Whitepaper

Harnessing Your Skills Data

Recognition and representation of workplace skills

Edalex

K. Chompff, T. Lambert and M. Griffith

June 2022

Forward

A key finding from our 2021 Employability Outcomes Survey (Edalex, 2021) was that only 33% of learners felt confident speaking about their differentiated skills. With personal evidence, learners' skills become more visible, empowering them to speak about what they know, backed by proof that they can show. At Edalex, we're passionate about making every learner's credentials as personal as their learning journey is. The personal evidence record created by Credentialate is the final result of implementing a skills visibility approach for the recognition and representation of workplace skills. But what are the steps that lead to an organisation's ability to produce personal evidence? How can organisations capture, aggregate and manage their skills data in an automated way? How can they bring to light underutilised 'dark data' hiding in their existing systems? And how can they align learner performance data to industry recognised definitions and frameworks? It is to answer these questions and more that we have prepared this whitepaper. Our Credentialate platform prepares and supports education providers of all types - such as formal, industry and K-12 education providers - to participate fully in the burgeoning Skills Economy. This whitepaper details the what, how and why it does this, and demonstrates what's possible as we prepare for the future world of work.

Contributing Authors

Kristine Chompff - Marketing Manager, Edalex

Kristine has worked in competitive, dynamic and high-growth environments for over 20 years, primarily in professional development and higher education. She has an in-depth understanding of education technology, having spent much of her time working with leading international edtech organisations in product development and in bringing cutting edge platforms to market. She is an avid lifelong learner and believes in the power of technology to improve learners' lives.

Troy Lambert - Freelance Writer

Troy is a freelance writer, author, and editor who is passionate about the future of education, and equipping tomorrow's learners with the skills they need to succeed in today's workforce and the ability to clearly communicate their academic and personal achievements to enhance employability. A lifelong learner, Troy lives, works, and plays in Boise, Idaho with his wife and a pack of talented dogs, at least one of which may have contributed to this article.

Margo Griffith - Head of Business Development, Edalex

Margo's in-depth knowledge and experience of micro-credentialing is the result of working in and with higher education providers and edtech leaders, nationally and internationally. She is passionate about the positive impact of technology within education and the enablement of lifelong learning and agility. Margo is a connector at heart and is a strong advocate for diversity and inclusion in all areas of life.

Date of publication: June 2022

Note that subsequent corrected versions of this document may replace this version.

Table of Contents

Introduction

What is the Skills Ecosystem? An ecosystem is a complex or interconnected system, and a skill is a learned power or developed aptitude to do and demonstrate something competently. Put together, this shows us a world where there are direct connections between educator, employer, and holder of a skill and then the building, learning, using, and understanding of the same skill. (Open Skills Network, 2022)

One of the most challenging things for educators, employers, and learners is creating a culture of skills visibility. At Edalex, we're working to facilitate this process. Credentialate helps you discover and share evidence of workplace skills by taking untapped learner, skills and assessment data (sometimes called 'dark data'), bringing to the surface personalised and meaningful insights and providing evidence to the learner.

- **For the learner** - we tackle employability, so they can answer 'what are your skills and competencies?' with confidence
- **For educational institutions or organisations** - we enable the creation of transparent and strategic insights around skills from their data
- **For employers** - we generate visible and verifiable evidence of applicant skills, sending a clear signal-to-hire for those possessing the skills needed for the role

These are at the heart of how we recognise and represent skills. But how does it all work?

A Note on Definitions

Are we speaking the same language around skills? How do we embed context around a particular skill so that everyone in the ecosystem can see and understand the details, when we may be using different terms for the same things? (M. Baker Stein, 2021)

Throughout this whitepaper we will use several terms, which we've defined in a Glossary at the end of this whitepaper. We encourage you to refer to the Glossary to clarify your understanding. While every attempt will be made to be clear within the text, from time to time we may drop into jargon or even "assumed understanding". It's our hope that the Glossary will serve as a reference point should that happen.

Executive Summary

The pandemic accelerated change in many industries, including - and some might say particularly - in education. Now it's time for us to ask the inevitable question - what next? What will the education of tomorrow look like in relation to the workforce of the future? How has this contributed to the sharp demand for skills-based education - and rise in skills-based hiring practices? How will skills become more visible and accessible to educators, learners, and employers?

