RESULTS AND CONCLUSIONS OF THE EXCHANGEABILITY BETWEEN ASSESSMENT SYSTEMS

INCENTIVE SCHEME

SURF's Exchangeability between Assessment Systems incentive scheme is designed to gain insight into possibilities for assessment item exchange and interoperability between assessment systems. Two experiments have been conducted under this scheme: MathConverter and *ToetsWisselWerkt* ('Assessment Exchange Works'). Below is an overview of the results and conclusions.

Want to exchange assessment questions? We're working on it!

The creation of good assessment questions is a labour-intensive process. So it comes as no surprise that an increasing number of institutions are launching initiatives aimed at building shared item banks. And there are also nationwide initiatives keyed to teacher training and nursing programmes, for example. Teaming up to develop assessment questions saves both time and money, and boosts the quality of the assessment items.

Different assessment software and interoperability

In practice, collaboration is complicated by the fact that institutions don't all use the same assessment software. Institutions wishing to collaborate therefore have to choose between purchasing additional licences for other assessment software (as used by their collaboration partners), with all the attendant costs and control issues, or importing assessment items into their own assessment system. But the latter has proved to be rather tricky, because whereas importing a single set of assessment questions is easily doable, things get complicated when all the assessment results of each respective institution have to be fed back into the shared database, which is desirable from a quality perspective. Also problematic is importing amendments to assessment questions.

Two experiments

SURF wants to help institutions address this problem and is involved in two experiments, MathConverter and ToetsWisselWerkt, to investigate the feasibility of exchanging assessment questions between two assessment systems. The experiments took two different approaches: ToetsWisselWerkt looked into how two assessment software packages (Surpass and RemindoToets) could be adjusted to enable ongoing exchange of assessment items and results, while MathConverter designed a solution for converting the lion's share of assessment items from one assessment package to another. The results of these two experiments are encouraging, but also show that more work still needs to be done.

ToetsWisselWerkt

The ToetsWisselWerkt project conducted at Saxion University of Applied Sciences came out of the Toets & Leer' ('Assessment & Learn') assessment and question bank, in which five universities of applied sciences develop and share exams using RemindoToets software. Saxion would prefer to administer summative exams in its own assessment environment using Surpass. ToetsWisselWerkt therefore attempted to transfer data from one assessment system to the other and back. According to the project's leader, Ernest Nuijten, 'The crux of ToetsWisselWerkt is not, in the first instance, about institutions obtaining assessment questions for their own environments but about partnering to build an effective database. Assessment data are fed back into the database and used to modify and refine the assessment questions. We hope to be able to remove the technical obstacles that have thus far stopped institutions from taking part.'

Assessment questions in the right folder

In theory, exchanging assessment items and assessment results is viable, provided the software packages used all support the same standard. The international QTI standard is designed to enable assessment systems to do just that. In practice, however, it is not a simple plug & play solution. During the experiment, transferring data from one assessment system to another – in this case from RemindoToets to Surpass – led to 'skewed' output owing to differences in technical and customer-tailored elements of the systems' designs. For example, institutions may have different protocols for how questions are saved to a folder or other location. The challenge lies in tagging questions in such a way that they are directed into the right folder during conversion to the destination assessment environment. Additionally, the QTI 2.1 conversion standard proved to offer only limited possibilities for defining assessment question layout, whereas the format of an assessment question plays a crucial part in its quality. Nor were all media types supported. The conclusion is therefore that the QTI 2.1 standard is insufficient on its own.

Changing role of suppliers

Saxion investigated which gaps between the systems are down to their own assessment system, Surpass, and which are generic in nature. All in all, Nuijten is positive about what the project has achieved. 'There are lots of options', the project leader explains. 'The solution to this lies in making firm, functional agreements with each other on how data are offered and gathered.' Suppliers play an essential role here. Though they weren't so keen to join forces with the competition at first, Nuijten says they gradually began to realise that there is a burgeoning market for sharing assessment questions. The shift that this has engendered is also one of the major payoffs of the project, he feels, bringing exchangeability between assessment packages another step closer – and thus making it more attractive for other institutions to join Toets & Leer too. Moreover, other collaborative endeavours can also benefit from these experiences.

MathConverter: own programming style

MathConverter's project leader André Heck likewise found himself grappling with diverging assessment data structures. MathConverter is a tool developed by the University of Amsterdam to convert assessment items from the MapleTA mathematics assessment system to the SOWISO package. At first Heck had a hard time believing the tool would work, but ultimately it proved a success. The conversion was effective and the method can be widely deployed. With a few manual tweaks, ninety per cent of the assessment questions could be converted. 'Many mathematicians have their own style of programming', Heck says. 'The individual preferences of all the faculties collaborating on the project made exchanging assessment questions problematic, because you've got to be familiar with the systems on both ends. But if you use a less complicated code, like our partners at Erasmus University, you can convert the lion's share of the assessment questions without any problem.' MathConverter may have been a small project, but its impact was surprisingly large. Other faculties expressed an interest and the group of SOWISO users ballooned. 'We got further than I'd imagined possible', Heck admits. 'We ended up becoming a magnet.'

What next?

The enthusiasm and ripple effect triggered by these two experiments is promising and testifies to the value of exchangeability. The projects make it clear that, for the time being at least, conversion still requires considerable custom work. Although the current QTI 2.1 standard for exchanging assessment items and results does offer some handholds, it is by no means a plug & play solution. QTI 3.0 will offer more plug & play functionality but is currently still in development, and it will likely be a few years yet before it is available. Furthermore, the 3.0 version will not solve the problem of disparate technical and institution-specific application structures. Additional efforts will always still be needed to bridge these gaps. A single bulk conversion, as effected through MathConverter, is relatively easy to do, but has the drawback that it does not support the maintenance of shared item banks. To achieve that, more work is needed. It would be a shame if inter-institutional collaboration on shared assessment and question databases were to founder on the complexities of exchange. In 2016 SURFnet will therefore continue to investigate possible easier alternative routes to joint item bank creation, and will also be keeping a close eye on the development of QTI version 3.0.

More information about the experiments

- ToetsWisselWerkt
- MathConverter

About the 'Exchangeability between Assessment Systems' incentive scheme

SURFnet launched the 'Exchangeability between Assessment Systems' incentive scheme in September 2014. Five project proposals were submitted, two of which were set up as experiments. The scheme was organised to contribute to the Assessment and Assessment-Driven Learning project, which was set up in 2015 as part of the Customised Education Innovation programme.

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