iFlip Project: Flipping the classroom in adult education

Adult Learners Needs Analysis Report
Survey Results and Conclusions
Preface

The Adult Learners Needs Analysis Report (ALNAR) is an activity agreed by all iFlip partners and its purpose is to inform the partners of the current developments related to flipped classroom awareness and practices, and of the existing preferences among learners and trainers/educators on learning/teaching pathways and approaches.

The ALNAR was planned in 4 focus quadrants: learners and their needs, trainers/educators and their teaching practices, case studies and good practice models, and flipped classrooms methods in use. The first two focus quadrants were attempted by means of online surveys. The second two quadrants were addressed by desktop research.
Adult Learners: Survey summary and conclusions

The total number of respondents in this survey is n=220 with all partners reaching or exceeding the required sample size. Slovenia is overrepresented in the survey, but analyses found no significant correlation between country of origin of respondents and their answers, meaning that we can accept the results of the aggregated sample as valid. Six factors exhibit a positive correlation between the country of origin and the learning factors – 3 of them show weak correlation in the lower end (0.20 to 0.22) and the other 3 show correlation up to the top end of the weak range (0.27 to 0.36).

Six factors exhibit a positive correlation between the country of origin and the learning factors – 3 of them show weak correlation in the lower end (0.20 to 0.22) and the other 3 show correlation up to the top end of the weak range (0.27 to 0.36).

Gender distribution shows 27% males and 73% females.

Age distribution provides sufficient responses in all major age groups. However, calculated correlation reveals no significant dependencies between age and learning factors on which the survey is focused. Only 3 of the studied factors exhibit a negative correlation with age between -0.20 and -0.30 (weak) with all other factors having a correlation between 0 and +/-0.20 (very weak).

Fourty-nine per cent of the respondents have HE (Bachelor, Master, or Ph.D). Thirty-one per cent have vocational education and training – at secondary education level combined with a vocational degree, or at post-secondary vocational training level.

Five of the 19 learning factors show weak correlation to the frequency of learning activities. Only 3 learning factors correlate (weak) to the educational attainment level of the respondents. As for the frequency of additional learning activities, the results show that just over 30% have participated in several (one every few years or so) learning activities in the last 10 years. A similar but slightly lower share of respondents (28%) have done this once or twice. Another 10% responded with “once per year”, and 21% with “more than once per year”. If we were to aggregate the last two groups, we would come to a balanced distribution of about 30% each among the three main answers – (1) one every few years, (2) once or twice, and (3) once or more than once per year. A mere 7% said they did not participate in additional learning in the last 10 years at all.

Learning factors survey data was statistically processed to obtain (1) a nominal scale value (scale between -2 and +2), and (2) a sum of squares of the deviations from the mean. A combination of the two values provides insight into which learning factors gather (1) positive responses and (2) greater consensus among respondents. There are 11 factors which have a nominal scale value of 1.00+ and a distinct consensus in the answers (corresponding to a numeric value along the x-axis of less than 200.

A. I like learning new things
S. I like to be able to track my own progress and measure achievements
F. I like to set my own learning pace
H. I prefer to have time to explore and reflect upon new ideas
L. I like sharing my opinion on things I have read, listened to, or seen
C. I like to have control over the learning process
E. I like lively discussions in class
D. I like to take initiative and construct my own learning path, given some guidelines
I. I like to have additional materials and resources along the main training texts/content
R. I like to set my own learning goals
B. I usually learn fast and with ease

In addition, there are 3 factors which have an intended negative connotation in their wording, which was meant to make sure respondents do actually read carefully all questions and consider attentively all factors which they have been presented for assessment. We suggest that the following 3 factors be taken in consideration as they have distinct scale values indicating disagreement (on a negative statement), which should translate in a positive solution. These 3 factors have a scale value of well below 1.00 (0.22-0.39) However, the consensus is rather low (sum of squares of over 300), hence our suggestion that they be considered, but not be placed center-stage.

G. When in class, I like to sit quietly and listen
J. Having too many training content sources upsets me
Q. When I can’t keep to-date with assignments and learning deadlines, I tend to lose motivation for learning
Adult Learners: Detailed results
Note: Survey results were initially presented with the help of interactive diagrams. This paper version lacks the full functionality of the presentation. For full interactive experience and complete diagrams, please visit the live page at http://projectiflip.eu/en/alnar-surveys.

Number of respondents by country

Gender distribution of participating learners

Gender distribution, learners

- Female: 73.2%
- Male: 26.8%
**Age groups of participating learners, all countries**

![Age groups chart](chart1.png)

**Highest educational attainment of participating learners, all countries**

![Educational attainment chart](chart2.png)

**Frequency of additional learning undertaken by the respondents in the last 10 years**

![Frequency chart](chart3.png)
Learning factors (Rating 2, Consensus value)

Learning factors (Rating 1, Scale value)

Combined learning factors diagram
Adult Trainers and Educators: Survey summary and conclusions

The total number of respondents in this survey is n=96. With an agreed sample of 5 per country, Italy is slightly below the target (n=3), with Slovenia (n=40), Belgium (n=24), and Bulgaria (n=18) more than offsetting this. Netherlands and Italy are on target.

Gender distribution shows 27% males and 73% females.

Age distribution provides sufficient responses in all major age groups. Almost half (47%) of the respondents fall within two age groups in the 35-44 years range.

When answering a question on whether in their current teaching occupation the respondents have freedom of choice as to the teaching methodology, 76% say they have complete freedom, 20% say they need approval from the administration, and only 4% have a prescribed methodology to follow with no freedom. This distribution outlines an excellent pool of trainers and educators for iFlip to target and work with, and we recommend that partners revisit their survey announcement strategy and try to identify the trainers (and the organisations they teach at) to attempt and involve them at the next steps of iFlip project. A share of 3/4 stating they have full flexibility on the choice of methodology suggests easier access to future experimentation and experimentation data.

Looking at the question which purpose was to establish if and how far in the implementation of the FC method respondents are, we found that about 18% already use it, and another 23% are immediately ready to use it (“I know what it is and how to use it”). This brings a combined share of 41% of trainers/educators who would be ready and able to work with FC with some assistance on the content part from iFlip. Yet another 11.5% seem to be in need of some additional training on the practical aspects, as they claim that they “know what FC is, but not how to use it”. A remarkably high share of respondents (just over 28%) have but heard of the term. They could become interested in FC provided adequate and sufficient training is provided both on theory and practice. And another share of almost 20% have no clue at all what FC means.

The most interesting question is a matrix-type question asking respondents to rate different statements regarding their own teaching style and approach. Interestingly, the results show no or very weak correlation levels with age or with the degree of familiarity with the FC concept. However, careful study of the numbers indicated that there may be a stronger correlation when we consider the country of the respondents. We measured this as moderately strong (0.4-0.6) in 3 factors and as strong (0.6-0.8) in 1 factor. Due to the small sample sizes per country, we could not derive statistically significant results for all countries, but we were able to do this for Slovenia (n=40), for all countries except Slovenia (n=56), and compare these with the results from the aggregated sample (n=96). We have summarised our findings in the table below, and the result is also graphically depicted at the end of this page. Because this question is tightly bound to the training approaches which we will discuss and integrate in the pilot iFlip FC courses, we are also attaching a downloadable spreadsheet to the live version of this survey which contains additional statistics for all the factors, namely shares by type of response (and also arranged in 3 datasets – all data, all data except Slovenia, and Slovenia only). We recommend that partners go through these simple datasets and consider the answers in the context of the sample of respondents which they targeted with the survey. We would also recommend that partners make a decision on a reasonable minimum threshold for the training approach/factor to be included in their FC course design, perhaps somewhere in the range 1.25-1.50 (see the last graph on this page). It should be stressed
that while the iFlip courses will be designed with the FC approach in mind, the survey only shows what the teachers’ current practice is (which may, or may not, necessarily cover all FC course requirements. However, a closer match between the current practice and the future course requirements would ensure smoother take up and lower resistance to change.