As the use of advanced technologies becomes pervasive, employees will need not only new skills, but also entirely new ways of thinking about work. To actively address the skills gap, business leaders must empower their people to develop a diverse skillset that includes ways of working, business acumen and interpersonal "power skills" like collaborative leadership and communication (M. DePrisco, 2022). Amidst the undeniable reality of talent shortages, a growing number of companies have reconsidered degree requirements, and started evaluating applicants on their demonstrated skills and aptitudes, rather than on their level of academic attainment (The Burning Glass Institute, 2022). According to Naomi Boyer, Executive Director of Digital Transformation at Education Design Lab: "The need to adapt, evolve and enhance opportunities for companies to respond to not only hiring but upskilling and reskilling their workforce requires significant foundational change, which is supported by a skills-based approach. Visibility of skills is key to matching the potential workforce with employers seeking talent." (Evolllution, 2022)

When an individual's skills are visible, validated and aligned, their quality as a candidate becomes clear. A strong signal-to-hire is sent to potential employers or HR managers seeking to fill talent gaps, that the candidate has, and can show proof of, their fit for the role. This directly serves the needs of learners and employers. Bridging the gap between learning and earning is in sharp focus for educators across the globe. We want to make the learn-to-earn journey as frictionless as possible. To effectively communicate solutions, skills data and the Skills Ecosystem need to be understood. In this whitepaper, we will work through four key aspects of skills visibility:

1. **Skills visibility challenges** - looked at primarily from the lens of the educator, but with an eye to understanding the needs of both the learner and potential employers
2. **What needs to be done to offer skills recognition** - what are the steps we need to take to recognise and appropriately represent skills? Not just what needs to be done, but how it can be done and why it matters
3. **The evolving Skills Ecosystem** - what is the Skills Ecosystem and who are the key players in it? How does Credentialate bring skills data together in one elegant solution?
4. **The learn-to-earn journey** - each of our platforms - Credentialate, openRSD and openEQUELLA - play a part in the learn-to-earn journey. How do they work in tandem to deliver skills visibility outcomes?

This whitepaper is designed to serve as a launchpad, a place to acknowledge the challenges, outline the journey and key steps along the way, introduce specific and effective tools that recognise skills and provide a framework you can act upon.

It is our hope, that from this starting point, the vision of the Skills Ecosystem will continue to progress and that your organisation will be positioned well to participate in it.

Identifying Skills Visibility Challenges

When we break the skills visibility challenges down to the most basic three, we can see that most other challenges and pain points tend to fall under them. They are:

- Visibility
- Mobility
- Scalability

Let's take a look at each of these individually, and see why each matters, and the challenges presented.

Making the Invisible, Visible

In a nutshell, this is what everyone in the Skills Ecosystem is looking for: the ability to identify the skills aligned to industry needs, represent in a human and machine readable format and recognise them digitally.

To understand the challenge we need to look at what is happening now compared to the ideal. For one of our recent blog posts, we asked a random selection of college students the question: "How did you do in your last course (or educational endeavour)?" Almost without exception the answer was either a letter grade or a course score like "I got an A" or "I got 90%."

When we re-phrased the question and asked "What skills did you obtain as a result of your last course (or educational endeavour)?" Each learner took some time to consider the question. Some gave an answer that seemed reasonable, but a few said simply, "I don't know."

Why is it, that learners can't immediately and definitively say what skills they possess, having just completed study?

A Typical Transcript

When we think of a typical high school, college, or trade school transcript, we think of the letter or number grade associated with a course or courses, and then an overall Grade Point Average (GPA) or Weighted Average Mark (WAM) depending on where you are in the world. This is true of educators, learners, and employers.

In fact, job descriptions might even list such things in their requirements: "A degree in marketing from a recognised university with a GPA of 3.0 or higher." Where does the employer get the idea that such a requirement will yield a candidate with the skills they are looking for?

The Course (or degree) Description

The employer is relying on the same data as the learner - there is an assumption that a certain degree comes with certain skills or knowledge. An MBA in business should provide a learner with the skills to perform certain jobs adequately, at least at a basic level. But even employers and learners know that not all MBAs are created equal. (S. Gallagher, 2021)

Some schools may have a different emphasis than others. Others may offer different courses that satisfy their programs. An employer may even reject a learner from a job opportunity not based on their skills, but on the school where their degree was obtained. But it doesn't have to be this way. There is new evidence to show that there is already a shift away from this blanket approach to candidate selection (Wellspring Initiative, 2021).

Surfacing Skills

When we say "surfacing skills" what do we mean? Well, it means that we look at a curriculum and determine what skills that course teaches learners. We can then look even deeper at each learner's achievements in detail to see how well they have grasped specific parts of the course.

How does this work? At the moment, educators produce a lot of data - but that data can be quite dark. Manually sorting through student data would take hours that professors don't have the skill and time for, and neither is it necessary. Because at this point, we can introduce data mining, management, and analysis to bring this data to the surface and put it in a format that can be accessed and easily shared while still remaining immutable.

"Today, job seekers rely on outdated methods to communicate their abilities and work experiences. The status quo fails to capture the full spectrum of an individual's range of skills and creates a bias favoring credentialed learning."

Marni Baker Stein - Provost and Chief Academic Officer, Western Governors University

In this case, it is again important to understand the difference between skills and competencies as defined in the Glossary. As a reminder, these two terms have become quite muddied, in large part because the difference means a lot in academia, but is not defined the same way by employers. In general, we tend to think that skills are merely behavioural and demonstrable, though it has become normal to use the word skills in place of competencies. Competencies is more broadly defined and includes knowledge, skills, abilities, and even innate talents.

The problem comes when we're referring to academic programs with learning outcomes that, like transcripts or digital badges, are at their core, competency statements. In this case, it is important to use the term competencies.

