Recognition of prior learning is a key issue of the Bologna Process driving forward significant higher education reforms throughout Europe and beyond. Kiron Open Higher Education (Kiron) has developed an innovative academic model that uses well-established standards and good practices in the field to implement measures for outcome-oriented approaches to the recognition and assessment of MOOC-based digital learning. This paper will first summarize key aspects regarding Kiron’s implementation of learning outcome-oriented curricula following Bologna standards and established quality assurance guidelines. Based upon this framework, the authors will present first learnings since the start of Kiron in 2015 with a special focus on developments achieved within the research & development project INTEGRAL². Challenges and potential solutions regarding recognition and examination will be outlined that could be relevant not only for Kiron and its very specific target group but also the overall higher education system and approaches to the recognition of prior learning acquired in digital settings.

Keywords: recognition of prior learning, higher education, MOOCs, innovation, INTEGRAL², Kiron, MOOklet.

1 INTRODUCTION

With the Bologna process, aiming at better recognition and comparability in higher education, the stakeholders signing the Bologna Declaration in 1999 have started a long lasting, incremental development resulting in the implementation of the European Higher Education Area (EHEA) in 2010. Following this first major step, it became clear in recent years that there are many Bologna issues still to be resolved, such as developing policies and tools in order to substantially widening access to higher education and with that potentially creating significant impact not only within the EHEA but on a global level. The public focus on significant numbers of refugees entering EHEA member states in recent years also put a new spotlight on challenges such as recognition of prior learning (RPL) and more overall inclusion in higher education. As an example, compared to 34% of youth around the world being able to attend university, only 1% of refugee youth go to university [1] representing one of the most vulnerable target groups when it comes to access to formal education. Tools and solutions developed as part of the Bologna implementation process can potentially serve as good practices serving the needs not only of this target group but also many others seeking access to higher education. In order to achieve this, well proven quality standards have to be combined with innovative approaches such as those introduced in this paper.

2 DEVELOPING AN INNOVATIVE ACADEMIC MODEL

When Kiron Open Higher Education was founded in Berlin in 2015, many higher education institutions in Germany and the EHEA had already started support programs for refugees offering an extensive range of activities such as language courses, preparation classes or buddy program [2]. Yet, in most programs in Germany it was impossible for refugees to participate in regular courses and gain ECTS without formal registration. A major motivation for the establishment of Kiron was closing this gap as recognition of credits appears to be of major importance for refugees seeking access to higher education: “Those migrants/refugees who were specifically interested in higher education saw recognition of credits and degrees as important” [3].

In order to overcome the barriers refugees face in formal settings, Kiron developed an innovative academic model combining MOOC-based online learning in a non-formal digital learning environment with a potential transfer to a regular study program (see fig. 1), thus allowing early access to higher education for refugees through digital solutions. From the very beginning in 2015, Kiron aimed at...
ensuring high quality standards based on the Bologna tools, European and national qualification frameworks and accreditation standards as well as good practices developed as regards recognition of prior learning (see “2. Standards and Quality Assurance Guidelines”). As a non-profit organisation providing higher education opportunities to a very vulnerable target group, Kiron also built up strong partnerships with established universities, ensuring smooth pathways into higher education following the Kiron model. Based upon these partnerships, Kiron has not just refined its approaches but also implemented several joint research and development projects ensuring not only innovation but also continuous evaluation and quality assurance.