**Summary of training approaches/factors. Highlighted rows show moderately strong (0.4-0.6) to strong (0.6-0.8) correlation between responses and country of respondents.**

<table>
<thead>
<tr>
<th>Training approaches and factors by use (scale 0-3)</th>
<th>ALL</th>
<th>All except SI</th>
<th>SI only</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Learners have some control over the learning process</td>
<td>0.73</td>
<td>1.11</td>
<td>0.20</td>
</tr>
<tr>
<td>B. Learner’s initiative is encouraged</td>
<td>1.41</td>
<td>1.54</td>
<td>1.23</td>
</tr>
<tr>
<td>C. Discussions in class are encouraged</td>
<td>1.73</td>
<td>1.77</td>
<td>1.68</td>
</tr>
<tr>
<td>D. Learners can choose their own pace</td>
<td>1.39</td>
<td>1.11</td>
<td>1.78</td>
</tr>
<tr>
<td>E. Using the traditional lecturing method</td>
<td>1.13</td>
<td>1.04</td>
<td>1.25</td>
</tr>
<tr>
<td>F. There is time allocated for processing and reflection</td>
<td>1.39</td>
<td>1.41</td>
<td>1.35</td>
</tr>
<tr>
<td>G. A variety of reading and exercising materials are provided</td>
<td>1.59</td>
<td>1.59</td>
<td>1.60</td>
</tr>
<tr>
<td>H. Question time is encouraged</td>
<td>1.72</td>
<td>1.79</td>
<td>1.63</td>
</tr>
<tr>
<td>I. Group work/assignments are encouraged</td>
<td>1.73</td>
<td>1.64</td>
<td>1.85</td>
</tr>
<tr>
<td>J. Using well-structured and programmed trainings</td>
<td>1.33</td>
<td>1.25</td>
<td>1.45</td>
</tr>
<tr>
<td>K. Using relaxed course structures with much flexibility</td>
<td>1.30</td>
<td>1.11</td>
<td>1.58</td>
</tr>
<tr>
<td>L. Using assignments</td>
<td>1.35</td>
<td>1.23</td>
<td>1.53</td>
</tr>
<tr>
<td>M. Learners can set their own learning goals</td>
<td>1.08</td>
<td>0.75</td>
<td>1.55</td>
</tr>
<tr>
<td>N. Using progress tracking and self-assessment tools/opportunities</td>
<td>1.10</td>
<td>1.13</td>
<td>1.08</td>
</tr>
<tr>
<td>O. Using case studies</td>
<td>1.17</td>
<td>1.29</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Adult Trainers and Educators: Detailed results

Note: Survey results were initially presented with the help of interactive diagrams. This paper version lacks the full functionality of the presentation. For full interactive experience and complete diagrams, please visit the live page at http://projectiflip.eu/en/alnar-surveys.

Number of respondents by country

Gender distribution of participating educators and trainers

Gender distribution, trainers (n=96)
Age distribution of participating educators and trainers

Educational level at which respondents teach

Qualification (teaching-related) of respondents
**Freedom to use a teaching method (reported)**

In your current employment as a teacher/trainer/instructor, do you have the freedom of using a teaching methodology of your choosing? (n=96)

- Yes, completely: 76%
- Yes, but this needs approval by the administration: 19.8%
- No, I am only allowed to follow a pre-designed format and methods: 3.2%

**Familiarity with the FC concept/method**

Are you familiar with the Flipped Classroom concept/method? (n=96)

- I use it already: 22.9%
- I know what it is, and I know how to use it: 28.1%
- I know what it is, but not how to use it: 11.5%
- I’ve heard of the term, but nothing more: 17.7%
- I have no idea what this is: 19.8%

**Use of teaching approaches/factors**

Training factors by usage:

- A. Learners have some contr...
- B. Learner’s initiative is enc...
- C. Discussions in class are e...
- D. Learners can choose the...
- E. Using the traditional lecu...
- F. There is time allocated for...
- G. A variety of reading and e...
- H. Question time is encoura...
- I. Group work/assignments...
- J. Using well-structured and...
- K. Using relaxed course struc...
- L. Using assignments...
- M. Learners can set their ow...
- N. Using progress tracking a...
- O. Using case studies...

0 = not using at all, 1 = using it occasionally, 2 = using it frequently
iFlip Project: Flipping the classroom in adult education

Adult Learners Needs Analysis Report, Section C

Compendium:
Case Studies and Good Practice Models
Reporting partner/country: LUV/Andragoški zavod Ljudska univerza Velenje, SI

Origin of the method description: OŠ Solkan (elementary school), SI

Context: FC used in class after participating at the EDID conference on flipped learning

1. General setting:
The FC was developed and used in the Elementary school Solkan, year 3 (age group 8-9), in subjects Math and Natural science.
Each of the teachers chose on topic to prepare and develop materials and construct a lesson according to the goals of the curricula.
For Natural science it was “Farm during seasons” and for Math “Parts of the whole”.
Lessons were recorded using Screencast-O-Matic, which is easy enough to use to make a start. Materials were arranged and cut into short videos, multimedia features were added using SmartBoard. Videos were published on YouTube and linked to online classroom.

2. Free description
Although the experiment was intended for younger students, they took it quite seriously. They have watched videos several times, most together with parents and other family members.
This was followed by so called “homework” time in the classroom, where students used the knowledge to fill out some tasks and exercises.
Students were very engaged and active; especially those with learning difficulties had less problems solving the tasks and required less help. At the same time not having to explain the content gave teachers more time to focus on individual students who needed help and support.

Sources and further reading:
Source: http://mlearningvili.blogspot.si/2014/01/obrnjeno-ucenje-na-os-solkan.html
Math Example
Learning material (video): http://youtu.be/EPqIX0xT_hY
In the classroom: http://youtu.be/easFbWn2cMQ

Natural Science:
Learning material (video): http://youtu.be/PYK0xxvE1CE
In the classroom: http://youtu.be/RwpwYG94IIE
Reporting partner/country: LUV/Andragoški zavod Ljudska univerza Velenje, SI

Origin of the method description: Biotechnical school Maribor, SI

Context: FC used in class of secondary school, subject Anatomy with physiology, lesson on Immune response

1. General setting:
The immune response is a good example of the flipped learning where the teacher motivates students by involving them in the selection of themes for which he then prepares a video clip. The added value is exceptional. Topic is extensive and for future veterinary technicians very important, it can include several books. Here it is presented in 30 minutes long very illustrative video. Video imitates teacher drawing on the blackboard with colored chalk while explaining. Students can watch videos anywhere and repeatedly. This method of work allows teachers save valuable time in the classroom to consolidate students and build on their knowledge in a creative way. After they watch a video at home, they need to draw a comic in the classroom using only pictures and no words to recreate the knowledge they have gained.