This is because the higher education community understands competencies to be different from skills. In the case of surfacing skills, we are revealing skills that can inform competencies, not surfacing competencies.

With these terms defined, the data from a course, an overall curriculum, and even an entire university can be curated in such a way that it can be analysed using automation, and so that artificial intelligence (AI) and machine learning can mine that data to inform credentials.

Rich Skill Descriptors (RSD) give a common definition of a skill and provide the context behind that skill, establishing a shared language between educators and employers. They are human and machine readable and allow for interoperability between systems (Figure 1).

Figure 1. What are Rich Skill Descriptors (RSD)? (*Source: https://www.edalex.com/openrsd*)

Sound Complicated?

If this sounds a little complicated, it does not need to be. While initial implementation of such programs can take time, effort, and funding, in the long run the automation will provide educators, learners, and even employers with skills data that enables all of them to make better decisions.

Of course, none of this matters if the data is closely held or siloed. To be effective, this data must be mobile.

A quick side note at this stage - when we talk about skills, we're not only talking about formal skills but also non formal and informal skills that a learner has. Whilst Credentialate is mainly focused on surfacing skills from formal learning, RSDs provide a mechanism for the recognition of the non formal and informal skills. After all, according to recent reports, more than 70 million workers are skilled through alternative routes (STARs) (K. Gurchiek, 2022).

From Visibility to Mobility

You would think mobility would be an easy topic - I mean, there's surely an app for that, right? While one might hope for this, there is no single app or system (yet) that provides the kind of mobility educators, learners and employers need - although they are in development.

Systems Mobility

There are a variety of different systems used by educational institutions, and they don't all "talk" to each other well. So the first way data must be mobile is between systems. How often does a student transfer schools or even majors in the same university only to find that they must "retake" a course because the one they had completed previously doesn't satisfy the requirements of their new degree program?

It's more common than you may think. Even within the same school, if one course teaches a certain skillset, it does not always transfer from one faculty to another. There might be communications courses in several different faculties that, while they teach the same skills, have a different emphasis and therefore are offered by a different group of instructors with slightly different curricula.

Not only is this a waste of time for students and a waste of resources on the part of the educator, but it makes duplicate

work for faculties as well, who could certainly borrow courses from elsewhere, and allocate resources more efficiently.

If translation of data from one school or faculty to another is a challenge, transferring that data to a career skills platform can be even trickier, with different definitions of terms and skills (highlighting the need for Rich Skill Descriptors that are universal).

Geographic Mobility

We live in a global employee economy, and learner mobility is vital. This is not only so the employee can move from state to state and area to area within a country, but so they can work for any global company no matter where they are physically located.

A degree or certification earned in one area is not often equally valid in another country, with different accreditation standards and qualifications. Oddly enough, the solution to the geographic mobility issue lies in the three pillars of Self-Sovereign Identity - Decentralised Identifiers, or DIDs, together with the Verifiable Credentials protocol and Distributed Ledger Technology (or Blockchain).

The primary advantage of such mobility of learning and credentials is that it provides options. To move their career forward, they can choose more formal study, an effort to create more work experience, or a personalised combination of both.

Economic Mobility

The reach, willingness, and ability to serve low- and moderate-income students well all combine to create the kind of socioeconomic mobility that institutions of higher education were intended to produce. (M. Itzkowitz, 2022)

In a skills-based learning and hiring ecosystem, economic mobility is not dependent upon having the money to obtain formal credentials, it is about being able to recognise and represent the skills a learner has obtained from non-formal and informal learning. But mobility is not enough. Skills visibility must also be scalable.

It's All About Scale

Perhaps the most important part of skills visibility is that it must be scalable to be effective. If one university and a handful of employers adopt these principles, that's a great start, but it does little to change the overall landscape.

To have impact, any effort towards skills visibility and mobility must be scalable and able to be widely adopted. This is a challenge for current systems, in part due to the centralisation we mentioned earlier.

This is related to the fact that while credentials must be both portable and accessible, they must also be immutable. The blockchain offers some potential solutions, but they come with challenges as well. For example, implementation of blockchain solutions is costly at the outset. (J. Park, 2021) Using the blockchain raises environmental and renewable energy concerns as well, and while there are ideas for fixes in the works, there is no clear answer at the moment.

Scalability is also impacted by adoption. For any program to work, it must be adopted and accepted widely by various stakeholders, in this case educators, learners and employers.

Perhaps the simplest of these is the learner. If provided with secure learning credentials and a digital wallet to transport them in, most learners will quickly adapt - especially those born into a "digital world." The key is for these credentials to be created by educators and accepted by employers in a similar way to traditional transcripts i.e. they become the currency for hiring.

Enabling Lifelong Learning

The overall goal of this process is to enable lifelong learning and to make it as frictionless as possible. The three pillars we have described in this section are the first step in that process. Skills visibility, mobility, and scale all present their own challenges.

To look at potential solutions, we need to start with visibility. And in that process, we need to look at what needs to be done to offer skills recognition, and the considerations that come into play.

