Source node ID:	• P-Money
	  ○ All - P
	• M-Money
	  ○ All-M

Rationale:	Users (Teachers) are used to being compensated for teaching.

# 17	
Requirement:	**Users (Teachers) would to like teach when they have the time, so that it doesn't impact their life ⚡**

Source node ID:	• O-Affect Life
	  ○ L-5-SG
	  ○ L-5-SG
	  ○ L-12-N
	  ○ L-5-Q
	  ○ T-7-M
	• N-Liking about Learning
	  ○ L-4-SG
	• R-Pain Points
	  ○ T-7-M

Rationale:	Users (Teachers) feel that the teaching isn't a center part of their life hence they have other priorities that need their attention.

# 18	
Requirement:	**Teacher should be able to limit the class size**

Source node ID:	• U-Teaching Audience
	  ○ T-11-M
	  ○ T-11-SG
	  ○ T-26-B
	  ○ T-12-Y

Rationale:	Teachers feel comfortable to teach on an average a class size of 10 people.

# 19	
Requirement:	**Users need a way to keep in touch**
Source node ID:	● U-Teaching Audience ○ T-1-Y ○ T-3-U ○ T-3-SG ○ T-1-U ○ T-3-Y ● V-Experience ○ T-4-SG ● Q-Good things about Teaching ○ T-4-Y
Rationale:	Most of our teachers have taught people they know personally. Keeping in touch with your students to know, if your teaching has benefited them; this provides teacher gratification and validation.

# 20	
Requirement:	**Teachers would like to gain deeper understanding of the topics they teach**
Source node ID:	● Q-Good things about teaching ○ T-20-A ○ T-24-A ○ T-6-SG
Rationale:	User feel that teaching a topic helps them gain a better understanding of it.

# 21	
Requirement:	**Pupils be able to rate their expertise level for the topic**
Source node ID:	● R-Pain Points ○ T-20-B
Rationale:	It is difficult to teach a class with different levels of expertise.

# 22	
Requirement:	**There needs to be a way to rate users**
Source node ID:	● R-Pain Points ○ T-5-Y ○ T-5-M ● T-What you can teach ○ T-4-M
Rationale:	One of the biggest pain points in teaching is having bad/unreceptive pupils in your class. Teachers need to be rated so that they and the other student can access their teaching skills.

# 23	
Requirement:	**Users need a good learning and teaching platform**
Source node ID:	● R-Pain Points ○ T-5-SG
Rationale:	Users feel that there a lack of legit medium to teach.

# 24	
Requirement:	**Users need to be able to share teaching material**
Source node ID:	● R-Pain Points ○ T-10-SG ○ T-5-SG
Rationale:	Teachers should be able to access material on a topic, makes it easier to teach, if the material has good case studies and examples. Most of our users are not professional teachers, hence they don't have the time or experience to make their own course materials.

# 25	
Requirement:	**Users need to be able to communicate with each other in real time**
Source node ID:	● S-How to Teach ○ T-2-U ○ T-20-R ○ T-2-Y ○ T-5-Y
Rationale:	Teaching needs to be interactive. Teachers need to know that if their pupils are able to understand what they are teaching.

Design models

The models developed are shown in this section, for our system we decided that the best models to capture the essence of our platform are the user model, flow model, the hierarchical task inventory and in particular the social model.

