

# Certification of MOOCs. Advantages, Challenges and Practical Experiences

## La certificación de los MOOC. Ventajas, desafíos y experiencias prácticas

**Michael KOPP, PhD.** Director of the Academy of New Media and Knowledge Transfer. Graz University of Technology, Austria  
([michael.kopp@uni-graz.at](mailto:michael.kopp@uni-graz.at)).

**Martin EBNER, PhD.** Senior Lecturer of the Institute for Building Informatics (IBI). Graz University of Technology, Austria  
([martin.ebner@tugraz.at](mailto:martin.ebner@tugraz.at)).

### Abstract:

In general, participants use MOOCs for individual learning purposes by selecting certain contents of a MOOC in which they are interested. Simultaneously, MOOCs are used in the context of online-lectures offered to students who must or may enroll for a specific course to earn credits. However, many participants do not successfully complete all units of a MOOC. Therefore, completion rates – in general – are rather low.

Certificates like PDF-documents or electronic badges can be an adequate stimulation to complete a course. This research raises the questions, how the certification of MOOC-participants can be managed and if certificates have an impact on completion rates. Firstly, general aspects of certification are discussed. This is followed by a practical insight into the certification practice based on experiences of the Austrian MOOC-platform iMooX operators. As a conclusion, results are summarized and related challenges and further research questions are addressed.

**Keywords:**MOOC, iMooX, badges, challenges, practical experiences.

### Resumen:

De forma general, los participantes de los cursos MOOC acuden a ellos por deseos personales de aprender, por lo que seleccionan ciertos contenidos del MOOC en el que están interesados. A su vez, los MOOC también se emplean en el contexto de clases en línea que se ofrecen al alumnado que necesita alcanzar créditos académicos en su formación. Sin embargo, muchos participantes no finalizan todo el curso MOOC y las tasas de éxito son, en general, relativamente bajas.

Los certificados en forma de documentos PDF, o distintivos en forma de credencial (*badges*), pueden resultar de estímulo para finalizar estos cursos. Esta investigación analiza cómo se puede afrontar la certificación de los participantes en un curso MOOC y si la certificación tiene, de alguna manera, incidencia en las tasas de éxito. En primer lugar, se discuten aspectos generales de la certificación y,

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a continuación, se realiza un análisis práctico con base en la plataforma MOOC austriaca iMooX. Las conclusiones muestran los principales retos e investigaciones derivadas del estudio y su desarrollo futuro.

**Descriptoros:** MOOC, iMooX, distintivos en forma de credencial s retos, experiencias prácticas, certificados.

## 1. Introduction

Massive Open Online Courses, shortly MOOCs, are a trending phenomenon in online education. Thus, MOOCs reached quite a high popularity in the field of higher education as well as in the field of continuing education. But after the initial hype nowadays the exploration is less enthusiastic but more reflected. Academics have become aware of the fact that they have to overcome several challenges and obstacles if they want to use MOOCs as an efficient technique for teaching and learning.

Focusing on the situation of higher education in continental Europe the widely missing obligation for lecturers and the lack of motivation to produce MOOC-materials, the fact that MOOCs are hardly considered to be integrated into curricula, the frequent absence of special training programs where lecturers can improve their MOOC-focused teaching competences as well as copyright and financial issues can be mentioned as such obstacles (Kopp, Ebner, and Dorfer-Novak, 2014).

Apart from these obstructing conditions rather low completion rates and the accomplishment of certification processes are salient challenges of MOOCs. This

research work raises the questions, how the certification of MOOC-participants can be managed and if certificates have an impact on completion rates. In order to answer these questions, firstly general aspects of certification in the context of MOOCs will be discussed. In doing so, PDF-documents and badges will be in the focus. Afterwards the authors will give a practical insight into their certification practice including technical issues as well as their findings concerning the relation between certification and completion rates. As a conclusion, results will be summarized and related challenges as well as further research questions will be addressed.

## 2. General aspects of certification in the context of MOOCs

As already mentioned above, completion rates in MOOCs are rather low. This is due to the following reasons: MOOC-participants choose the content they want to learn via MOOCs very carefully. The time invested has to be in a well-adjusted balance with the intended learning success. Therefore, learners pick just that parts of information that is of interest for them which means that they usually do not follow (and complete) all units of a MOOC. This is especially true

for those cases where learners enroll in a MOOC for professional or private purposes. In these cases, participants want to enhance their knowledge in a specific subject area. They seek for intellectual stimulation and/or entertainment. Additionally, they might just be interested to experience or to explore online education (Khalil and Ebner, 2014). So, not completing a whole MOOC does not necessarily mean that participants did not learn what they intended to learn. It might rather mean that they are just not interested in all subjects of the specific MOOC.