2. Free description
By drawing comics, students create associations, which help them to memorize relevant facts more easily. By explaining the topic to their classmates, they learn quickly and efficiently, and they verify, repeat and consolidate their knowledge and receive new associations, while training their communication skills. Effective and useful application of information and communication technology to facilitate learning allows more time to achieve higher taxonomic levels and individualization and enhances the development of creativity. Feedback was positive, students got inspired and creative. Teacher evaluates the method as useful as it encourages students to build their own knowledge and reflect on the topic. The use of ICT is appropriate, but it takes a certain amount of teachers' time and engagement. As the teacher creates videos according to students' choice this gives them a feeling of contributing to the teaching.

Sources and further reading:

Source:
http://www.inovativna-sola.si/component/k2/item/453-kako-bi-flipnil-pouk
Video lesson:
http://youtu.be/pzruhGOhz1A
Technology used:
http://www.smoothdraw.com
http://www.techsmith.com/camtasia.html
Reporting partner/country: Artevelde University College, BE

Origin of the method description: Artevelde University College, Department of teacher education for secondary schools, BE

Context: Multimedia and ICT skills

1. General setting:

An online learning package allows to enhance ICT and multimedia skills, taking into account the starting knowledge level. Moreover, the flipped classroom stimulates the users to explore actively the presented multimedia and computer tools. The use of illustrations, pictures, movies and online appears to make the course content more attractive for the students and opens the way to enter different difficulty levels. During face-to-face classes, the students first have an introduction session to explain the method. In a second session they can practice and ask questions.

Function:

1. Online learning activity parallel with face-to-face learning activities
2. Instruction and guidance: websites have been created per theme. Each website is a collection of tools related to one specific multimedia cluster (for example movie tools, sound tools, screen capture tools, presenting tools etc.). The websites have a clear structure easy to navigate for students. For every tool the websites include specific tasks to exercise the tools and enhance the student's skills.

2. Free description

The websites developed for this e-learning course are made with a free tool, and all the applications and tools presented and used in the course are freeware. This is important because it proofs to the students that didactical integration of multimedia and ICT tools doesn't need expensive programs.

Used tool: The website was developed using Weebly, a free tool. Diverse, free applications were used to fill up the Weebly: issuu, slideshare, youtube, screen-cast-o-matic, soundcloud, thinglink and audacity.

Result:

http://ologeluid.weebly.com/
http://educatievesoftware.weebly.com/

Infrastructure:

Computer or other devices, Wi-Fi connection, digital camera or webcam, headset and accounts to use the different tools.

Necessary preparation: The preparation is the most important and intensive phase. Gathering and structuring the content of the websites, deciding which information, tools and exercises will be used, is very important. Everything has to be well prepared before building up the website.

Sources and further reading:

http://klaswebsitebouwen.weebly.com/andere.html
Reporting partner/country: Artevelde University College, BE

Origin of the method description: Teacher training Center for Adult Education – CVO Vlaamse Ardennen

Context: Online introduction to didactics / Didactics from a distance

1. General setting:

Didactics is a course in the first year that introduces students to course didactics. Students are often confronted with diverse didactic models that they have to know and that they have to link to their observations during the observation phase of the internship.

Function:

1. Online learning activity as preparation: a multitude of learning paths were developed about didactics: introduction to didactics, didactic models, linking the didactics to videos. The objective is that students browse through these paths to process their assignment.

2. Guiding, practicing and co-operation: the learning paths are linked to an assignment. An intervisionmoment is organised before the deadline focusing on how the students processed the didactic moments critically.

2. Free description

The elearning setting allows students to follow the course mostly independent from both time and place. A classroom session before the end of the assignment allows the teacher to check how much of the course the students already grasp. This combination -online preparation and intervision- forms an adequate base for the students to start their observation and internship program.

Amount of contact moments: 30% - 70% distance learning (= blended trajectory with regular contact moments)

Used tool: The learning paths were developed using Xerte.

Necessary infrastructure: PC and Xerte account (available at Tollnet.be)

Average preparation time: Developing the learning path itself doesn't take a lot of time. What does take a lot of time is shaping the learning path: WHAT will it contain and IN WHICH ORDER? In total, it will take about 10 to 15 hours of developing. It's important that you select and organize your materials before starting with Xerte.
Reporting partner/country: Artevelde University College, BE

Origin of the method description: Teacher training for secondary teaching education – University College Artevelde, BE

Context: Content study of basic physics / Mastering Physics education

1. General setting:

This is a good practice for online instructions and online learning activity for learning physics, with focus on mechanics. The content is taught using the workbook Giancoli, which has an online learning package attached to it called 'Mastering Physics'.

Function:

1. The physical learning activity: Instruction and guidance: the contact moments involve the contents of the workbook (instruction). After each contact moment, the students are referred to a series of exercises to work with the content. Work flow can be followed by checking the tracks, and feedback on exercises can be given in the next contact moment.

2. The physical learning activity: Practice: Mastering Physics allows the teacher to create exercises based on the content of the workbook. Every series of exercises is visible online for a short time right after each contact moment.

There are learning paths with exercises to check the cognitive level of the students, regarding the theory the application of it.

2. Free description

An online training package with tracking of the student activities has many advantages. It provides an anchor for the students to regulate their learning process; they can estimate via the training package to what extent they are mastering the learning content and they get an indication of the expectations. For the teacher, the tracking offers important information to define the starting point for the educational process.

Used tool: Mastering Physics is a learning environment in which the teacher can create exercises and assignments. A tutorial giving more information about the program: https://www.youtube.com/watch?v=1u2P47LUHD0

Result:

http://www.pearsonmylabandmastering.com/northamerica/masteringphysics/

Necessary infrastructure:

A personal login for students and teachers is necessary. The login data is linked to the Giancoli handbook that students have to buy.

Necessary preparation:

The program is quite easy to work with.

Sources and further reading:

https://www.youtube.com/watch?v=1u2P47LUHD0
Section C: Case studies & good practice models

Reporting partner/country: NTC/Adam Smith College of Management, BG

Origin of the method description: Adam Smith College of Management, BG

Context: FC used across all modules/disciplines in the Adam Smith College of Management programmes since 2015

1. General setting:
Following a number of years of experimentation of different FC approaches, the Adam Smith College of Management has introduced FC across its flagship 2-year programme in Entrepreneurship and Management for adults (EQF Level 5). The programme consists of 18 modules/disciplines. In recent years, we have seen a stable interest in the management training programmes, but student intake was decreasing as people report more and more work-related stress and less time to dedicate to long-term qualification level studies. The FC was considered the best alternative not only to lighten the additional burden caused by studying, but also to access a new target group with increasing importance and increased demand for flexible and individually paced training solutions. FC would, therefore, serve several purposes:

1. Work with random number of students during class time (attended learning);
2. Allow new students to enter the programme at anytime, thus avoiding the need to participate in the fierce competition among training providers during the Summer months immediately before the start of the traditional academic year (September-October)
3. Encourage project-based assignments;
4. Improve the application of the in-house developed model for accreditation of prior learning;
5. Provide individual feedback, support and learning pathways;
6. Provide stimulus to teacher to work on authoring additional training resources;
7. Improve faculty and staff's digital skills, encourage self-paced and self-controlled task and time management among them;

2. Free description
The e-learning platform (Moodle) used at the Adam Smith College of Management was already holding a full collection of text-based learning resources. For programmes other than the one described in this example, it was also used to inform students about assignments and collect their work, with assessment/marking also being done through the platform. With the decision to move to a training design strongly shaped by FC, the need to restructure the content to suit self-study requirements was evident. Moreover, this opened the path to full self-study learning and qualification pathway.