A special focus of Kiron’s work is promoting the recognition of learning outcomes developed in digital learning scenarios with a focus on so-called Massive Open Online Courses (MOOCs). With this concept, Kiron has piloted a new approach to the recognition of prior learning in the form of “open learning opportunities” [4] that mostly come from formally established higher education institutions (HEIs). For European HEIs, MOOCs had so far generally been developed with a focus on internationalization, not recognition: “Enhancing international visibility is by far the most common motivation for setting up MOOCs” [5]. This being said, the recognition of MOOCs within formal settings remains a much bigger task, as it raises many open questions such as quality assurance, examination and user identification. Although some organisations and researchers have tried to frame challenges and provide first solutions in recent years [6–8], the topic remains highly controversial. Kiron has therefore partnered with more than 40 HEIs as well as independent higher education experts throughout Europe in order to set an own framework allowing for the recognition of MOOCs with ECTS credits. Based upon its first efforts in 2015, more evidence-based practices were developed in 2016, with the research and development project INTEGRAL², financed by the German Federal Ministry of Research and Development, providing a major push in this direction.² Within this project, Kiron further refined its MOOC-based modules, implemented new quality standards and tested two major approaches to the recognition of MOOC-based learning.

### 3 STANDARDS AND QUALITY ASSURANCE GUIDELINES

Since Kiron’s goal is to provide students with the opportunity to transfer to partner institutions, its educational model aims matching at the standards and quality assurance guidelines defined for HEIs. Thus, Kiron is taking into account the following international and national provisions to develop suitable and credible procedures:

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1. More general information is available on the project website: https://kiron.ngo/our-projects/integral2/

![Figure 1. Kiron Academic Model](image-url)
• **Kiron Study Tracks** fulfil most regulations stated in the Standards and Guidelines for Quality Assurance in the European Higher Education Area 2015 (ESG 2015) concerning study programs [9] - they cannot, however, directly provide students with degrees as Kiron is not an accredited HEI itself but an external, non-profit educational provider. Modules of Kiron’s study tracks consist of learning outcomes on the so-called first cycle defined in the European Qualifications Framework (EQF) and its German equivalent (Deutscher Qualifikationsrahmen/DQR). The five study tracks (Business and Economics, Mechanical Engineering, Computer Science, Political Science and Social Work) are based on the outcomes of a needs-analysis amongst potential Kiron students and a feasibility-study by Kiron.

• **Kiron Core Curricula** are based on the guidelines defined in ESG 2015 and their national specifications in the German “Common structural guidelines of the Länder for the accreditation of Bachelor’s and Master’s study courses”. They have been designed with a focus on student-centered learning and smooth student progression. Learning outcomes of Kiron’s core curricula are described according to the knowledge and cognitive process dimensions of the revised taxonomy of educational objectives by Anderson and Krathwohl, 2001 [10] and the guidelines by Kennedy, 2006 [11] in order to define a common standard and “vocabulary”.

• **Kiron Campus**, the learning platform developed by Kiron, has been programmed based on these learning outcomes as key for the assignment of MOOCs to **Kiron Modules**.

• **Kiron Modules** are designed in alignment with the EHEA regulations and workload is measured as required in the ECTS Users’ Guide. The documentation of these modules in module handbooks follows the standards defined in the German common structural guidelines to ensure equivalency with HEI modules thus supporting the comparison of Kiron-modules and HEI modules.

• Matching processes and learning agreements as the core instrument of quality based partnerships with HEIs and key for RPL fulfil the regulations from the European Recognition Manual for HEIs [12]. By also using standards according to the Lisbon recognition convention it encourages “the fact that, from a lifelong learning perspective, qualifications frameworks can also facilitate the recognition of prior learning, since qualifications frameworks describe qualifications in terms of learning outcomes independently from learning paths” [13].

Furthermore, Kiron uses guidelines of the German Accreditation Board, specifying European guidelines for the German academic context, which is the main “proof of concept” context for the global work of Kiron. By implementing these standards and guidelines, Kiron is also fulfilling quality assurance dimensions previously defined in the German ANKOM project exploring approaches to the recognition of prior learning with regards to vocational training [14].

Based on these guidelines and best practices, amongst the key processes of Kiron are so-called equivalence analyses, providing information about the institution-specific matchings of Kiron modules to HEI modules. So far, these analyses consisted of two main levels:

1 Kiron Modules as an outcome-oriented description of specific, meaningful units on the Kiron platform. These modules provide a virtual framework setting standards for the assignment of the actual content – MOOCs – and are precisely described in module handbooks attached to the analyses.