Though this is true for participants who enroll in a MOOC for private or professional reasons (in the sense of life long learning), the situation is different when it comes to students. If MOOCs are offered as (obligatory or facultative) lectures (additionally to or as a replacement of classroom teaching) then students usually should have a strong interest in completing the MOOC. This is –most of all– when credits are linked with the successful completion or when the completion is at least a prerequisite to take the exam. If students do not complete a MOOC offered as a lecture (or part of a lecture) this may be up to the following reasons: The instructional design of the MOOC is not good enough so that students cannot follow the online lectures properly or they just lose interest. It is also possible that students are not familiar enough with online learning so that they cannot handle the MOOC-platform and/or cannot fulfill the required tasks, which might be different to classroom teaching. Moreover, it can be that students would not complete

the course even if it is offered as classroom teaching due to their lack of time or interest.

From this, it follows that motivation plays a key role for the (non-)completion of MOOCs. Motivations depends on the reason, why one enrolls for a MOOC. In general, there exist two different target groups: those who want to enhance their knowledge in a specific subject field (which means the general public) and those who need to participate for reasons of study (which means regular students). Although motivations to participate in a MOOC differ between the target groups it can be assumed that there is one motivation they have in common. Both of them are interested in a certificate that confirms the completion of a MOOC.

In this context, talking about certificates means that participants can use them to proof that they passed content-related online-quizzes or mastered MOOC-immanent communication and/or collaboration tasks (e.g. writing postings within the MOOC-forum) successfully. But it does not mean the confirmation of earning credits. Since MOOCs naturally have a rather huge amount of participants certificates preferably should be issued automatically. Computer-generated PDF-documents as well as electronic badges (which become more and more popular) seem to be a good solution. In general MOOC-platforms offer two types of digital certificates (Witthaus, and others, 2014): Certificates that confirm participation in / completion of a course and certificates that verify the learners identity and confirm attainment of learning outcomes.

As they refer to the first type of certificates, the functionality of PDF-documents is rather obvious. However, the suitability of digital badges as certificates in the context of MOOCs needs a closer examination.

Badges have their origins in the world of computer games. Collecting badges is very popular among their players. Badges increase the willingness to be engaged in a game longer and more intensively. This is for several reasons: Badges reward the accomplishment of (optional) tasks, they allow players to compete with each other and unlocking a new badge is an additional challenge within the computer game. Generally, a badge consists of a signifying element (the visual and textual cues of the badge), rewards (the earned badge), and the fulfillment conditions which determine how the badge can be earned (Hamari, 2015). Thus, it can be concluded that badges are an important factor for the enhancement of the motivation of computer game players.

Since motivation is an established predictor of educational outcomes (Dörnyei and Ushioda, 2013), the above mentioned effects of badges are worth to be transferred to educational contexts, but not only in the sense of gamification. As Abramovich and Wardrip (2016) point out, there exist a number of learning motivation theories that can inform positive interactions between badges and learners' motivation. The achievement goal theory suggests that the motivation to earn badges can be described on two interacting scales of learning goals: approach to avoidance (i.e. to avoid the appearance of underperforming) and

mastery of to performance (i.e. to achieve mastery based on one's own interest and to perform better than others). The expectancy-value theory suggests that earning a badge could motivate learners if the badge increases the expectation for learning the targeted material and if earning the badge increases how much they value the learning. The cognitive evaluation theory countersinks the concerns that earning badges will distract learners from learning itself, meaning that learners see badges disconnected from the learning. Following this theory, badges act as a motivator because it is considered that learners are able to connect their badges to their learning.

Gibson and others (2015) summarize that badges in education are emerging to incentivize learners to engage in positive learning behaviors, to identify progress in learning and content trajectories and to signify and credential engagement, learning and achievement. They identify three major educational affordances of digital badges: motivation, status recognition and evidence of achievement. Analog to computer games acquiring badges motivates learners to engage with provided online learning material continuously and more intently. Concerning status recognition, badges in education can provide a direct link to an assessable artifact or an indirect link to a collection of evidence needed to pass a unit, graduate from a program or even get a job. Moreover, badges may assist users in building and formalizing identity in social media networks. Additionally, badges can be displayed e.g. in an e-portfolio or on (personal) web-

sites. Therefore, they are an evidence of achievement that has even the potential to become an alternative credentialing system.