Teachers in all affected modules had a serious task. To re-work their resources and entire approach to the learning process. A large number of additional assignments was created for each learning objective/topic. These were complemented by a database of computer-assessed questions

When assessing the new design, we found out that we lack almost entirely a very important component – instructional videos and interactive learning resources. We decided to separate our work in two phases, but the common approach was identical – we wanted to develop the skills needed for producing both type of resources in-house. We realised that this is the longer path, but in the medium to long-term this option was assessed as superior compared to the outsourcing resource production.

So we decided that video production would come first, and that creating interactive content will follow an year later. We subscribed to an online video clips production platform (wideo.co) and created a large number of instructional videos – customised to match the training content which is itself authored by the faculty, videoclips scripted by the faculty, and created with the newly acquired and very specialised digital skills of the administrative staff at the College. The result is an e-learning platform rich in activities and resources, which allows the training design to provide for a flexible and self-paced learning routine, where the teacher is mostly a mentor and advisor.

The self-paced characteristic of the new training design needs one more adjustment – this time to account for the needed balance between individual and group work on assignments. In a setting which departs slightly from the FC in the direction of full self-study. A lot more to come, many exciting months and years ahead!
Reporting partner/country: NTC/Adam Smith College of Management, BG

Origin of the method description: Adam Smith College of Management, BG

Context: FC used in the English Language module at the Adam Smith College of Management since 2013

1. General setting:
The setting of this experiment is the English Language (EL) module of the 2-year management qualification programme at Adam Smith (EQF 5). Set for attended classes during weekends, the programme is designed for busy people and targets ever-increasing efficiency of class-time use. The EL module is one of 18, and although it is part of the mandatory curriculum, it has often been regarded by students as of somewhat secondary importance. With erratic attendance due to very busy work and personal schedules on the students’ part, we needed a solution which would allow the teacher to:

1. Work with random number of students during class time (attended learning);
2. Maximise oral interaction to improve effectiveness of taught communication skills;
3. Provide individual feedback, support and learning pathways based on entry levels of language competences and individual speeds.

2. Free description
What started as an experiment and was later partially introduced to other modules at Adam Smith, consists of:

1. One introductory class meeting for the teacher to establish the entry level, suggest to students and agree with them upon target learning outcomes (targets are, in most cases, individual).
2. A set of videos (Youtube), which were selected by the teacher (but not produced by Adam Smith), and are situation-based.
3. Detailed instruction to accompany the videos, ranging from how to approach the videos, what to pay attention to (e.g. words, structures, non-verbal behaviour, etc.).
4. Tasks (e.g. building a thesaurus, translate portions, re-tell the story, etc.) and quizzes for self-assessment.
5. Two follow-up attended class sessions in a time agreed with the group.
6. Final presentation of written coursework and oral presentation before the class.

Communication (asynchronous) between the class and the teacher takes place in our e-learning platform, the Exploratorium (Moodle). Individual/group video-conferencing possible upon request or teacher evaluation.
1. **General setting:**
The Creative Classrooms Lab project (CCL) brought together teachers and policy-makers in eight countries to design, implement and evaluate 1:1 tablet scenarios in 45 schools. The project produced learning scenarios and activities, guidelines and recommendations to help policy-makers and schools to take informed decisions on optimal strategies for implementing 1:1 initiatives in schools and for the effective integration of tablets into teaching and learning. The project, funded by the European Commission's Lifelong Learning Programme, was coordinated by European Schoolnet, involved 10 partners and ran from April 2013 to May 2015.

The aim of this scenario was to introduce the students to the concept of the Flipped Classroom. This was to encourage the students to make more use of their time at home for class preparation and to enable them to make better use of their time with the teacher. The policymakers were keen to understand how introducing the Flipped Classroom might support the student to connect home and school encouraging the student to take more responsibility for their learning. The idea was that students should be encouraged to watch videos, make notes and to begin to develop new resources to support their own learning at home prior to the lesson enabling them to use the lesson time to explore content further and to collaborate with their peers and their teacher on more challenging ideas.

2. **Free description**
The initial goal was for the 18 students to use a Flipped Classroom scenario with all their teachers across all 14 subjects. To implement the Flipped Classroom scenario, the school used the “PUPIL 108” Windows 8 tablet (known locally as Magalhães) with Office 2013. All 18 students were able to take the device home as well as the teachers. The school had to define common ideas for all staff. The teachers found it a completely different teaching and learning environment. Teachers had to be aware that some students came to lessons unprepared and had not completed the tasks required. The students were also aware of the different skills of the teachers and the types of activities that they had to do during their lesson time.

The students liked biology lessons because the teacher gave them quizzes or asked them to make a poster. The CCL project teacher explained that in a typical lesson, students were able to share their achievements and knowledge acquired at home. For this, the teacher proposed some activities such as group discussion about the main ideas of the topic. Sometimes the students had to answer quizzes or online questionnaires. Teachers used Infuse Learning and Windows 365 Excel tools. The school has had some difficulties with the internet connection which compromised the development of some planned activities.

Thus, from a certain point it became necessary to always have activities on paper that would make it possible to "replace" the online resources if there was failure. From time to time the students were asked to present to the class the results of their learning in the form of posters or PowerPoint presentations. Students frequently used Office 2013 resources. In some cases teachers chose to subtitle short films taken from YouTube. During the lessons, the teachers helped with the creation of individual presentations, assisting on questions and validating the conclusions reached.

An interesting example was the subject of physical education, given its essentially practical nature the teachers felt that it did not initially look as if it would be possible to implement the flipped classroom scenario. The CCL teacher, therefore, proposed that the students study the rules and technical movements of the sport "Korfball". Students, in groups, produced videos / tutorials on the various technical aspects of Korfball. They shared the videos on the OneDrive platform, serving as a technical document for their study. After this approach, the teachers found that students were involved more dynamically during classes and took an active role among peers with more practical difficulties, correcting the technical “skills” and the playing movements.

The teachers felt that using the tablets in this way had improved student and teacher communication during the lesson time. Students were allowed to learn at their own pace and teachers could spend more time supporting students in class. However, teachers also felt that implementing the Flipped Classroom was time consuming and that it was extremely challenging to find appropriate resources in Portuguese.

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**Sources and further reading:**

CCL Project Website [http://creative.eun.org/home](http://creative.eun.org/home)
Reporting partner/country: Unipa e-learning, IT

Origin of the method description: University of Copenhagen, DK

Context: FC implemented in the course on the history of the Gothic language (BA of Indo-European Studies)

1. General setting:
The first idea starts in 2010-2012 when the teacher realizes that some of his students live abroad, so he starts to record and broadcast the lessons. The lessons were recorded in a real TV studio, and the class even got the opportunity to test run the oral exam as a video conference session on Skype.

2. Free description
In the latest edition of the course, the teacher didn't live-stream and podcast the lessons. Instead, partly because of a cut in the number of hours allotted to the course, and partly because he wished to include the students more actively in the class, he implemented what is normally referred to as flipped classroom… meaning that he swapped the activities normally done in class, that is lecturing by the teacher, and those normally done outside class, that is exercises. He chose to let the videos from 2012 constitute a part of the students' preparation before class. In that way, they didn't have to spend most part of the highly valued student-teacher time on lectures on theoretical stuff. Instead they could focus on clarifying questions, exercises and student presentations, thereby training their competence as a communicator and their ability to apply the knowledge and understanding gained from the video clips on concrete text examples for analysing them linguistically.