Flow model

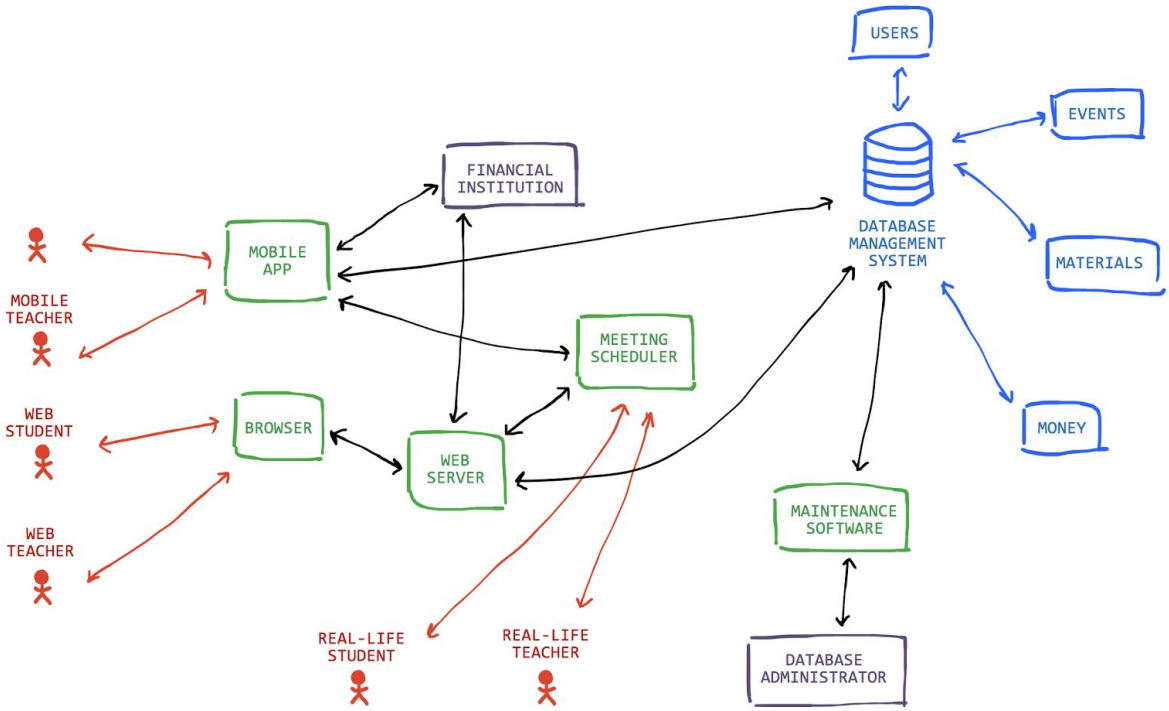
Our flow model is quite high-level as it leaves the detailing to the other design models we decided to implement.

We decided to divide our users into three categories: mobile users, web users and real-life users. As every user can be both a teacher and a student we showed both on the flow model.

Mobile users are those users that access our platform using a mobile application while web users are simply those that access it through a standard web browser.
Real-life users are students and teachers that have used our platform to organise a face-to-face lesson; they will be able to manage this by using a meeting scheduler component.

We imagine that our users will be able to buy time when they need it to attend a lesson but haven't enough hours on their account; in this case they would be able to buy the time needed through an online payment provider with which our system would have to interface.

We detailed the users in the User model, while the tasks they can do are in the Hierarchical task inventory. How our users are affected by outside forces is shown in the Social model.


USERS
EVENTS
FINANCIAL INSTITUTION
DATABASE MANAGEMENT SYSTEM
MATERIALS
MOBILE APP
MOBILE TEACHER
MEETING SCHEDULER
WEB STUDENT
BROWSER
WEB SERVER
MONEY
MAINTENANCE SOFTWARE
WEB TEACHER
REAL-LIFE STUDENT
REAL-LIFE TEACHER
DATABASE ADMINISTRATOR

User model

In the user model we present a more detailed description of our type of user. In particular there are two main work-roles (in red), which are student and teacher, and some sub-role (in blue).
We have also defined different possible user classes, that can be related to the sub-roles. Each user class describe a sort of cluster of users and tries to analyze its characteristics and needs.