However, the efficiency of badges is closely linked to their character. Abramovich and others (2013) distinguish between two types of badges: skill badges (measuring acquired skills) and participation badges (measuring the grade of participation). In their findings they point out, that different badge types affect different learner's motivation, classifying their target groups into low and high performing students. Low performing students seem to be motivated only by participation badges and only these students have a high desire to outperform others by earning badges. On the other hand, concerning the learning outcome skill badges seem to be more efficiently. Most of all because they are considered to be intrinsic motivators while participation badges are perceived as external motivators.

Here a parallel can be drawn to the two main target groups of MOOCs. Students need to focus on skill badges. Collecting these badges helps them to gain knowledge and to prepare for their exams. On the other hand, lifelong learners may rather seek for the exchange of experience when attending a MOOC. Thus, they will be more interested in participation badges and it will be easier for them to earn these badges. That means that the motivation factor to enroll in a MOOC is an important reason for which type of badge is of higher interest. Thus, selecting the right balance between skill badges and participation badges depends

on the primary defined target group of a MOOC.

As illustrated above, different types of certification (especially in the form of badges but also as PDF-documents) have different influence on learning behavior and thus on completion rates. However, the question if there exists a correlation between awarding certificates and completion rates remains open. Thus, the next chapter is devoted to the practical experience in the certification of MOOC-participants.

### 3. Practical insight into certification practice

In March 2014 the Austrian MOOC-platform «iMooX» was founded by the University of Graz and Graz University of Technology. At the beginning the platform offered three MOOCs which were attended by a total of 1,300 participants. One year later the number of MOOCs was extended to eight and in May 2016 iMooX had more than 10,000 registered users who were able to choose between 21 offered courses, all offered in German language.

Right from the start iMooX-participants had the possibility to receive a certificate in the form of a PDF-document. To earn this certificate, they had to pass the offered online-quizzes which mainly served as self-assessments. Answering more than 75 percent of the questions of each quiz correctly was required to get the computer-generated certificate. In summer 2015 iMooX has started to award badges in addition to PDF-certificates.

To begin with the iMooX-platform itself as well as technical aspects concerning the issuance of certificates will be described. This is followed by the representation and interpretation of first data collected in the context of certification.

### 3.1. The Austrian MOOC-platform «iMooX»

The courses offered on iMooX are typical xMOOCs. Thus, they consist predominately of video lectures, self-assessments (provided as multiple-choice-quizzes) and forums where participants can discuss among each other and/or with the particular course instructors. The platform was developed as part of a project which was supported by public funding. Since this was (and still is) the first and only Austrian MOOC-platform the project not only aimed on the development of online courses. In fact, the formulation of a pedagogical guideline for practitioners (Lackner, Kopp, and Ebner, 2014) and the discussion of business models for MOOCs (Fischer, and others, 2014) were also central, completed tasks.

Especially the pedagogical guideline was of high importance. It ensured that all instructors who were responsible for the development and the execution of the MOOCs were familiar with the respective instructional design and knew how to design their courses in a didactically successful manner. Based on the guideline iMooX courses are characterized by

- a clear course structure with respective educational objectives and

a typical run-time of four to eight weeks;

- short video lectures, each of them not longer than 15 minutes;
- additional learning material;
- the possibility to interact asynchronously (with the help of discussion forums);
- self-assessments and
- a concluding certificate.

Concerning the financing aspect, it has to be mentioned that –aside from the initial funding by the regional government– all courses of iMooX have to be financed independently. Since there is no central financing by the universities that run the platform it is necessary to find financial backers for each course separately. This makes it rather difficult to extend the number of courses as well as the functionality of the platform as quickly as the participants would like to have it.

In contrast to well-known MOOC-platforms like Coursera or Udacity iMooX offers all learning materials as Open Educational Resources (OER). The use of creative commons licenses not only creates a clear legal framework concerning the free use of the provided material. Moreover, it makes it possible for third parties to reuse and adopt the materials for their own purposes. Thus, all content provided via iMooX can be used in various teaching scenarios which greatly expands the dissemination of the materials.

### 3.2. Technical aspects

There are two possibilities to become awarded on the iMooX-platform. The first

one is simply by getting a PDF serving as a confirmation of participation in a particular MOOC. The participant has to pass each weekly self-assessment with a score beyond 75% and to fill in a final evaluation. Afterwards the confirmation is automatically computed with the name of the learner on it. Nevertheless, the strength of automatization is also the most weakness, because it is otherwise not an official certification from an educational institution like a university –so there is no guaranteed validation.