Normally, a lesson would start by the teacher asking the students if they had understood the lecture podcast and the literature belonging to it. Afterwards, one or two students would present orally on a theoretical subject selected by the teacher, and in the last half of the lesson, they'd make and go through some exercises in which the students were to apply the theory they'd just learned on concrete linguistic material from the Gothic language or from its precursors. By means of the plenary walkthrough of the exercises, the teacher could see right away if the students had learned what they were supposed to learn. And if they hadn't, the teacher could react on it immediately.

In more general terms, the use of flipped classroom implied that they had much more time for focusing on the entire package of intended learning outcomes which, of course, doesn't only consist of knowledge and understanding but also of analytic and interpretative skills. In other ways, we had created a learning environment with a high level of constructive alignment in terms of outcomes based teaching and learning – in the exact way that Biggs & Tang – and others – have suggested to be ideal for teaching at the institutions of higher education.

The teacher points out that there is no need of high value technology, like TV studio recording, to achieve didactical goals. Just a webcam, Adobe Connect, and Powerpoint presentations suffice to implement his flipped classroom experience.

Sources and further reading:
Roots of Europe Blog http://rootsofeurope.blogs.ku.dk/tag/flipped-classroom/
1. General setting:

PBL (Problem Based Learning) is a method of acquiring knowledge and competence in a specific domain of education on the basis of the resolution of the problem. Students form and develop their problem-solving skills in a way that is more independent and innovative in comparison with the traditional academic learning methods.

Students work in groups of 4-5-man. Each group receive a defined problem at the beginning of the semester and during the period of 15 weeks make the research in different disciplines and areas connected to the problem.

The students make the research themselves to find the possible solution of the given problem.

Each PBL group has a separate supervisor who assists students in the learning process and finding the solution of a specific problem.

Classes are held at the 4th semester of the engineering study level (3.5 years) and are addressed to the students of all domains of study.

2. Free description

In a problem-based learning (PBL) model, students engage complex, challenging problems and collaboratively work toward their resolution. PBL is about students connecting disciplinary knowledge to real-world problems – the motivation to solve a problem becomes the motivation to learn.

Teams identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem.

Why the PBL method was decided to implement?

- The need to change the students' participation in the learning process from a passive (teacher oriented) to the active one.
- The need to prepare students for professional functions in the continuously changing environment with access to an increasing number of information sources.

PBL organization concept:

- Students work in teams of 4 or 5
- Team has a tutor or supervisor
- The groups coming from the same domain of studies, e.g. computer science, architecture, management have the common coordinator who manage all these groups and their supervisors having control under the fulfilment of general rules of the classes
- Meetings (students and their supervisor) once a week
- Every meeting has a leader, chosen from the group of students, that changes each week
- Students have also the classes about communication skill that give them the knowledge and practical experience in team building and in team communication
- Every meeting, another team member takes the leadership role – Leader is responsible for meeting's organization, discussion, time controlling, summarizing a discussion and minutes preparation.

Daily communication (asynchronous) – if necessary – between the groups and the teacher takes place by e-mail, Skype and e-learning platform.
Reporting partner/country: AHE/University of Humanities and Economics in Lodz, PL

Origin of the method description: AHE/University of Humanities and Economics in Lodz

Context: FC used in the Project Based Method module at AHE/University of Humanities and Economics in Lodz since 2009

1. General setting:

Project Based Method (PBM) – the essence of the module is a stand-alone problem-solving by the student. Teacher acting as an adviser who prepares the student for tasks and advise how to solve these, with which alone student cannot cope. The workshop is a method of work aimed not only to transmit the knowledge, but on the development of personality and personal competence.

2. Free description

Students in groups determine and develop under the guidance of a teacher the common project related to their interests in the field of study. This action aims to acquire the practical skills necessary for the efficient performance of the work in the future. The students gain a specific experience and the skills such as:

- ability to solve problems
- ability to take decisions
- ability to analyze a situation and drawing conclusions
- ability to communicate and cooperate in the group

Classes are conducted by the workshop method, whose essence is the active participation in the activities of all students – the lecturer is a mentor and a moderator of the action taken. All members of the course work, learn, solve problems, learning some valuable lessons. An important role of the teacher is not only a skillful control of the events, but also to be open to proposals and suggestions of the students. With this method each attachment are different from other attitude, they learn to solve new problem situations.

The steps of project realization are as follows:

- independent determination of objectives and tasks
- formulation of ways of their implementation
- creative problem solving
- analysis of the effects of the adopted solutions
- evaluation of the value of the effects of the implementation
- deployment of adopted solution

Daily communication (asynchronous) – if necessary – between the groups and the teacher takes place by e-mail, Skype and e-learning platform.
Reporting partner/country: Foundation Knowledge Center Pro Work, NL

Origin of the method description: Deltion College, NL

Context: FC used in Anamnesis lessons, Dental Assistant, Intermediate Vocational Education, level 4, year 1, school-based pathway
Summary “Thuisles – Samenwerkend afstandsleren” (Home learning – Collaborative distance learning)
This scenario is an answer to the educational question whether students are able to do distance learning collaboratively. In contrary to the Deltion ICT pilot “Afstandsleren” (Distance learning), the teacher does not guide individual students, but groups of students. The assumption is that the guidance will be easier to achieve, partly because students themselves also have a role to fulfil amongst themselves. Every week during the third period the students get instructions during an Anamnesis/Patient history lesson. At home the students process the theory in groups based on an assignment that they have to hand in together. They have two hours to do so. After the distance learning the theory will be deepened at school.

1. General setting:
This example is used for the course Anamnesis, Dental Assistant, Intermediate vocational education, year 1, School-based pathway. There were two groups, 50 students in total. This form of distance learning is given by a qualified teacher in the subject given. The teacher is also trained in the use of virtual and flipped classroom. The Deltion helpdesk is available for realtime online assistance. The presence/absence of the student is monitored by the teacher. The distance learning hours are incorporated in the students roster. All learning outcomes are covered during an exam.
The students are present in the virtual classroom via a webcam. Lesson cycles are evaluated at the end of the period. If, due to technical or other problems it is not possible to organize the distance learning, another time/day will be scheduled. In case another problem arises the activity can always be moved to school.

2. Free description
The student is instructed to log into the virtual classroom at a set time to view a recorded lesson. A network to discuss via text, chat and video has been set up. During and after watching the videos the students need to work on a number of assignments together. The teacher guides the group and can monitor the process live (and can intervene if necessary). The next day a 1,5 hour lesson is scheduled to further deepen and process the outcomes of the assignments.

Sources and further reading:
Research results (Dutch)
https://deltion.mediamission.nl/Mediasite/Play/df6565ba6f644e64b39f6529135c36a71d
Link to video of pilot (Dutch)
https://deltion.mediamission.nl/Mediasite/Play/0b67708bb5ef4df1a6e1315a009871491d
iFlip Project: Flipping the classroom in adult education

Adult Learners Needs Analysis Report, Section D

Flipped Classroom Methods in Use
Reporting partner/country: LUV/Andragoški zavod Ljudska univerza Velenje, SI

Origin of the method description: Flipping with a MOOC - The DUKE Center for Instructional Technology, USA

Context: Class of Introduction to Genetics and Evolution – integration of the FC method in combining on campus class with online class, by Mohamed Noor

1. General setting: Prior to every class period, Duke students were expected to watch 3 videos (average ~15 minutes each) in Coursera bearing 80-90% of the primary “raw information content” that they were expected to learn from the course. Following the videos, the students had to take a graded preclass quiz, formatted similarly to their in-class tests and of comparable difficulty. The purpose was two-fold: for them to identify areas of misunderstanding or gaps in their knowledge, and for Noor to see what students struggled with from his lectures.