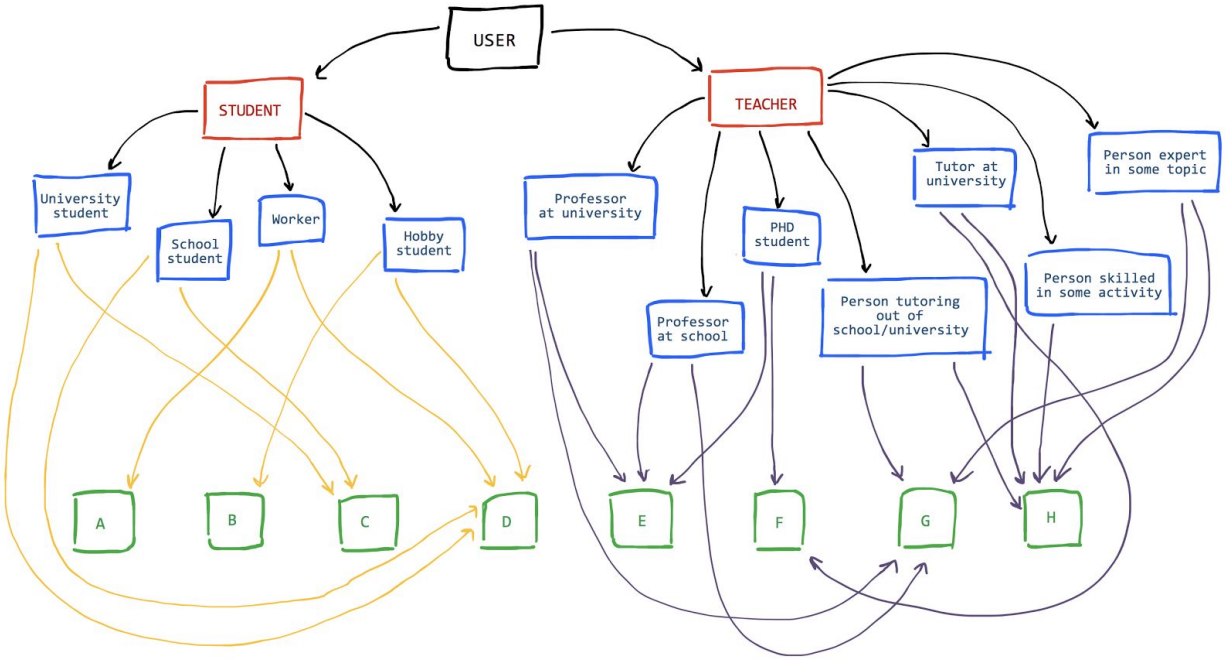
Work roles and sub-roles:

- STUDENT
    - University student
    - School student
    - Worker
    - Hobby student
- TEACHER
    - Professor at university
    - Professor at school
    - PHD student
    - Tutor at university
    - Person tutoring out of school/university
    - Person expert in some topic
    - Person skilled in some activity

User classes:

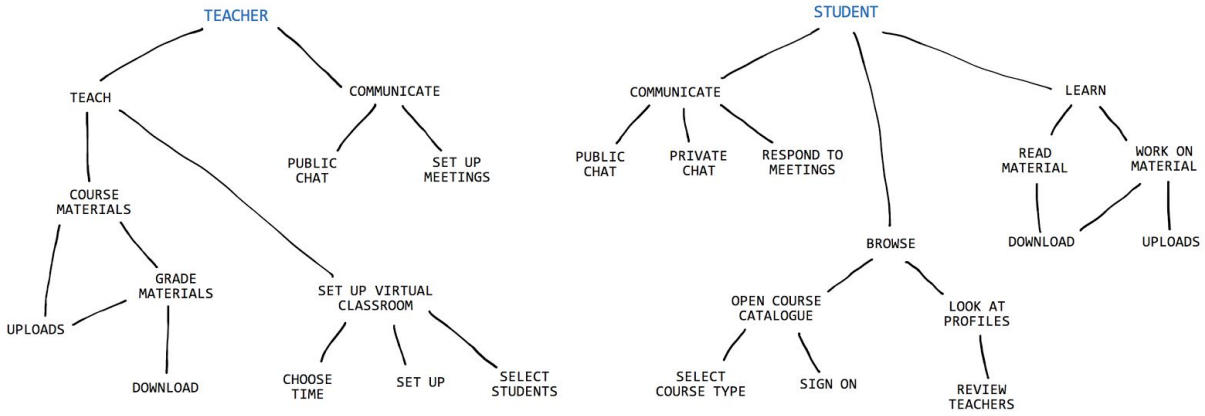
- A: Person who has to learn new knowledge or skills for his work
    - middle-age
    - some experience with digital systems
    - not much time, very busy
    - needs simple, fast and direct informations
    - could learn online to save time
- B: Old person who wants to learn something new
    - old
    - lack of experience with digital systems
    - lot of free time
    - needs simple, slow and patient teaching
    - needs real meetings
- C: Student at school/university who has to elaborate a topic
    - young/middle-age
    - lot of experience with digital systems
    - has lots of engagements, a little bit busy
    - needs to examine a particular subject
    - learns often in group
    - could also learn online
- D: Person who wants to learn a new topic or activity for hobby
    - young/middle-age
    - some experience with digital systems
    - learning from scratch

