(Floe) General principles and guidelines for designing for teachers as consumers and producers of OER

How to read this draft?

How can OER be designed to best promote their use and their modification by teachers? This work is one step to answer this major question. It aims to identify what designers should know to better design for teachers. It builts on studies and ideas from the field of teacher practice and teacher education related to technology use (OER and ICT in education in general). It is organized it as follow: 1) it proposes several general principles for design relevant to teachers 'use of technology, and 2) it gives guidelines for designers of OER built on those general principles.

General principles for designing for teachers

- **Technology isn't the spotlight:** Technology should support and encourage the use and the development of quality educational content in order to improve students'learning. In addition, many teachers are reluctant to use recent technologies because they fear losing their position as teachers due to the Technological Generation Gap between them and their students.
- **Teachers may not be aware of the relative utility of the technology use:** The perceived usefulness of the technology is an important barrier or facilitator in technology use by teachers.
- **Teachers may think that content creation is a hard task:** Teachers may be convinced it is not their responsibility or that they don't have the skills to create content with technology.
- **Teachers may not have the needed technological skills and knowledge to use the technology:** Initial and continuous teacher education programs don't prepare them well to use and create content with technology well (very recent research results continue to prove this fact).
- **Teachers usually are not well prepared to select suitable technology and evaluate its use:** As a consequence of the last principle, teachers don't know on which bases and how to proceed to select technology and how to evaluate technology use by their students. Some motivated teachers develop their own practice, otherwise they usually use the technology used by their "leader" colleagues or the most used technologies (usually the most available).
- **Teachers usually don't have time to discover or update their knowledge and skills about technologies:** A lot of work to do, discovering or updating technology skills are ranked low in their priority task list.
- **Teachers usually don't have time to use the technologies in the classroom** (overloaded curriculum, equipment available in laboratories and not in the classroom, lack of support, important student number, etc.)
- **Teachers usually don't have the needed technological support to use the technology at its full potential.**
- **Teachers usually don't have the needed pedagogical support to use the technology at its full potential.**
- **Teacher may usually lack of access to technology in the classroom/school** (few computers in the classroom/ dated or inappropriate equipment/ technology available in laboratories not in classroom, etc.)
- **Teachers work in inclusive settings:** they have to meet the special needs of all their students.
- **Teachers are guided by the curriculum set up by the authorities:** They have to comply with its content while using or creating content through OER.
- **Teachers are strongly influenced by other teachers' practice.**
- **Education is oneof the sectors the most resistant to change (very conservative):** It took more than 30 years to integrate the use of the calculator in schools!

Suggested guidelines

General principle	Suggested guidelines applied to the video use in the classroom
• Technology isn't the spotlight	• Consider the pedagogical application of the technology: Provide examples of how to teach with videos with different students. • Convince them of the difference between the use of technology in everyday life and the use technology to teach and learn: Focus on the pedagogical benefits and specifities of the use of videos in the educational setting • Give the teachers a sense of professionalism by using a technology that is at the forefront of the latest scientific advances and current events (a solution to the generational gap). Inform and form the teachers on the use of the latest technologies related to video. • Support the development of a new culture that conceives teachers as learners AND teachers.
• Teachers may not be aware of the relative utility of the technology use	• Convince teachers of the usefulness of the technology for their teaching practice and mainly for their students 'learning: Provide concrete examples that show the usefulness of vide 'use (gain in time for teachers, motivated students, improving collaborative work in the classroom, etc.) • Give the teacher educational prospects of success at a reasonable cost of using the technology (time, stress, etc.): the use of the video must lead to concrete results and not cost a lot in terms of time and effort of the tecaher and his students (efficiency) • The use of the technology must be **comparatively** better than the traditional strategies of teaching applied by the teachers. The use of the video as an alternative must be better in terms of outcomes and ease of use • Ensure that the technology answer real educational needs of the students and their teachers. Question the need for the video before using it. • Involve teachers in the process of designing technology. • Evaluate continuously the use the technology to improve it.

• Teachers may think that content creation is a hard task than the simple use of existent resources • Teachers may not have the needed technological skills and knowledge to use the technology • Teachers usually don't have the needed technological support to use the technological at its full potential.	• Design technology that requires basic technological skills to use it. • Explain how to use the technology step by step in with easy and clear instructions. Provide a practical guide. • Provide clear practical examples of how to create content and examples of created content. • Do not assume that they know the keywords used in the designing or the technological field. Make a glossary explianing thoses concepts. • Give them the necessary support : 1. Give them easy access, simple and clear links to solve the main problems 2. Give them easy and quick contact specialists. • Develop communities of practice where they can share their experiences, solve their problems and learn collaboratively (forums, wikis and other online tools of collaboration)
• Teachers usually are not well prepared to select suitable technology and evaluate its use.	• Provide teachers with tools to evaluate the use of the technology. The use of video as an alternative to text must be followed by and adaptation of the output of the student's work, the assignements and their evaluation.
• Teachers usually don't have time to discover or update their knowledge and skills about technologies • Teachers usually don't have time to use the technologies in the classroom (overloaded curriculum, lack of support, important student number, etc.)	• Take into account the overload of work of teachers. • Take into account the resultant frustration as a barrier to their technology use • Design technologies whose use will help reduce the dependence of students to the teachers: they can do it by themselves (easy to use, clear, simple instructions, etc.). • Design technology that will reduce the time spent teaching and learning the content of the curriculum. The use of a video content and the software used to watch it must reduce the time spent in learning objects. • Consider and find out how to deal with the fact that teachers do not have time to learn and train on the use of recent technology (for eg.: Inform teachers through forums, wikis and other highly frequented places by the communities of users (don't overload them with information though)) • Consider and find out how to deal with the fact that teachers do not have time to use the technology in the classroom : 1. Provide them with in time and effective support. 2. Provide them with ready to use lessons plans or activities applying the technology
• Teachers usually don't have the needed pedagogical support to use the technology at its full potential.	• Design technology that can be used with the most common and available equipments
• Teachers work in inclusive settings	• Ensure that the technology answers the needs of different students. For eg.: videos that incoporates subtitles, clear sequenced videos, audio alternatives) • Develop flexible technologies that offer the teachers options to adapt the technology to their students' needs. • Apply the universal design for learning's principles to develop flexible technologies • Ensure that technology use (or the application of its flexibility options) by students with special needs does not interfere with students without disabilities (disturbing noise, complicate interface because of the multiplication of the flexibility options, etc.)
• Teachers are guided by the curriculum set up by the authorities	• Design technology that can fit the existent curriculum • Show how content creation through OER is a solution to the inflexible and content-heavy curricula (concrete applications and examples)
• Teachers are strongly influenced by other teachers' practice	• Develop communities of practice • Encourage exemplary uses of the technology (for eg.: Post the work of exemplary teachers, make competitions of the best use) • Encourage teacher's initiatives to collaborate with peers
• Education is one of the sectors the most resistant to change	• Updating and improving existent technologies may be more costless, effective and accepted by teachers than developing new one. Evaluate existenting technologies and answer their limitations.