"Aspiring learners need a more flexible approach to education that allows for – and fully recognises – incremental learning. They need a system that helps students work toward multiple possible futures, and one that ensures they don't so easily leave empty-handed if life gets in the way."

L. McIntyre-Hite and M. Jackson - Guild Education

What Needs to be Done to Offer Skills Recognition

Helpful to understanding what needs to be done, in what order, and how it can be achieved using the tools and technology currently available, is the Skills Recognition Continuum (Figure 2). The Skills Recognition Continuum outlines the process education providers can undertake to identify, align and recognise skills in a meaningful way for the other stakeholders in the Skills Economy.

Rich Skill Descriptors (RSDs)

As we've noted, to communicate effectively when it comes to skills recognition, we need to be speaking the same language. Enter Rich Skill Descriptors (RSDs). RSDs establish a shared language between educators, employers and learners and are a digital tool that tightly connects a curriculum with the skills that employers need. They match emergent and hidden talent with the employers in need of those skilled workers. How do they achieve this?

RSDs are structured data records that clearly define a particular skill, provide the context behind the skill, and enable interoperability between credentials, education and training opportunities, job profiles and learner records.

Key components include:

- **Human Readable** - skills statements are clear in their definition of what a specific skill is and what people that hold the skill know and are able to do
- **Machine Readable** - to automate the process of making skills visible, skills data needs not only to be uniform, but readable by AI and machine learning (ML) models. This is especially true given today's largely automated talent acquisition process
- **Searchable** - to be both visible and accessible, skills data must be easily searchable. RSDs adhere to a skills data syntax that structures data in a standards-based format that's recognised globally
- **Contextualised** - the inclusion of alignments, occupation and job market data lend credibility to skills credentials and give learners an understanding of what specific roles their skills make them eligible for

A leader in this space is Open Skills Network, who posit that the more that all systems - from education to training, from jobs profiles to learner records - speak the same language and operate along similar lines, the more accurately skills can be identified and articulated. Learners too, can be more accurately evaluated for the skills that they possess. This goes beyond a degree or "years of experience" requirement to something far more meaningful, to employers and learners (Open Skills Network, 2022). We couldn't agree more.

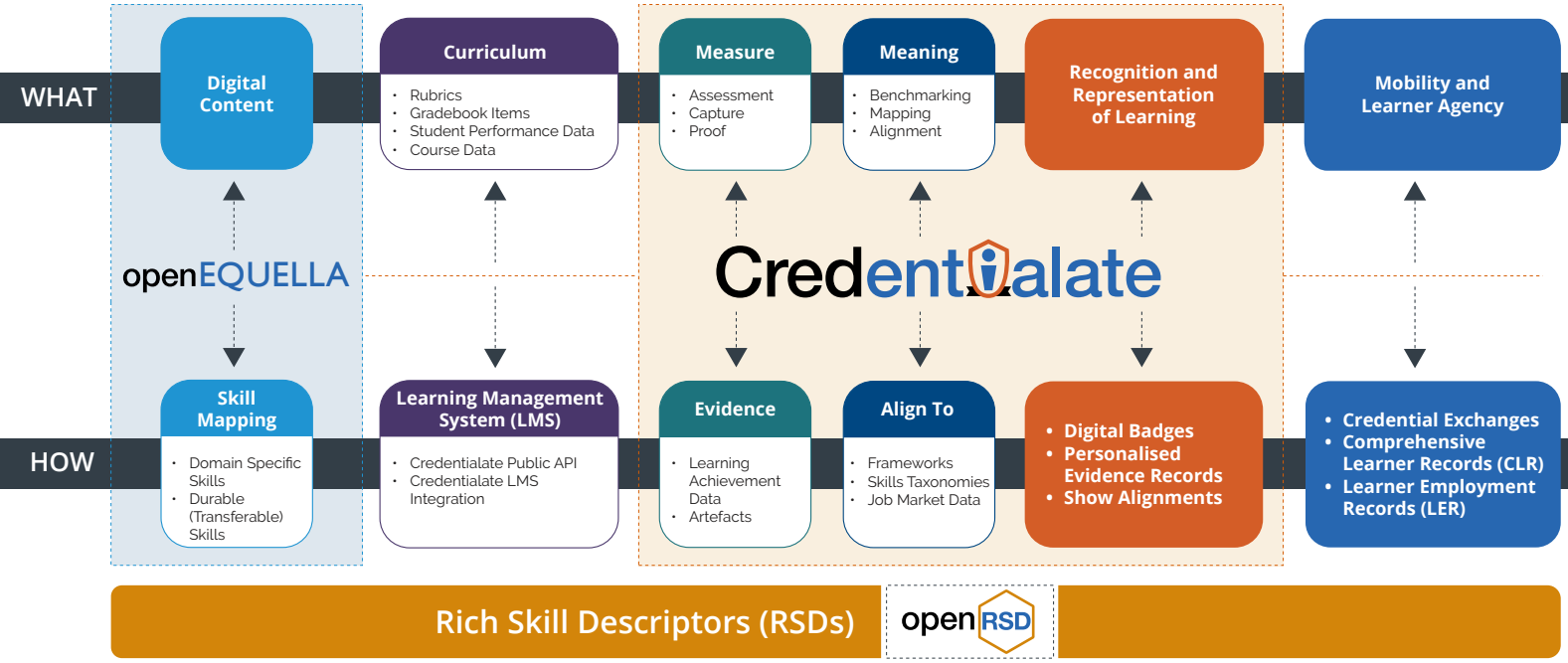

Figure 2. The Skills Recognition Continuum
(Source: https://www.edalex.com/credentialate/skills-recognition-continuum)