Awarding badges is a bigger challenge. In 2011, Mozilla developed an open technical standard, which allows everyone to issue, earn and display standardized digital badges (Mozilla, 2012). Those badges are following the idea, that each of them contains embedded meta-data (that link back to the issuer), the badge description, the moment the badge was awarded and finally also the earner identity. Therefore, everyone can anytime verify the receipt of those badges by taking the data from the badge and check their originality on the issuer's web server. Also digitally signing the badges ensures authentication, non-repudiation and integrity. With other words, on the one side those digital artifacts will foster learners' motivation as described above and on the other side the award process is strongly related to a validation process. If those badges are put online on an eportfolio or even a badge platform anyone is able to see its validity.

In summer 2015 a first service-oriented web-application named badgeit has been installed on the iMooX-platform (Wüster and Ebner, 2016). It has been realized as a Java web application using Java Servlets (3.1) as a controlling technology and Java Servlet Pages (JSP) as presentation technology. It has been deployed on the iMooX's Tomcat 7.0 web server. For storing badge and assertion data, a MySQL 5.1 database has been used. Signed badges are represented as Java Web Signatures (JWS), secured by a 2048-bit RSA key. To increase data privacy, the earner identity is always salted and SHA-256 hashed before it is added to the badge assertion. To be file and URL-safe, image data as well as the JWS header and payload is Base64url encoded.

Fig. 1 points out the badge awarding process at the iMooX-platform. It can be simplified to just one sentence: *«Take a user, identify potential awards as well as assertable badges and if you find any, award it.»* This must be done of course for any user and any course by looping the process again and again. It must be also pointed out that this badge application only awards two types of badges, so called Quiz-Mastery-Badges and Certificate-of-Participations-Badges. The first one will be awarded if a certain amount of quizzes within one particular MOOC has been passed successfully. The second one will only be issued if the whole course (= all quizzes) has been completed as well as a final feedback formula has been filled out.

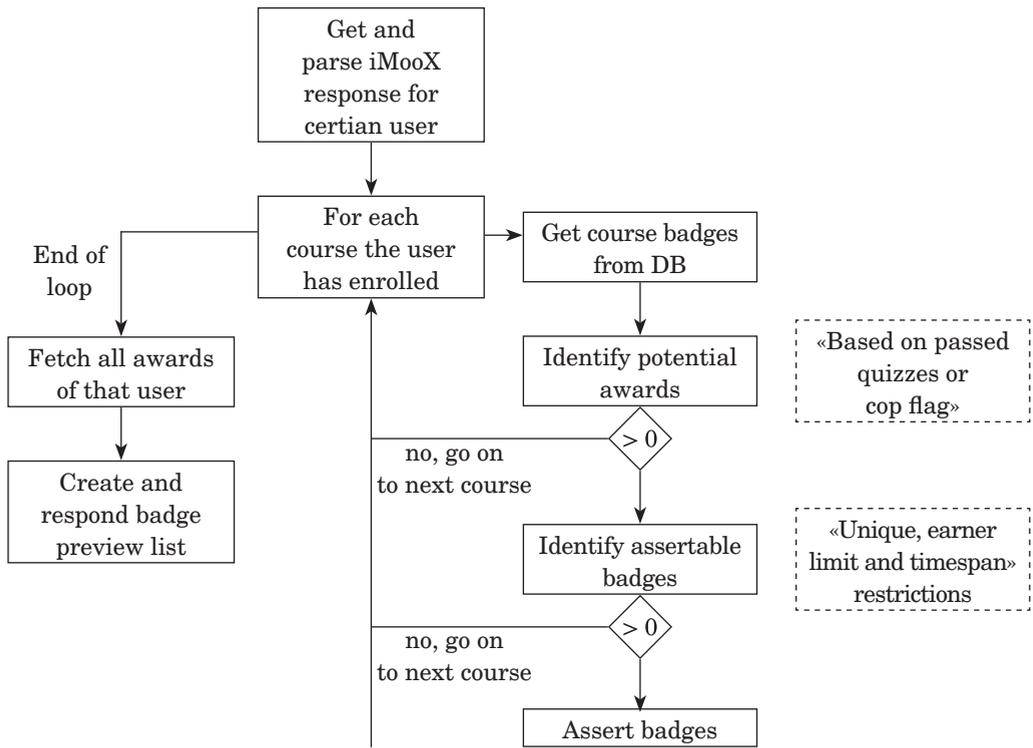


FIGURE 1. Badge awarding process.