2 MOOCs, clustered in these modules based on their learning outcomes and representing the main content of the Kiron curricula. So far, through an equivalency analysis, basic information with a focus on learning outcomes, content, workload, assessment and institution/lecturer was collected.

Within its research and development project INTEGRAL², Kiron further developed its equivalency standards seeking to adapt to the latest research regarding recognition of prior learning in digital learning environments. A major influence on Kiron’s work in this regard was the open education recognition traffic light model published by Witthaus et al. (2016) as part of a JRC report on the “validation of non-formal MOOC-based learning” [8].
Although this model aims at information and data on MOOCs becoming more transparent, standardized ways to provide all information on the dimensions recommended in this model, especially in terms of recognition, credentialisation and examination, are currently non-existent. Thus, Kiron started filling these gaps by self-collecting information throughout different platforms and HEIs. This process is currently further elaborated by directly approaching institutions and lecturers and connecting their information with public data. Kiron decided to include this in-depth information on the course level in its equivalency analyses, developing a new model for documentation (see 4.2.2).

4 IMPROVING RECOGNITION AND EXAMINATION THROUGH JOINT RESEARCH AND DEVELOPMENT INITIATIVES

Digital learning scenarios provide a challenging setting for young actors such as Kiron but also established HEIs. Therefore, innovation has to be incrementally developed in strong networks making the best use of synergies created through collaboration.

The challenges discussed in this paper are thus a focus of the joint research & development project INTEGRAL² – which in German is short for “Integration and Participation of Refugees in the Context of Digital Teaching and Learning Scenarios”. In this project, Kiron collaborates with two prototypical German HEIs, RWTH Aachen University and Lübeck University of Applied Sciences who have gained significant expertise regarding the digitization of higher education and online assessment and recognition in recent years.

4.1 Testing different approaches to examination within MOOC-based curricula

When Kiron is setting up cooperations with partner universities, the issue of examinations is mostly described as the key barrier to the recognition of prior learning as examination does play a major role in transforming workload into credits since it is used to validate the achievement of learning outcomes [4]. This practical experience matches the outcomes of recent publications such as the OpenCred study funded by the Institute for Prospective Technological Studies within the Joint Research Centre of the European Commission [8].

The main challenges faced by Kiron in this regard are:

1. The different nature or subject cultures of Kiron’s study tracks demand examination models that incorporate a variety of examination possibilities with some being easier, some more difficult to adapt to digital settings.

2. Regarding potential offline examination, traditional open and distance learning universities often implement examination models based on on-site proctoring and a large network of institutions
that students can use to take their examination. Kiron’s target group is especially facing legal
and monetary obstacles in terms of mobility.

3 Online examination approaches are still highly controversial. Although some solutions such as
online proctoring have been developed and tested on several MOOC platforms, a “perceived
lower value of online assessment and proctoring” [8] amongst HEIs and governments remains,
combined with “challenge[s] to existing HEI regulations” [8].

4 Kiron’s curricula and study plans are mainly based on self-paced MOOCs. Although
examinations are only taken on a module level (with usually only one examination per module),
the variety of MOOCs within the modules as well as their asynchronous nature makes it more
difficult to establish fixed exam periods than in traditional settings.

Within the INTEGRAL² project, Kiron and its partners tested two major approaches to the assessment
of MOOC-based prior learning seeking solutions for challenges 1 and 2.

1 The validation of RPL through module based offline assessments:

With Lübeck University of Applied Sciences, Kiron examined students on module level in a
mixture of offline written and oral assessments. These examinations were based on the
question whether the completion of MOOCs by external providers results in competencies
comparable to those achieved through equivalent modules taken at a university. In a first round,
14 Kiron students coming from Syria, Iran, Afghanistan, Gambia, and Egypt took exams in two
Computer Science modules. With 13 out of 19 successfully taken exams, these first
examinations indicate that taking MOOCs of external providers might indeed result in
achievements equivalent to those attained in offline university courses and modules.