Looking Beyond Learning Management Systems (LMS)

The next step in offering skills recognition is collecting and collating learner data. Most often, this is done by collecting learner achievement data that tends to sit in places like the LMS. However, it could sit in independent assessment platforms or work integrated learning platforms as well.

This data includes rubrics, gradebook items, student performance data and course data - anything related to learner achievement or performance data that contains information about the skills learned and the context of those skills.

Credentialate does this in a couple of different ways.

- By integrating fully with the big four learning management systems
- By utilising our public API for integrating with bespoke or non-mainstream LMS systems

The idea is simple - we want to connect you to everywhere that learning takes place, and to make the skills learned visible in context. But it is not enough to simply discover these skills - measurement is imperative.

The Value of Measurement

It's one thing to think that a learner possesses a skill, but another thing entirely to assess their mastery of that skill. This usually comes in two forms - competency and skill.

It's important to make a distinction when we are talking about measurement and assessment. One of the simplest definitions can be expressed this way (C. Torres, 2021):

- **Competency** - knowledge, behaviours, attitudes and even skills that lead to the ability to do something successfully or efficiently. For example, the ability to make business decisions would be a competency
- **Skill** - learned and applied abilities that use one's knowledge effectively in execution or performance. Using the same example of making business decisions, in order to do so, you would have to maintain certain skills to perform well - such as budgeting, market research and competitive strategy

Competencies are generally related to specific jobs or tasks and can be very rigid. They are often value-based and dependent on culture and context, so can be harder to measure. For example, if you say a learner has analytical ability, how that relates to a specific job depends largely on context from data analytics to situational analytics. These are two very different things.

It's helpful to think of competencies as large - the big picture related to specific positions or tasks. Sometimes it's hard to visualise how a competency such as 'data analytics' can transfer to another role.

Skills on the other hand, is how people generally talk about themselves - the things they know, and the things they do. For example, skills can be "hard" like computer programming or "soft" like active listening. The key is that they can be taught and grasped rather quickly.

"Business leaders very rarely think of work to be done in terms of attributes, behaviors or competencies. Instead, they often think of work as tasks to get done - specific and objective tasks or areas of expertise."

Janice Burns - Chief People Officer, Degreed

While it might take more time for those skills to be mastered, they can be measured and standardised. You can test someone on how skilled they are with various Microsoft or Adobe products, for example, but a knowledge of InDesign does not give that person the competency of magazine interior design.

In this case, skills are measured using assessments and things like Learner Achievement Data (LAD) and other educational artefacts that become evidence of skills.

The next question becomes: what does this measurement mean?

Meaning and Context

If you say to a person in the US that something is 25 millimetres long, they might ask you how many inches that is. If you tell someone in Australia that it's 25 degrees, they may assume you're talking Celcius, and that it's springtime warm outside - not that it's Farenheit, at a temperature well below freezing.

In the same way, measurement of skills must have both meaning and context to be valuable. This involves three steps:

1. **Benchmarking** - which could be defined as evaluating skills in a particular context for comparison. Not just evaluating a skill - but assessing the level of proficiency in that skill so that it can be compared equally to something else. Ensuring you compare apples to apples.
2. **Mapping** - think of this as a visual representation of skills, essentially a map showing where skills exist in your systems, curriculum and other places. This is also contextual, and where alignment comes in.
3. **Alignment** - overlaying skills benchmarks or mapping with something else to ensure they match up. In the case of learning and employment, we want to align skills with a few different things:
    - **Frameworks** - these are the existing accreditation, industry or educational frameworks that provide standards for academic outcomes. It can also relate to company or other external frameworks that provide context for evaluating learning.
    - **Skills Taxonomies** - this really means a system of classification that can categorise and organise skills in groups or "skill clusters" including the "skill levels" within it. A skill taxonomy usually includes the skills that are most important in a particular context, like a specific company or position.
    - **Job Market Data** - this is data related to certain positions or companies and the skills needed within a particular occupational context.

In short, skills data that is gathered from various sources is given meaning, by adding context to the application of those skills. But there is one final step to offering skills recognition - proof.

Putting the Proof into Credentials with Credentialate

This final piece, the proof, is putting into action two of the steps we talked about in part one: visibility and mobility.