Each awarded badge will be delivered through a personal collection web page. Fig. 2 shows a screenshot of the site «My badges» issued to a single user after computing the process described in Fig. 1. The badges displayed are sorted by the course name and the mouse overlay displays the badge-description. Each badge can be downloaded by the learner and uploaded to any third-party application for further reasons. Due to the embedded

meta-data the badge holds also its description, the issuer as well as the learner identity. The identity is ensured by an email-validation. With other words the learner has to use his/her email-address as authentication property. Any user who is interested if the badge is valid has just to click on it and will be automatically redirected to the iMooX-Server, where a small notification confirms its validation immediately.



FIGURE 2. Personal collection of issued badges for each single learner.

### 3.3. First experiences with awarding certificates in MOOCs

As mentioned above iMooX-participants may earn PDF-certificates as well as badges. In the last two years of operating the platform the authors could gain first experiences in awarding certificates in MOOCs. In the following these experiences as well as related findings will be described by addressing three research questions:

1. How many learners are interested in certificates?
2. How many certificates are issued?
3. Is there a difference between the certificate-collecting-learners in order to the non-collecting ones with respect to completion rates?

We base our answers on a case study approach, by carrying out examples of awarding PDF-certificates as well as badges.

### 3.4. Case Study: Awarding PDF-certificates

In the field of PDF-certificates the analysis concentrates on two iMooX-courses, which were simultaneously offered as free courses for the whole public and as online-lectures for regular students during winter semester 2014/15 and summer semester 2015. The course «Lernen im Netz» (Learning online, winter semester 2014/15) was one of the first pure online-lectures offered by a university in Austria. Thus, the primary target group were regular students but everybody else was also invited to enroll in the course. On the whole 1,111 persons registered for the MOOC, 547 were active users (i.e. they at least watched some videos and/or wrote a forum-post) but only 288 earned a PDF-certificate. On the other hand, 909 participants (which in this case means students) registered for the exam, 887 of them passed the exam.

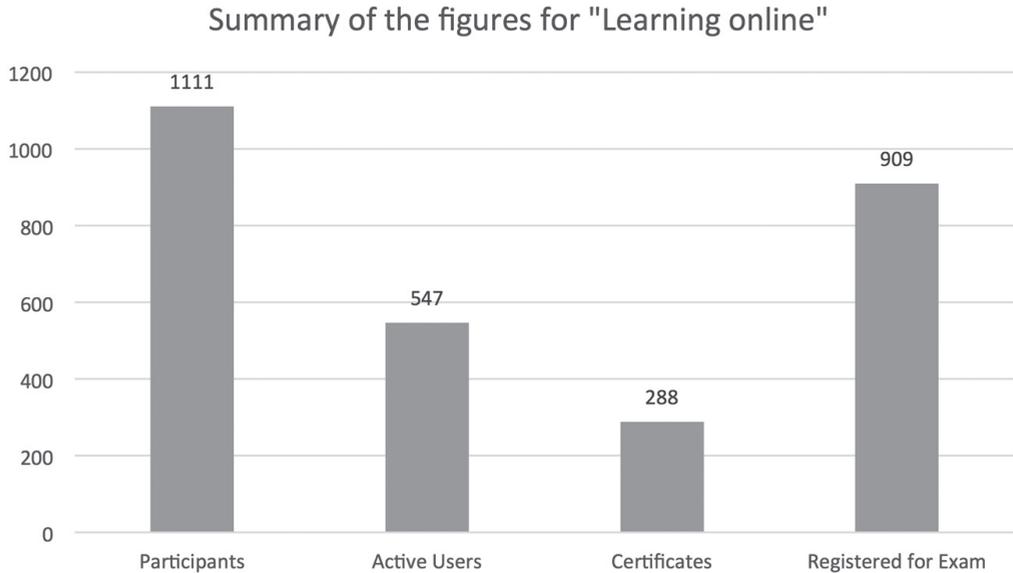


FIGURE 3. Figures for the MOOC «Learning online».

It appears that only 26 percent of the participants earned a certificate. This seems little, but is easy to explain: Due to study regulations students were not obliged to complete (or even to enroll for) the MOOC to register for the exam. Considering the number of registrations for the exam it can be assumed that the majority of the participants were students (which cannot really be proofed because students cannot be filtered out among registered users and students needed not to be enrolled in the course). Completing the course as well as earning a certificate was no obligation for them.

Moreover, executing the MOOC as an online-lecture means that students can register for the course even after it has

officially ended. Therefore «active users» could enroll for the course anytime before they took the exam. Thus, the number of active users cannot be compared with other MOOCs where users are considered as active only during the runtime of the course. Anyway, 49 percent of the participants can be considered as active users, but only 52 percent of them earned a certificate.