The first few minutes of the class period were used to collaborate in completing the preclass quiz. After that, Noor spent ~10 minutes going over areas of misunderstanding based on the preclass quiz performance and free responses. The bulk of the class period was devoted to students working in self-selected small groups on ~7 ungraded practice problems designed to help them integrate and apply the concepts from the lectures. The teaching assistants (TAs) and Noor would walk around the room and engage the students to see what problems they were stuck on.

In addition the students had a weekly problem set to complete, weekly laboratory sections, a few other online practice problems, and three open-book, in-class tests. The class period activities were also recorded and made available to any students who couldn't make it due to illness, travel, etc. (again, just like before).

2. Reactions and outcomes: Most of the class's students indicated they were pleased (and often pleasantly surprised) with how well the flipped class format worked. Students could work at whatever time of day was optimal for them. They could also easily pause at any time, or immediately replay anything they missed. Most reported that the inclass reinforcements were helpful for them to really understand the material and to perform better on assessments (see figures below). Most appreciated the “reactive” and “interactive” nature of the class, where the class period content responded directly to their areas of interest or confusion. Some students said that the format forced them to study as they went along, such that they noticed they barely had to study right before the tests since they'd already done so much along the way. A handful said they liked the online discussion forums, and found the elaborations by either Duke or online students on some of the material helpful.

3. Lessons learned and conclusions drawn by the trainers:
WHAT WAS LESS-THAN-IDEAL

- Some of the students were unhappy with the added workload of having to watch ~1.5 hours of video each week.

- “While the flipped class format benefits many of my fellow students, this format hinders my learning. In a normal class, I would go to lecture and take notes and such, and then do whatever work was required of me, but no more; I normally take a minimalistic learning approach, does as little as possible to succeed. As such, I do not normally watch the online lectures because I find that doing so is more time consuming than just glancing over the lecture slides to find the information needed.”

- A fraction of the students fell far behind (especially between test 1 and test 2) and did not really catch up in a timely manner to do well on the later tests. If one fails to watch the lecture videos before class, there really is no point to coming to class since the student would be just lost on the material. At that point, it can become self-reinforcing – a student falls behind, and the work needed to "catch up" is greater than in a traditional class, possibly making them more likely to further procrastinate and fall further behind.

- A possibly related negative was a drop in class attendance... attendance probably was consistently at or below 50% after the third week. They often had 50-70% attendance in the traditional classes, unlike the <50% with the flipped class.

A few students cited two reasons:
1) the increase in overall amount of outside-class work (the fact they already had to spend 90+ minutes a week on the material made some students less likely to spend even more by coming to class), and relatedly,
2) some simply felt confident with the material from the video, and would thus skip the reinforcement and application in-class.
• The one class format element that “flopped” was the few minutes at the beginning of class for completing the class to skip that piece.

OTHER SURPRISES
The biggest surprise was the absence of correlation between class attendance and grade. The three test grades were very highly correlated with each other despite the differences in mean, but there was no clear association between which students came to class and student test performance.

The other surprise was the general absence of engagement of the on-campus students in the online Discussion Forums associated with the online class. Many of Duke students said they looked in the forums, but even though they were offered the Duke students extra credit for posting in the forums, 80% of the Duke students never posted in the forums, and most of those who did post made 5 or fewer short comments or questions. A handful really engaged with others in the forums, but <10 students total.

SYNOPSIS
Although requiring a TON of upfront work, this experience has definitely changed Noor’s view of teaching. He feels now that, as faculty become less “lecturers” and more “facilitators” in the classroom, they work with the humanity of students rather than treating students as consumers of prepackaged products. Teaching this class was very, very enjoyable. Further, these students are interesting and talented people, many of whom are spending tens of thousands of dollars to be at an elite university, and are receiving some classes in a format of not much greater value than what could be found online. His statement is not to suggest that the total college experience is what happens in the classroom (clearly untrue), nor that the students themselves are incapable of obtaining more from traditional lecture classes by taking the initiative to engage professors directly. However, his goal was to add as much value as possible to the in-class experience by making it visibly dramatically more than what is available freely online-- far more opportunities for interaction, extensive reinforcement, “going further” with the material, etc. (in addition to the laboratory sections, of course).

Sources and further reading:
http://science-and-food.blogspot.si/2013/05/flipping-with-mooc-very-new-approach-to.html
Reporting partner/country: University College Artevelde Ghent, BE

Origin of the method description: Nursing education - University College Artevelde Ghent

Context: introduction to First Aid techniques through an online course

1. General setting:
The course First Aid techniques confronts first year students with the techniques and application, depending on the target audience (baby, child, adult) and diverse environmental parameters.

2. Reactions and outcomes: The idea of using blended learning for this course came out of the fact that the group of students was increasing year after year without an similar increasement of teachers or scheduled lesson sessions. The used method was demonstration, and due to the big amount of students this had become impossible to handle.

Therefore, First Aid techniques that were normally demonstrated in practical sessions, are now demonstrated via online instructional videos and pictures. The students can learn the techniques online and attend the faceto-face practical sessions well prepared.

The practical sessions are focusing on practicing the First Aid techniques. Students are challenged by using realistic case studies to find the correct First Aid technique, keeping the target audience and parameters in mind. The teacher gives feedback where and when necessary.

Used tool:
De instruction movies are made with camera, light set and tripod. The movies are integrated in PowerPoint with a program called Articulate Storyline.

Result:

Necessary infrastructure: Articulate Storyline account

Tutorial for using the tool: https://www.articulate.com/

3. Lessons learned:

Average preparation time: Articulate Storyline is a very user friendly package to make attractive and professional e-courses. This is realised inserting diverse elements into a Powerpoint presentation.

The videos have to be very well prepared, with a strict scenario containing tasks, actions to be filmed and explanations to be told. The videos have been made with two teachers: one who performed the actions, and one who explained what's happening. Another person was operating the camera, and yet another person showed the scenario to the actors by using big card boards.

Sources and further reading:
https://www.facebook.com/Screencast-O-Matic-158210234220889/ (interesting page with tools, tricks and useful information)
Reporting partner/country: University College Artevelde Ghent, BE

Origin of the method description: Teacher training for primary teaching education - University College Artevelde Ghent

Context: Online instructions regarding internships for teacher education students

1. General setting:

This is a good practice for online instructions and online learning activity as preparation of the teaching practice in primary schools. The videos are made using a 'screen-cast-o-matic', with YouTube as platform. There's no particular software to be installed.