Essentially, this is for the learner. The learner must be able to offer proof of their skills through the representation and recognition of their learning, which in Credentialate is achieved through:

- A personal evidence record,
- Embedded within a digital badge

Combined, they showcase the skills the learner has obtained in an immutable, accessible, and portable format, and detail how the learner's skills align directly to a given position. They give the learner confidence to articulate their strengths and show proof of their achievements.

Essentially they enable an individual to transition from a learner to an earner. And enable employers to more clearly identify the candidates that actually have the skills they need.

Enabling Mobility and Learner Agency

With the recognition and representation of their learning included in a highly mobile digital badge format, learners gain real agency. Agency to store, manage and share their credentials with Credential Exchanges, that travel through their life with them. They can contribute to Comprehensive Learner Records (CLR) or Learner Employment Records (LER). Importantly, it gives the learner the opportunity to access and use their credentials in the way that best meets their needs - not only upon completion of their learning, but throughout their lifelong learning journey (D. Leaser, 2021). And in the global economy, will be key to a productive working life no matter where they wish to go.

The Evolving Skills Ecosystem

This is where the practical application of what we have discussed so far begins. So far we've talked about challenges that need to be addressed, what steps to take to recognise skills and how we can make skills more visible. Now we should take a step back and look at the wider Skills Ecosystem and who the key players are.

The Skills Ecosystem is not static. Like the education industry at large, it is dynamic and constantly evolving as the need for new skills and job markets change.

The Skills Ecosystem is made up of several sectors, each with roughly equal value. A framework is meaningless, for example, without some kind of assessment it can be aligned to. Without a framework, there is nothing for an assessment to be benchmarked against. Without an LMS there is no way to teach to a particular skill level that can then be assessed. You get the picture.

Credentialate sits at the centre of this ecosystem and acts as the Skills Core, the skills infrastructure that connects and integrates with each player, so that you can communicate with and work effectively in the entire ecosystem.

Let's look at how Credentialate fits within the Skills Ecosystem and interacts with each (Figure 3.).

LMS and Assessment

Credentialate integrates with LMS and assessment platforms to extract learner data that essentially provides evidence of skills. Proof that learners can do what they say they can do. This is the heart of skills visibility, but is only one of the steps in skills recognition.

Badging

For the learner to share proof of their skills, they need a credential that is portable, personal, immutable and accessible.

Credentialate creates a Personal Evidence Record using individual learner data found in the LMS and/or other assessments. It embeds the record within a digital badge made via a badging agent. The evidence metadata is baked into the digital badge, so it can be easily verified. The learner, potential employers and others can view and validate, but not modify the credential.

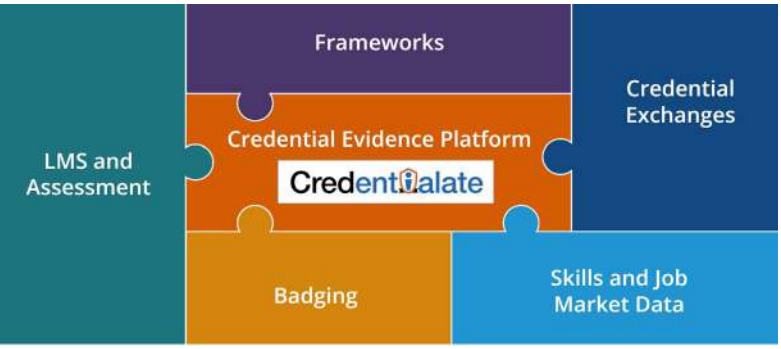

Figure 3. Credentialate in the Evolving Skills Ecosystem
(Source: https://www.edalex.com/credentialate/evolving-skills-ecosystem)

Skills and Job Market Data

While the digital badges may provide evidence for the learner, that only has value or currency if it can be used in context. The Personal Evidence Record aligns with and links out to the RSDs that the digital badge recognises.

For the learner, including job market data on the Personal Evidence Record gives them a clear and direct link to where they can find information about the occupation and jobs that match their skills.

Frameworks

There are several frameworks that education providers may wish to align their skills to, such as:

- Institutional Frameworks
- State Frameworks
- Accreditation Agency Frameworks
- Industry Frameworks - designed around particular companies, jobs, and industries
- National Qualification Frameworks

In Credentialate, skills data can align with more than one framework, providing greater depth and context to the achievement being recognised.

Credential Exchanges

Credential Exchanges include things like digital wallets, where learners can store their credentials and choose how and with who they share them with, and credential marketplaces, where employers can search for people who hold the skills they need. However these are only possible if data can move easily through the pathways, while still remaining secure.

This is important to both learners and the employment marketplace as it gives them a place to "meet" and exchange information.

The Learn-to-Earn Journey

A quick recap before we move on - having reviewed the challenges to skills visibility and how they can be overcome by progressing along the Skills Recognition Continuum, we then looked at how Credentialate sits at the centre of the Skills Economy. Now it's time to get into the weeds, with a view of how Credentialate's functionality creates a frictionless skills data environment.

We see the learn-to-earn journey as a pathway - but the pathway only flows for those that can move the data. Edalex operates on the principles of education and workforce interoperability and we recognise skills in a way that allows for greatest mobility.