- E: Professor at university or school
    - old/middle-age
    - could have lack of experience or have some experience with digital systems
    - needs to elaborate a specific topic
    - used to teach to groups of people
    - lot of experience in teaching
- F: Tutor that help students at university
    - young/middle-age
    - some experience with digital systems
    - a little bit busy
    - has to acquire experience in teaching
    - flexible about teaching methods and topics
- G: Tutor outside school or university
    - teach to be paid
    - elaborate specific topics
    - more comfortable with one or few people
- H: Person who teach for pleasure
    - very available to help
    - teaches a topic or activity in which he is skilled



Hierarchical task inventory

The Teach2Learn platform has two main users: Teachers and Students. Teachers use the app to teach to a single student or a group, they can communicate during the lessons (in the case of remote students) and they can contacts their students and setup a meeting.
In the case of remote teaching they have all the facilities to organize the classroom and select the students that will be part of the it.
Teachers can upload materials to be read to all his/her students and can also upload and grade exercises.



Students have a wide variety of task they can perform, they can communicate with the professor, either during a virtual group class or during a one-to-one session and also confirm his/her participation to a class.
Students can browse courses and narrow their search by selecting some filters on the type and other desired characteristics, when a user found a course he/she likes it will be possible to consult the professor profile to asses whether he/she thinks it's the right fit for him/her.
Students can read the materials the professor has uploaded for the course and do the exercises.

Social model

Social behavior and norms affect the teaching and learning experience. Using the social model we try to capture the communal aspects, pressures, attitude and influences of the participants. We try to explicitly bring out the concerns and feelings of every participant, and also how the individuals can influence each other. Finally we highlight the critical work barriers.

Active Entities

In the model there are 5 internal entities: Teacher, local students, remote students, local student groups, remote student groups. There is one external entity which represents the life and work scheduling constraints.

Concerns

All together there are 4 student nodes, and the major concerns they share are: Will I be able to learn? The quality of the teacher, and if the teacher will be patient. Will I be able to ask many questions? Will I be able to understand the material?

Then we separate the students in two sub-categories, grouped and 1 on 1.

Students in the groups are mainly concerned with being able to learn effectively in the group and social pressure and norms of the group. The local group is concerned with the quality of the classroom experience. The remote group has concerns in being able to learn effectively online.

Students in the 1 on 1 setting are concerned with how they will be able to get along with the teacher, because student to teacher time is much greater. They also want to make sure that the teacher is able to personalize lessons for their needs and background.

The concerns the remote students and remote group share is that if the technology will be good enough to provide a good learning experience.