Analyzing the numbers, it can be concluded that participants of that MOOC were not interested in earning certificates. The reason is clear: The vast majority were students who were interested only in passing the exam. Since the certification was no requirement they had no motivation to gain a certificate.

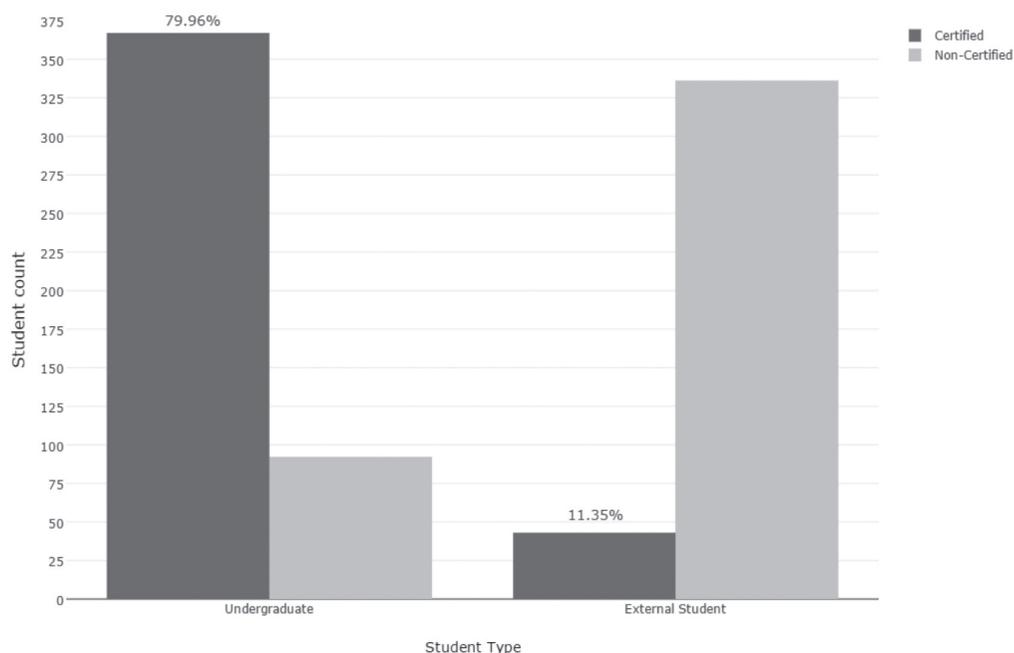


FIGURE 4. Certification of MOOC «Social Aspect of Information technology».

In the second course, the case is completely different. In the MOOC «Gesellschaftliche Aspekte der Informationstechnologie» (Social Aspects of Information Technology, summer semester 2015) the generation of the final PDF-certificate was mandatory for the successful completion of the lecture. Additionally, four short reports were written by the students to get the final mark. In total 838 learners enrolled in the MOOC. 410 were classified as students who need to get the final mark («undergraduate»), 428 were classified as external learners who followed the course voluntarily («external students»). Fig 4 points out that about 80 percent of the undergraduate students computed the final certificate, completely different to the external ones. Only about 11 percent showed an interest to get the final

certificate. This result is not really surprising. It only proves, that obligation is a strong motivation to complete a MOOC and to earn a certificate.

### 3.5. Case Study: Awarding badges

In the context of badges the authors like to describe their first experiences made in winter semester 2015/2016. Therefore, data from 1st of June 2015 until 31st of December 2016 was collected. In summary seven different MOOCs were monitored which offered 44 different badges to learners (37 Quiz-Mastery-Badges, 7 Certificate-of-Participations-Badges). Both badges must be seen as participations badges as mentioned by Abramovich and others (2013).

The small research project noticed the exact date (day) of issuing of each single badge. In order to see how the issuing of badges is working and how learners are motivated to get them, the issuing of badges was *not* obligatory. Each learner

had to press the site «My badges» by him/herself and only then the described issuing process would be computed. With other words getting a single badge was a fully aware process.