Function:
1. online learning activity as preparation program for the teaching practice;
2. the online instruction has been developed as particular screencasts used in every year of the program, including all necessary information to start the internship;
4. during the internship weeks teacher training students can get guidance to attempt the basic competences required to succeed;
3. the function of the flipped classroom is information and guidance

2. Reactions and outcomes:

Outcome: Online instruction enables internship instructions to run more smoothly and easily. In the past, the instructions regarding the teacher training internship, including goals, tasks, necessary documents... were taught during a face-to-face session. But it was always very difficult to plan these sessions and to reach all students, because many of them have personalized trajectories, and very different schedules. Online instruction in a flipped classroom setting, enables students to access all information, documents and tools whenever they want. Furthermore, reading through all the information, viewing the screencasts and preparing the questions they have, allows the students to really have a better insight in the organization of the internship program.

Used tools: The videos were made using a 'screen-cast-o-matic'. This software records your voice and computer screen simultaneously. The videos can be uploaded on YouTube afterwards. To upload videos, a free account is necessary.

Results:
https://www.youtube.com/watch?v=zM2qPuKaE9g
https://www.youtube.com/watch?v=vbApANpjeFg
https://www.youtube.com/watch?v=pgqmmH5rRl

3. Lessons learned:

Necessary infrastructure: PC and internet connection, an account for the screen-cast-o-matic and an account for YouTube.

Average preparation time: Making the screencast doesn't take a lot of time, if you've prepared well. It's important to know what you're going to say and show to your viewers. Keep in mind that videos should take maximum fifteen minutes.

Technical tutorial for using the tool:
http://www.screencast-o-matic.com/u/h/start-recording

Sources and further reading:
https://www.facebook.com/Screencast-O-Matic-15821023422089/ (interesting page with tools, tricks and useful information)
Reporting partner/country: NTC/Adam Smith College of Management, BG

Origin of the method description: Zurich University of Applied Sciences

Context: FC used in a Computer Science course on “Algorithms and Data Structures” taught in 2014 at Zurich University of Applied Sciences

1. General setting:

In the setting of this example, the semester runs for 14 weeks, and every week targets a specific topic such as “Basic Sorting Algorithms”. This allows the trainers to work using closed and independent teaching units. Every week is divided into four phases:
   1. Preparation, where the students get to know the topic;
   2. Quizzies, where the students answer simple online questions about the topic;
   3. Plenum, where students and teacher delve deep into the topic; and
   4. Exercises, which the students solve alone.

2. Reactions and outcomes:

Initial student reaction was rather reluctant (it will take too much time), over time it changes to almost entirely positive evaluation (over 78% agreed FC suits them better than the classical method). Here’s a summary of individual feedback (free-text):

<table>
<thead>
<tr>
<th>Advantages (perceived)</th>
<th>Disadvantages (perceived)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The material can be covered more intensively.”</td>
<td>“Preparation takes very much time.”</td>
</tr>
<tr>
<td>“I left every lecture with the feeling that I really understood it; unfortunately, this is often not the case for classic lectures.”</td>
<td>“I don’t think it should be used for every course; this would not be possible.”</td>
</tr>
<tr>
<td>“I am forced to get in touch with the topic before the lecture. This allows me to build an own opinion of the topic first.”</td>
<td>“This only works with very motivated students.”</td>
</tr>
<tr>
<td>“The lectures are much more efficient; this way, there is much time for real-world examples.”</td>
<td>“For me as a beginner, flipped classroom does not work.”</td>
</tr>
<tr>
<td>“I like the quizzies!”</td>
<td>“Whoever visits the plenum without preparation will understand little to nothing.”</td>
</tr>
</tbody>
</table>

The trainers commissioned a research study to determine the effects of FC, in which three classes of computer science students were compared, one of which taught with FC, the other two with classical lectures. The main findings of the study were very positive for FC:
   1. Students in flipped classrooms use much more time for preparing the lectures.
   2. Both groups of students perform equally well in the exams, with Flipped Classroom students slightly better.
   3. Students with flipped classroom improved their non-technical competences (communication, organization, etc.) much more than those with classical lectures.

3. Lessons learned and conclusions drawn by the trainers:

High effort for introducing flipped classrooms
The switch of an existing course from classic teaching to FC usually takes 6-8 hrs per 90-min-lecture for preparing the material. Within this time, we select the learning material, write the webpage in our learning management system, and develop quizzies, tasks for the plenum, and exercises. We usually do this before semester starts, for each week. If we produce introductory videos for a lecture, this takes additional 3-5 hours per video. During the semester, each teacher needs additional 60-90 minutes to evaluate the quizzes and select tasks for the plenum.

Support and resistance from other teachers
When we started using FC, many other teachers were very interested in the concept, and some even started using it already. However, there were also teachers who were very skeptical, and still are. One of the possible reasons: FC challenges the basic principles of classic teaching. Therefore, one has to be prepared to handle some amount of opposition. In addition, we found it important that those who use FC really advocate for the method: there is no use in forcing anybody not convinced of its usefulness to use the method.

**Good teaching material is important, but difficult to find**
Students have to study the learning material alone, without previous knowledge. For this reason, appropriate learning material is very important. In our setting, we use a textbook, accompanied with summary and additional explanations in the learning management system, plus some short introductory videos (2-3 minutes each). A normal course script is in our opinion not sufficient as learning material, since this was usually written for post-class reading. The same applies to most textbooks, which often rely on the fact that the topic was first introduced, motivated and explained in a lecture. Finding good, self-contained textbooks that are suitable for FC is not an easy task.

**Students fulfil their preparation tasks**
Students usually studied the learning material thoroughly before they come into the plenum. Each week more than 80% of all students complete the quizzes before the lecture. One of the reasons is, probably, that solving quizzes contributes to the final grades.

**Quizzes are useful for preparing the lectures**
Since quizzes are completed before each lecture starts, the teacher can see which sub-topics did the students not yet understand. This helps very much, since the teacher knows exactly what he/she has to explain in more detail.

**Quizzy question “What did you not understand?” is very helpful**
With this question, the students can point out which topics they are most interested in, and they can ask specific questions. In many cases, the teacher can pose these questions directly in the plenum, and all students search together for an appropriate answer. This has several positive effects: open and interesting discussions take place; students see that others might have the same or similar questions; and even students that do not talk/ask much in the plenum can pose their questions. Experience shows that students pose only few useful questions in the first weeks; however, once they see that these questions are taken seriously and answered in the plenum, the amount of questions increases massively.

**Introductory videos are helpful, but lots of work**
We produced small introductory videos (2-3 minutes each) for most topics. In these videos, we motivated the topic and explained the main concepts and ideas. Students appreciated these videos very much, since it simplified the process of starting with a new topic from scratch. However, producing these videos is very time-consuming (3-5 hours per video). Whenever possible, we now use existing videos from the internet.

**Activation in plenum is very high**
In the plenum, students discuss open questions and solve small exercises. Often very vivid discussions arise, where most to all students participate actively. Nevertheless, even silent students, who do not talk too much, appreciate the concept, since they can solve exercises on their own and immediately get feedback from the teacher.

**There is time for in-depth discussions**
In FC all learning content is defined and known beforehand. The teacher does not have to present any mandatory stuff. So it is possible to use time in the plenum very flexibly: if there is an interesting discussion, one can let it go until all arguments are exchanged and solutions have evolved. If no such discussions arise, one can just go through all open questions and exercises.

**Teachers have to be highly competent and flexible**
When teaching in a FC, you do not know beforehand which topics will be discussed in which depth. Often there are questions in the plenum that emerge to educators’ total surprise, and which go far beyond the pure learning material. For this reason, teachers using the method have to be able to react spontaneously and appropriately to such topics, which requires a very high degree of expert knowledge – probably more than in classic teaching settings.