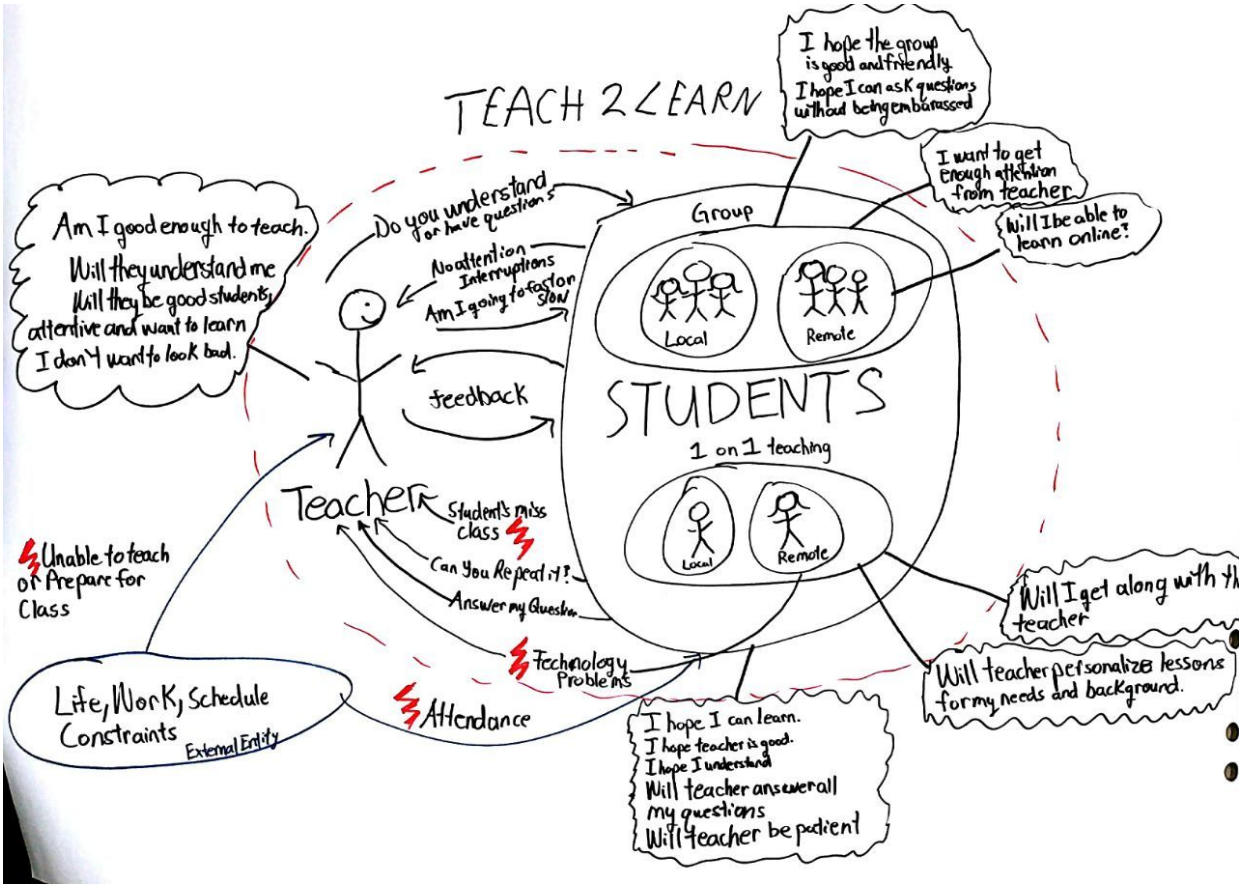
The concern of the teacher is if they will be good enough to teach, if the students understand what they are teach. The teacher hopes that the students will be good students that are attentive and care to learn the material. The teacher is worried that they will look bad in a social setting.

Influences

Teacher and students constantly give each other feedback. The teacher influences the students by querying them if they understand the content that they are presenting. The teacher is examining the students facial expressions or asking them to see if they understand the material, or if they are teaching at the right speed, which is either too fast or slow.

Students influence the teacher by asking questions and participation in class. They also influence the teacher if they miss class, or do not give attention to the teacher or distract and interrupt the class.

There is external influences that involve life and work scheduling constraints. If these constraints are too high this will have a drastic effect on the teaching and learning experience. For example if the students are unable to attend class the teacher will lose motivation. Likewise, if the teacher is unprepared and also misses class the students will lose interest and motivation to learn. It is important that both sides commit equal effort.


TEACH 2 LEARN
I hope the group is good and friendly. I hope I can ask questions without being embarrassed
I want to get enough attention from teacher
Will I be able to learn online?
Am I good enough to teach.
Will they understand me
Will they be good students, attentive and want to learn
I don't want to look bad.
Do you understand or have questions
No attention Interruptions
Am I going to fast or too slow
feedback
Group
Local
Remote
STUDENTS
1 on 1 teaching
Local
Remote
Teacher
Students miss class
Can You Repeat it?
Answer my Questio
Unable to teach or Prepare for Class
Technology Problems
Attendance
Life, Work, Schedule Constraints
External Entity
Will I get along with th teacher
Will teacher personalize lessons for my needs and background.
I hope I can learn.
I hope teacher is good.
I hope I understand
Will teacher answer all my questions
Will teacher be patient

Work Barriers

This section contains a summary of the work barriers we encountered in our models and from our requirements.

#	Trigger	Goal	Barrier
1	Older students have less memory	Create contents accessible to every user	Hard learning lengthy materials
2	Unbehaved students	Allow students that want to learn to do so in a good environment	Undisciplinated students interrupt the class
3	Not enough time	Design the system such that everyone can find time to use it	Inconsistent teaching schedule impact learning
4	Few courses	Have a wide variety of topics	Users not engaged because they don't find interesting courses
5	Users that don't show up	Teach a group of students	Users that miss classes impact the group
6	No user teach/want to learn a topic	Teach or learn a subject	User can't use the app to learn/teach that subject
7	Not enough credits	Learn inside the app	User are not allowed to enroll a course because he doesn't have the right amount of credits
8	User bored or doesn't like the course	Learn a subject	User leave a course abruptly