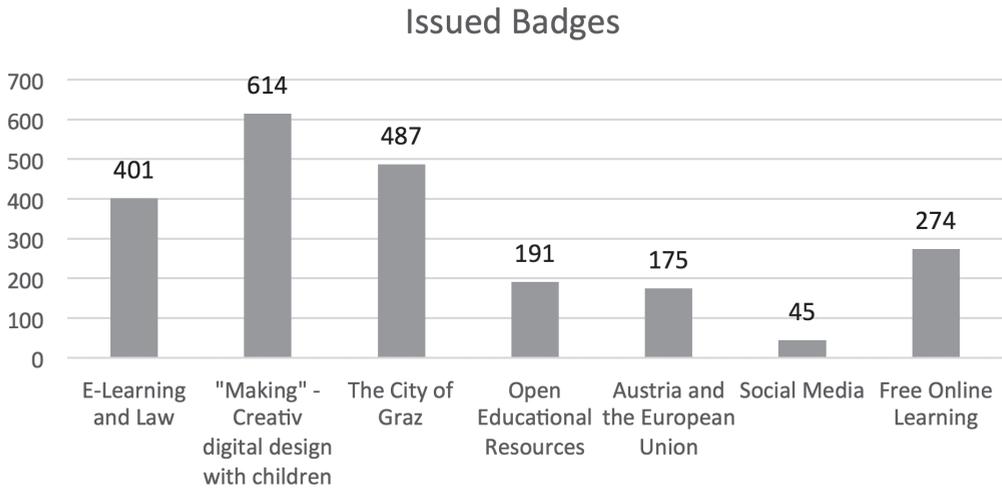


FIGURE 5. Issued Badges from June to December.

Fig. 5 points out the final result. In summary 2,187 badges were issued during the researched time period. The number between the courses differs arbitrarily, due to the huge difference of participants as well as due to the respective topics of the MOOCs.

Remarkable is the difference of issuing badges concerning the weekdays. Beforehand it must be stated that Mon-

day was always the starting day of a new lecture. On Monday 576 (26%), Tuesday 300 (14%), Wednesday (17%), Thursday (12%), Friday 239 (11%), Saturday 184 (8%) and Sunday 246 (11%) badges were awarded. This result is in strong relation to the users' activity on the platform, with Monday as most active day and Saturday as most non-active one.

TABLE 1. Percentage of issued learners.

Course name	Subscribed user	Issued user	[%]
E-Learning and Law	645	93	14%
Making-Creative digital design with children	657	125	19%
The City of Graz	1109	83	7%
Open Educational Resources	544	56	10%
Austria and the European Union	264	28	11%
Social Media	362	18	5%
Free Online Learning	465	85	18%

Source: prepared by the authors.

Table 1 points that only between 5 and 19 percent of the learners generated at least one badge of one single course. Due to issuing was not obligatory this num-

bers show that more than 80 percent of learners were not interested in badges or even did not noticed it.

TABLE 2. Drop-Out Rate of issued learners.

Course name	Issued first lecture	Issued all badges	[%]	Drop-Out
E-Learning and Law	93	40	43%	57%
Making - Creative digital design with children	125	39	31%	69%
The City of Graz	83	30	36%	64%
Open Educational Resources	56	44	79%	21%
Austria and the European Union	28	7	25%	75%
Social Media	18	11	61%	39%
Free Online Learning	85	30	35%	65%

Source: prepared by the authors.

Table 2 points out the drop out rate of issued learners, which is rather low in comparison to the general drop out rate within MOOCs.

TABLE 3. Certified learners vs. additionally issued one.

Course name	Certified users	Issued all badges	[%]
E-Learning and Law	180	40	22%
Making - Creative digital design with children	119	39	33%
The City of Graz	209	30	14%
Open Educational Resources	52	44	85%
Austria and the European Union	24	7	29%
Social Media	61	11	18%
Free Online Learning	117	30	26%

Source: prepared by the authors.

Table 3 points out that about a sixth to a third of the finally certified users are computing their badges. Only the course «Open Educational Resources» is an exception, but in this particular case we gave the learners an explicit hint to the possibility to get also badges before they downloaded the pdf-certificate.

Finally, we also took a look to those learners who are maybe only interested in special parts of the MOOC –lateral entrants. So we took a look if the number of issued badges increases from one week to another, because this would mean that learners just make the quiz of a particular topic. In all seven MOOCs there was no increase from one week to

another, the number of issued badges was decreasing constantly. So it can be concluded that if there are lateral entrants, those students are not interested in awarding badges.

## 4. Discussion

In this chapter the results of the case studies are summarized and crucial aspects concerning the certification are discussed. This is done by answering the postulated research questions.

### 4.1. How many learners are interested in certificates?

Obviously, motivation plays a very important role for earning certificates.

