‘The whole is greater than the sum of its parts’, according to an old saying. That’s true when it comes to a product, like a motor vehicle, with the components having no standalone value unless combined to create a car.

We can also make a better whole by streamlining the production and quality of the various parts. For example, something like this happened in the car manufacturing industry when we saw the outsourcing of vehicle parts production to external providers for better quality and efficiency.

As it turns out, this analogy can also apply to higher education, given the increasing discussion about making learning programmes more relevant and responsive to the needs of end users through micro-credentials. The only difference is that the small learning units that make up a full qualification always possess a standalone value.

**To bundle and unbundle**

A qualification-based programme consisting of courses and small learning units offered by colleges and universities usually operates as one whole for students, from recruitment to graduation.

On the one hand, the bundling nature of the programme can help integrate the different components of a qualification programme in a coherent, synergised and complementary manner, especially when they align with external and internal quality frameworks and standards.

On the other hand, there might be issues of adaptivity, flexibility and relevance due to the pre-determined and not-easy-to-revise duration, length and contents of traditional courses and learning programmes.

Moreover, single-provider learning programmes deprive students of the opportunity to opt for better courses and learning activities that may be offered by other learning providers.
As quality has increasingly become linked to how much students’ learning outcomes are relevant to the rapidly changing needs of individuals and societies, key terms such as flexibility, relevance and agility have prevailed in recent quality narratives, including UNESCO’s new roadmap presented at its World Higher Education Conference 2022.

One way to increase relevance is to shorten and downsize learning programmes. Unbundling qualification programmes into small learning units can serve this purpose if they are separately recognised through credits that can either stand alone as micro-credentials or are stackable for full qualifications.

**Mainstreaming micro-credentials**

There are three pillars of learning programmes for colleges and universities: undergraduate programmes, graduate programmes and short-term courses for income generation and outreach. The former two have received the most attention and are commonly regarded as the core learning programmes of colleges and universities.

Colleges and universities should, however, mainstream micro-credential programmes along with traditional macro-credential ones rather than continue to regard short-term courses only as part of their outreach and extended activities.

Splitting traditional qualification programmes into small and standalone learning units, such as short-term courses that can lead to the award of micro-credentials to the student, can be a way forward for colleges and universities. Effort should also be made to improve the relevance and adaptability of the small learning units to the world of work and life, thereby ensuring that better parts can constitute a far better whole.

With the shrinking domestic demands caused by the declining number of school leavers in many countries, and with the wider spread of the lifelong learning perspective, mature and adult learners, especially those in local communities and industry, have increasingly become the main clients for colleges and universities.

In short, colleges and universities should focus on consolidating and ramping up their competitive courses and small learning units for learners to utilise in the building up of their tailored micro-credentials for reskilling and upskilling purposes, and even as a pathway towards full qualifications.

**Fragmentation**

The risk of unbundling traditional qualification programmes is that they tend to go unregulated after leaving their mother programmes and lose their identities and functions in the bigger picture. That is what is meant by ‘learning fragmentation’. In other words, it’s easy to split the whole into parts, but it is a big challenge to make the parts better and build them back into a better whole.
A common framework to standardise the specifications of small learning units is needed to keep such units comparable and transferrable. This common framework should be based on a shared concept of the learning matrix when it comes to defining learning outcomes, including the ways to achieve learning outcomes.

The learning outcomes of each small learning unit should address the following three mutually supportive dimensions: (i) knowledge and understanding; (ii) skills and capacity; (iii) sentiments, attitudes and values.

These three dimensions can bring learners enhanced awareness and sensitivity; they can suggest the level of responsiveness and the ability of learners to take appropriate action; and they can indicate the successful integration of knowledge and practice in learners’ daily life and work.

When offering small learning units leading to micro-credentials, colleges and universities should develop institution-wide templates for their planning and development. The national qualifications framework can be the basis for template development at the subject, professional and occupational levels, as well as institutional and faculty levels.

Credit banks

As mentioned above, the national qualifications framework is the critical academic infrastructure to define and achieve learning outcomes at the systemic, institutional and faculty levels.

Web-based and blockchain-supported e-banking systems have been quite mature in the banking sector for some time. Therefore, there should be little problem establishing similar inter-connected e-platforms at the systemic and institutional levels that are capable of validating, recognising and crediting the small learning units offered by different learning providers, including traditional bricks-and-mortar colleges and universities.

The current barriers to such developments can be seen in the investment, coordination and commitment accorded by a country’s higher education actors and stakeholders.

National governments should take the lead in developing a solid national education credit bank network and treating it as a crucial part of the national academic infrastructure. This network can be empowered by big data, artificial intelligence and blockchain technologies. That would allow small learning units to be recognisable, stackable and portable, with credits deposited in personal learning accounts.

There is a need to integrate different levels of education credit banks with the national qualifications framework, as well as subject-specific quality standards, national quality registers for accredited learning programmes and micro-credentials, university learning management systems, and so forth. Such integration is necessary to increase the coherence of different actors and stakeholders in the system.
Regularly maintaining and upgrading digital apps to support the functioning of the national education credit bank network requires substantial and sustainable financial support. Government investment is critical. Cost-sharing arrangements among actors and stakeholders can also provide alternative options for overcoming current resource gaps.

**Outsourcing**

Colleges and universities can design different kinds of qualification programmes in line with various upstream quality frameworks and standards. However, the delivery of different parts of programme learning for specific qualifications can be outsourced to external providers who can do it more effectively and efficiently.

In this way, colleges and universities can validate learners’ micro-learning experiences with external providers and award degrees and qualifications once all the relevant requirements have been fully met.

External learning providers should make their micro-learning programmes quality assured, comparable and compatible with the relevant national qualifications framework to warrant full validation and recognition. The rationale behind outsourcing is that external learning providers, primarily those close to the demand side, can provide better small learning units and experiences for colleges and universities to assemble into a qualification programme.

Massive open online courses (MOOCs) are good examples of technology-empowered learning units that can be developed and delivered by various learning providers. In addition, they can fit into national learning ecosystems through alignment with relevant national quality frameworks and standards.

**Coherence checklist**

To avoid learning fragmentation, alignment with national qualifications frameworks and other national quality standards is critical when designing and implementing such learning units or activities. More specifically, three key areas should be closely considered for promoting the coherence of learning.

First, it is necessary to consider the overall learning objectives and how they are supported by specific learning outcomes. However small, every learning activity should have learning objectives that can possess standalone value while contributing to the learning objectives of a broader learning programme.

Second, it is necessary to develop learning content and supporting learning materials that can facilitate learners achieving the pre-determined learning outcomes and the overall learning objectives.

Third, one must consider the broader range of pedagogies to be used. These pedagogies can cover how learners interact with teachers and fellow learners as well as with other learning partners and the learning environment. They may also cover learning venues, the
various modalities of learning delivery and assessment.

Coding the learning units with credits under the shared national higher education learning ecosystem, underpinned by qualifications frameworks, helps promote the coherence of learning among the micro units offered by diverse learning providers. If we can move more efficiently towards a well-calibrated micro-learning ecosystem, the parts will happily and very effectively add up to something more significant than the whole.

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