2 Credentialisation of individual MOOCs in connection with offline exams jointly taken by learners
from the equivalent offline course and MOOC learners:

RWTH Aachen university provided a full-semester MOOC (EBWL MOOC) on edX that fully
matched the structure, content, language and pace of its on-campus equivalent for the
introduction to business administration. At RWTH Aachen University, Erasmus+ exchange
students had the opportunity to choose between either the offline course or the MOOC and a
small cohort of Kiron students was able to study online with the MOOC, limiting the target group
due to its German language content and examination. At the end of the winter term, Kiron
students were allowed to take the regular offline examination at RWTH Aachen University or its
partner TU Berlin with the regular ECTS granted to those passing this exam.

The experience with both approaches described above indicate first valid results, however, numbers
are still small and the pilot models have to be further refined within INTEGRAL² and further
collaborative projects.

The possibility for Kiron students to take the regular, on-campus examination guarantees immediate
recognition at the exam-providing university upon successful application and enrollment for a suitable
study program. Already in the first pilot, 5 out of 11 Kiron students successfully passed the offline
examinations. Kiron students, however, had the further obstacle of language proficiency.
Implementing such models thus need corresponding support mechanisms provided by Kiron,
mitigating the tentativeness of students and matching the exam preparation at traditional universities.

The second approach, has shown even more promising results with 13 out of 19 examinations
passed. Also in this case of offline examination, mobility was a moderating factor. Executing these
models was accompanied with high organisational demands with local authorities, enabling students
to travel to the on-site exam as well as the need for financial coverage of all costs.

Thus, Kiron does take university requirements and solutions into account that are more aligned with
traditional approaches, but aims at further developing a digital examination model that implements at
least one high standard online examination per module. A first step towards this is the current focus of
Kiron to assign at least one MOOC with an online-proctored final examination to each module. By May
2017, this has already been achieved in 47% of the Kiron modules (cf. table 1).
Table 1. Proctored examination in Kiron modules

<table>
<thead>
<tr>
<th></th>
<th>Business &amp; Economics</th>
<th>Computer Science</th>
<th>Mechanical Engineering</th>
<th>Political Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules with at least one proctored examination</td>
<td>11</td>
<td>9</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Modules in total</td>
<td>14</td>
<td>19</td>
<td>13</td>
<td>5</td>
</tr>
</tbody>
</table>

4.2 Improving processes and documentation for better recognition

4.2.1 Recognition of non-formal learning at partner institutions

The final outcome of the 2017 curriculum matching revision at Kiron based on the equivalence analyses is the Equivalence Module List. This list collects partner university modules on one side and maps them onto Kiron core modules, including the assigned MOOCs, on the other side.

The Equivalence Module List is a list agreed upon between Kiron and a partner university, which includes details of the academic quality of the online course content, the required learning outcomes, and the evaluation process for the recognition of online study and examination results.

The partner university assesses the Equivalence Module List according to its standard procedures. By signing a learning agreement (with the Equivalence Module List attached), both parties, Kiron and the partner university, agree on the equivalence of Kiron's online modules and the partner's study programs based on required learning outcomes, so that recognition can later be granted by the partner university. Both parties agree to use the Equivalence Module List as the basis of their cooperation.

The Equivalence Module List also allows Kiron to integrate the evaluation of the matching into its curriculum design and enables a target-oriented preparation of our students tailored to the demands of the university.

The examination board of the partner university responsible for the respective study program assesses the Equivalence Module List, based on standard working routines of the HEI. It is requested to provide feedback on the Equivalence Module List to Kiron in a reasonable amount of time and provide an elaborated explanation for the refusal of modules because of substantial differences, thus helping Kiron to improving its core curricula. Negotiated learning agreements are always provided with a version number to ease the recognition process. Still, the learning agreements are formally not legally binding for the university and universities do also have the possibility and authority to additionally assess students based upon individual decisions.