The diagram below (Figure 4.) illustrates this journey and where and how Credentialate adds value. The learn-to-earn journey consists of three segments:

1. **Inputs** - the curriculum layer. It may start with content that's tagged in openEQUELLA's digital repository, so that it can be easily searched and aligned to recognised skills. Education providers identify the skills they wish to award and source or create RSDs to maximise interoperability. Credentialate uses the RSDs - from openRSD or other RSD source - to collect and collate learning and assessment data and artefacts of learning from the LMS and other assessment sources
2. **Process** - the Credentialate Skills Core layer. Learner data is sorted and mapped to Competencies. Credentialate creates a personal evidence record, with qualitative and quantitative detail of the learner's achievements and rich contextualisation through alignments and job market information.
3. **Outputs** - the recognition layer. The personal evidence record is baked into a digital badge, which can be easily managed and shared with potential employers and others. The digital badge can be stored on credential exchanges, giving the learner agency throughout their life and career.

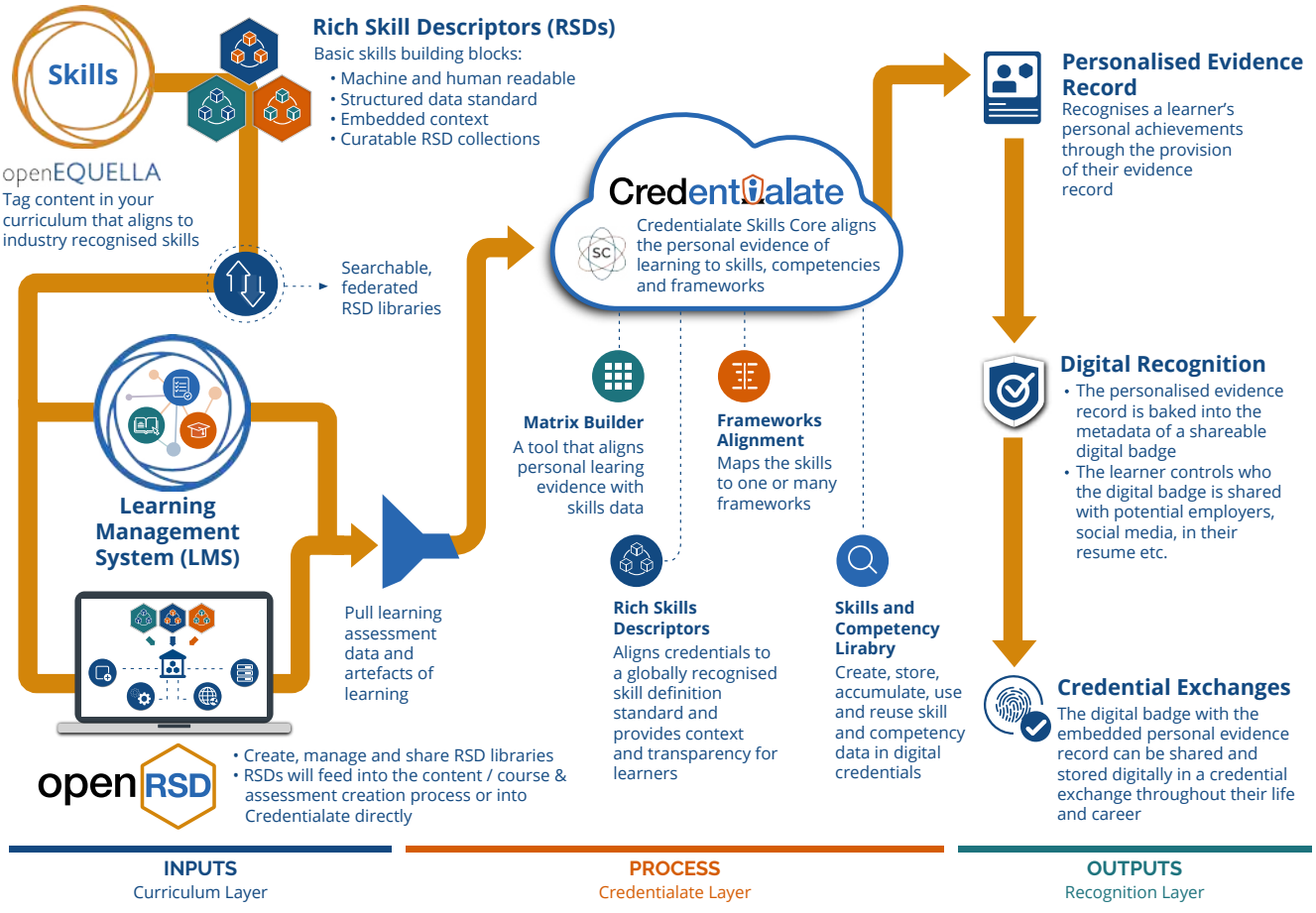

Figure 4. The Learn-to-Earn Journey

(Source: https://www.edalex.com/credentialate/skills-recognition)

openEQUELLA

openEQUELLA (edalex.com/openequella) is an open source digital repository that sits in the centre of your edTech stack and acts as a 'single source of truth' to house your teaching and learning, research, media and library content. openEQUELLA frees your digital content from within siloed learning management system (LMS) courses, making them accessible, able to be improved upon, repurposed for use in multiple places and shared easily across your institution.