**Not too many courses should be switched**
Students are very excited about the method, and they usually wish for more courses with FC. But we found that not all courses should be switched: FC requires more preparation time from the students than classic teaching – and switching too many courses might end in an overload.
Sources and further reading:
http://www.elmmagazine.eu/articles/flip-your-classroom-but-be-aware
Context: Flipped Lesson Plan Template, 2012

Authors: Melissa Bersano

Lesson Title: Standard Form, Word Form, and Expanded Form (Expanded Notation) of numbers less than 10 million and decimals through the hundredths place value.

Subject Area(s): Math

Grade Level: 5

Time Needed: 60-80 mins at home, 60-70 mins. in class

PA Academic Standards (1-3 entries)

M5.A.1.1.1: Use expanded notation to represent whole numbers or decimals (whole numbers less than 10,000,000 and decimals through hundredths).

M5.A.1.2.1: Match the standard form to the word form of decimal numbers through the hundredths.

Learning Objectives (including cognitive and behavioral objectives)
Students will be able to represent whole numbers less than ten million through the hundredths place value in expanded notation.

Students will be able to represent whole numbers less than ten million through the hundredths place value in word form.

Students will demonstrate understanding of the 3 forms of numbers through the completion of an online quiz.

Student Learning Resources at Home

- Instructional Videos:
  Place Value- Expanded form and Word Form of Numbers: https://youtu.be/uBuofv6Bbn0
  Standard and Expanded Form of Decimals: https://youtu.be/nt2aov1t3Js

- Games:
  QUIA- Match the standard form and expanded form of numbers http://www.quia.com/mc/279741.html
  AAA Math- Using expanded notation to write standard form (http://www.aaamath.com/g31d_px1.html#section
  (http://www.free-training-tutorial.com/place-value/airplanes.html)


Student Learning Activities at Home

Complete a 3-2-1

3- Define standard form, word form, and expanded notation (cite resources used)
2- Provide two examples of each form
1- Which form do you feel is harder to write?: Word or expanded?

Prepare 2 questions for the teacher and post on class blog. Complete 5 practice problems of choice on each of the (4) worksheets attached. (Used attached number word table to assist with word form)

Classroom Activities (pick what applies in the lesson)
Students share 3-2-1 note card in cooperative groups
  ◦ look for common themes
  ◦ look for differences
  ◦ see if peers can answer question
  • Whole Group: Address common problems & facilitate whole group discussion. (record notes that answer common problems in math journal (notebook))
  • Extension/Remediation stations (based on exercises completed at home on worksheets).

Assessment
  • Response cards:

Part 1
  ○ Students are given 3 note cards that read as follows: word form, standard form, expanded form.
  ○ Teacher presents different forms of numbers on Smartboard and students are to hold up the correct form card. Teacher records on grid those who respond incorrectly for each prompt/question.

Part 2
  ○ Students use whiteboards to respond to teacher prompts/questions.
  ○ Ex. Teacher writes 26,546,000 on the Smartboard. Students write the expanded form on their whiteboard and hold up. Teacher records on grid those who respond incorrectly for each prompt/question.

Differentiated assessment strategies for Part 2 above:
  ○ Aide scribes on whiteboard for low achieving and/or special education students. (reduced written load completely, while still assessing concept knowledge)

Low achieving and/or special education students work with an aide separately and are provided note cards that can be arranged to make word form, standard form, and expanded form for each example. (reduced written load, while still assessing concept knowledge)

Sources and further reading:
https://tch4902012mb7393.wikispaces.com/Flipped+Classroom+Lesson+Plan
Reporting partner/country: AHE/ University of Humanities and Economics in Lodz, PL

Origin of the method description: New York University

Context: Flipped Lesson Plan Template

Lesson Title:

Subject:

Level:

Prerequisite skills or knowledge (connect to prior lesson):

Time Requirements for First Exposure & Incentive:

Time Requirement for In-Class Activity:

Time Requirement for Post-Class Activity:

Worksheet for preparing what students will do before, during, and after the lesson

The success of your flipped class depends on the alignment of the what you want your students to accomplish before, during, and after the class.

**Step 1: Define Content Scope, Learning Objectives, & Instructional Strategies**

*What is the scope of your topic?* Defining scope is important in terms of providing your students relevant and connected content that is not too granular or wide in terms of scope, otherwise students will have difficulty building a mental model and connecting content. Concept maps are useful exercises to help define scope.

*How will students use or apply the material?* Clearly write the learning objectives and outcomes that align with the activities students will do before, during, and after the class. It is not enough for students to just read, listen, watch, and take notes. They need to use it to really learn it. Creating and communicating the learning objectives will help you to align your lesson and clearly define what you want your students to accomplish before, during, and after the class. When writing the learning objective including cognitive, affective, interpersonal, psychomotor domains. Describe what students will need to be able to know and do using active verbs from Boom’s revised taxonomy. Use the chart below to fill out each goal.

<table>
<thead>
<tr>
<th>Goal 1:</th>
<th>Content Type</th>
<th>Learning Objective</th>
<th>Task, Question, or Activity</th>
</tr>
</thead>
</table>

*Which instructional approach fits best for the main learning activity?* Choose the evidence based instructional approach will fit the main learning activity (i.e.: direct or indirect instruction, peer-instruction, team-based learning, case-based learning, process-oriented guided inquiry learning)

**Step 2: Student's gain familiarity with new material before class**

*What instructional materials and resources will you use for students to familiarize themselves with the content prior to class?* The pre-class work should set the scene for the in-class activity. Plan through how you will communicate the new instructional ideas. Would students benefit more from watching a video demonstration outside of class at their own pace and as often as needed or would some other media type (i.e.: text, animation, graphic) serve the presentation of instructional content more effectively? Review research literature for best uses of media and technology for your audience, topic, and objectives.
Step 3: Activities that motivate students to prepare before class

What kinds of activities will motivate students and prepare them for class? What questions will I ask students? What should students be able to do to prepare? Align & match these activities with the learning objectives. Identify the kinds of incentives or motivations that will engage students in the new instructional material and prepare for the in-class activity. Determine how you can provide feedback to students about what they know and do not know prior to class. NYU Classes has tools that can provide students immediate feedback on their progress, strengths and weaknesses.

Step 4: In-class activities that provide students opportunities to deepen understanding

What kind of in-class activities will focus students to attain higher-level cognitive abilities? Align & match these activities with the learning objectives.

In all these examples prepare clear instructions for distribution to students in-class.

Use a timeline work plan to help you keep manage the activity and keep students on task.

Step 5: Post-class activities that extend student learning

How will students continue the learning experience from the inside class activity to outside of class? Align & match these activities with the learning objectives. Note, we do not retain well what we may learn from just one exposure to the materials but over an extended period of practice.

Describe how you will connect this lesson to the next lesson so that they flow coherently.

Step 6: Ongoing Evaluation and Assessment

How will you evaluate student's learning and progress? Evaluation and assessment are ongoing throughout the process. Plan how you will evaluate the effectiveness of the flipped experience and assess student understanding at all stages.

Plan above to ensure Alignment. Is everything well connected? Is the lesson coherent? Have a colleague review your plan and give feedback.

Sources and further reading:
https://ctl.iupui.edu/media/88c8b954-2e9b-4e8d-b979-15fcd9218d6f/I9L_MYw/CTLContent/CTLResources/PlanningALearningSession/FlippedLessonPlanTemplate-website.docx