So far, Kiron has been able to agree upon 12 learning agreements with German partner universities. Besides these general agreements of recognition between Kiron and its respective partner universities Kiron has been able to achieve the actual recognition for individual transfers of students that took place even before learning agreements were signed. At Bard College Berlin, a Kiron student was able to get 30 ECTS from his studies at Kiron recognized and therefore was able to skip one full semester after having studied with Kiron for less than one year. At another partner university in Germany, a Kiron student is about to receive the recognition of more than 90 ECTS with 37 credits coming from his studies at Kiron and the remaining amount of credits being recognized from his previous studies in Syria. This combination of Kiron credits and credits already received from a HEI at home is an important development to be more substantially implemented in Kiron's study guidance in the future.

4.2.2 MOOklets as a tool for the standardized comparison of MOOCs used in RPL-oriented digital curricula

In order to create a clear framework for its revised equivalence analysis making the two levels – module and MOOC – even more clear, Kiron developed the new format of MOOklets (MOOC booklets). Mooklets provide in-depth information on the MOOCs implemented on Kiron's platform. With the focus still being learning outcomes, content, workload and types of assessments, information on the providing institutions such as their accreditation-status and support structures has become a significant add-on. Thus, Kiron aims at providing high transparency allowing universities to assess the quality of its programs with a focus on the externally provided MOOCs.
A MOOklet is a quality assurance tool standardizing the comparison of MOOCs from different platforms and higher education institutions in order to support the assignment of MOOCs to coherent digital curricula and the credentialisation and recognition of MOOCs or MOOC-based modules within accredited study programs. The Kiron MOOklets visualize and structure key information on several levels and dimensions relevant for quality assurance in educational settings with information on the course and the course-providing institution being most important.

In detail, Kiron provides information on the following dimensions:

- basic information on the MOOC (name, platform, providing HEI, course lecturers, session starting dates)
- workload (workload in hours, length in weeks)
- information on course material (number of lecture videos, video time, additional material)
- information on assessments and examination (course assignments, final exam, minimum condition to pass, possibility to retake an exam, proctored examination, type of certificate, codes and ID-verification)
- information on existing recognition of individual courses (recognizing institutions, information on recognizing Kiron partners)
- accreditation-status of the MOOC-providing institution
- QA standards in teaching / support-structures for online-teaching
- affiliations of the institution
- recent research and publications related to the institution’s work regarding MOOCs

By May 2017, Kiron has collected such information on more than 180 MOOCs that are used within the Kiron curricula.

5 CONCLUSIONS

This paper has summarized major elements of the current approaches used by Kiron Open Higher Education in order to ensure high quality standards in MOOC-based digital curricula and enable a better recognition of MOOC-based prior learning within HEIs. The incremental development of quality
assurance processes and especially innovative solutions for examination in digital settings remain a key challenge for Kiron internally and externally. The examination models tested in INTEGRAL² only address a smaller part of the needs and personal circumstances of Kiron students. Thus, Kiron continues to work with partners on widening its examination model to provide at least one recognized online examination per module. Amongst others, the implementation of online-proctored exams is also planned to be accompanied by online pilots regarding open-book-examinations as well as peer-reviewed essay writing on a Kiron module level.

Additional offline examinations are planned to be available throughout Germany and potentially also in Kiron’s other focus countries. For Germany, this model will most probably include an "examination network" to be established with Kiron's partner institutions RWTH Aachen and Lübeck University of Applied Sciences as well as other partner institutions and HEI networks in order to enable the participation in on-site examinations despite students’ limited mobility.

So far, Kiron was able to prove the feasibility of combining innovative, digital learning scenarios with the implementation and adaptation of standards and guidelines set within established, more formal settings throughout the European Higher Education Area in order to not only open up higher education but also ensure effectiveness and sustainability through high quality standards.

The examples within this paper show clearly that such developments and overall innovation can best be achieved by focusing on smart partnerships including young and agile organizations, well-established HEIs as well as committed experts and strong exchange platforms. By doing so, innovative approaches such as those described in this paper can help redefining and expanding the possibilities set by the Bologna process and in the overall higher education sector.

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