Focusing on the mentioned PDF-certifications makes clear, that participants only run for a certificate if they are forced to do so. While students do not care about certificates if they are not obliged to register for an exam, almost all of them earn the certificate if this is a requirement to receive credits. Thus, the obligation to gain the certificate is the main reason to be interested in certification—at least when it comes to students (which were the main target group of the discussed courses).

Learners who enroll for a MOOC for professional reasons are interested in PDF-certificates to proof their learning outcomes. They use their certificates in the context of job applications and as evidence of completed further education. Thus, an official document is important for them even though this document is just a certification of participation. Requests from some iMooX-users who did not pass the quizzes successfully to get the possibility to repeat the quizzes show the high importance of certificates in those cases where attending (and completing) the MOOC is job relevant. Professional users may prefer PDF-certificates because they are more common and better accepted among employers and supervisors.

However, only a very small part of users are generating badges in a voluntarily way. 5 to 19 percent of the subscribed users were computing at least one. If the comparison is done between those who downloaded the PDF-certificate and those who generated badges too, the percentage

increases to one third at maximum. So it can be concluded that badges in general seems to be interesting to a particular target group of our learners—to about one third of those who are finally finishing the course.

### 4.2. How many certificates are issued?

The number of issued PDF-certificates varies greatly. As mentioned above it depends strongly if students are forced to generate one or not. In our second case study we awarded badges completely on a voluntarily bases and recognized that only about one fifth of the learners like to gather it. Nevertheless, on average each of the 44 badges was issued about 50 times, which is a quite satisfying number. Of course the first badges are computed more often than the last or final badges. From a technical perspective the generating of badges seems to cause no real problems. Only few discussion posts in different forums popped up about how these digital artifacts can be imported to third-party application or if the generating won't work. All these minor problems were solved at the beginning of the course and also a short movie was created to point out the general handling of the badges.

### 4.3. Is there a difference between the certificate-collecting-learners in order to the non-collecting ones with respect to completion rates?

Naturally, all participants who collect a certificate are considered to have com-

pleted the course. But this conclusion is true only if completion means nothing else but passing the self-assessments successfully. This does not proof that participants watched all videos or adopted all provided learning material. Hence, a unified understanding of what is meant by «completion» is necessary to avoid misunderstandings.

Nevertheless, certificate-collecting-learners have a higher motivation to complete a MOOC, especially when it comes to badges. This can be of course not directly measured, but it is interesting to see, that the drop out rate of those who are generating badges are significant lower compared to the non-badges-learners. On average the success rate of learners with badges are about 44 percent, never lower than 25 percent and never higher than 79 percent. With other words collecting badges seems to have a clear impact to learners' motivation to move further, but as seen above only for a specific target group. Furthermore, from personal emails and blog posts the authors can confirm this result, due to learners asked immediately for their badges even in weeks where none has been made available.

However, concerning the conducted investigation status recognition and evidence of achievement play a subordinate role. Using the iMooX-platform, users do not have the opportunity to place their badges on the platform. Therefore, they cannot display their achievements publicly which means that they cannot compete with others and the principle of gamification is largely overridden. Although badges are suitable to confirm evidence of achievement they are hardly

used for it. This is, because badges currently are not well known among learners as well as among those (e.g. employers) who are interested in qualification-proofs.

Based on our outcomes we like to conclude with two theses:

*Traditional certification strongly bases on extrinsic motivational factors.* Students' engagement on awarding those PDF-certificates is directly related to grading specifications. Is the certificate mandatory they will generate it, if not it is simply from minor interest. The behavior of external students seems to be similar —only few of them are completing the course with a valid certificate.

*Participation badges are motivating, but only for a smaller sub-group.* The case study pointed out that only a smaller sub-group of the learners is generating the issued badges. That sub-group has also a significant lower drop out rate. Consequently, this leads to following conclusion: If a voluntarily learner generates a badge in the first week it is much more likely that he/she will finish the course in comparison to a none-generating-learner.

## 5. Conclusion

Summarizing the findings, it can be stated that awarding certificates does have an impact to MOOC-learners. But this impact varies widely depending on several parameters including intended target groups, obligation and usability. Therefore, it is hardly possible to make

general statements about the impact of certificates to the MOOC participants. Rather, it must be assessed individually for each course. Nevertheless, the authors are confident, that badge-certification will play an important role in the future. To support the successful use of badges, the discussion of the following research questions would be helpful for further research:

- How can MOOC-certificates be included in curricula?
- What is needed to enhance the gamification factor in the context of MOOCs?
- How can partly certification with badges be managed?
- How can the value of the badges as evidence of qualification be increased?

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