openEQUELLA's functionality allows you to tag content in your curriculum that aligns to industry recognised skills, surfacing and collating the skills in your curriculum for easy recall and use.

openEQUELLA

Rich Skill Descriptors (RSD)

We have of course mentioned these already, but this is another opportunity to stress their importance in this process. This is the first step in taking skills data from the various sources and turning it into something far more useful. There are four key elements:

Data is human and machine readable

What does this really mean? Well, skills data could be theoretically coded in machine language, something that a computer could easily sort and analyse. However, that code might not be easily readable or understood by the average "human" user. To be truly useful, skills data must also makes sense to the humans that will read it.

This again illustrates the importance of definitions and structure. Otherwise, we have not met the challenge of communication we talked about earlier.

Data is structured to a data standard

How do you make sure that the skills data is readable by humans, machine learning and artificial intelligence modules? Well, you adhere to a structured data standard of course. It all comes back to quality input.

Just like any other computer program or system, the old adage of Garbage In, Garbage Out - called GIGO by analysts the world over - still remains true. The use of RSDs ensure a solid foundation, on a data standard that's recognised globally.

Context is embedded

When we look holistically at the rich skills detail in the Personal Evidence Record, the need to include the context in which the skills can be used becomes obvious. Through the use of RSDs, this context is embedded with the evidence of their skills, so they know exactly where and how they can be used.

Curation and collection

RSDs are curated into collections, which is critical to organising skills data, maintaining consistency and shortcutting speed to market of quality skills-based micro-credential courses.

But all of this is just the first step in making skills visible throughout the learn-to-earn journey. Now that we have added meaning and value to skills data, we must do something with it.

openRSD

openRSD (edalex.com/openrsd) is an open library for the creation, storage and sharing of Rich Skill Descriptors (RSDs). Localisation, approval workflow, version control and other important functionality is available within the library platform. openRSD enables the production and storage of RSDs around the globe. openRSD is a permanent SaaS environment that enables RSDs to be contextualised to local frameworks, occupations and job data, regardless of the organisation's location around the globe.

openRSD

Key Functionalities in Credentialate

So what does the Credentialate Skills Core do? The idea is to create the basis upon which rich digital credentials can be created. To do that, something must happen to the learning data we have gathered:

The Skills and Competency Library

Skills and Competency data is housed in a "library" where it can be created, indexed, accessed, stored, and reused over and over to create digital credentials across the organisation.

Frameworks

Frameworks provide the anchor point for skills, as it connects them to an existing frame of reference that is easily understood by educators, learners and employers.

Evidence Matrix Builder

The Evidence Matrix gives you the flexibility to create Competencies outside of an LMS. Assessments and evidence of learning are mapped to a matrix, against which a Competency can be awarded - a digital badge, recognising skills achievement.

Artefacts

Credentialate introduces the ability for organisations to upload and store personal artefacts for learners in the form of files such as videos, images and documents, to use as customised evidence of skills for a credential.

With Credentialate as your Skills Core, skills data can be used in such a way that the recognition of learning creates currency and value. The end result is the creation of a rich Personal Evidence Record that provides real meaning and value - for the learner, the institution and industry.

Conclusion

Developing a skills recognition mindset is the first of many steps to understanding and implementing skills based outcomes and credentials that align with industry needs, while satisfying existing and evolving frameworks. It's clearly no simple task.

From the very start, we must define terms so that we are speaking the same language. Then there's the steps you can take to make skills more visible in a curriculum and learning of all types - formal, informal, and experiential. We outlined what needs to be done to offer skills recognition - the steps along the Skills Recognition Continuum and how you can identify where you are now and what steps may still lie before you. Following this process creates the foundation for a Credentialate personal evidence record that can be translated to meaningful credentials learners can use as currency in their careers. And following an overview of the current Skills Ecosystem, we clarified where Credentialate, openRSD and openEQUELLA fit into that ecosystem and how they add value.

Using the framework outlined in this whitepaper, the possibilities are unlimited and the future of education looks bright indeed.

Glossary

Learner - this is defined as any learner in an educational environment, whether that is formal or informal learning, high school, university, or even lifelong learning.

LIfelong Learner/Learning - the act of learning throughout one's lifetime in both formal and informal settings. This learning can be credentialed, degreed, or simply classed as personal and career experience.

Skills vs. Competencies - these two terms have become quite muddied, in large part because the difference means a lot in academia, but is not defined the same way by employers. We tend to think that skills are merely behavioural and demonstrable, though it has become normal to use the word skills in place of competencies. Competencies are more broadly defined and include knowledge, skills, abilities and even innate talents. But when we're referring to an open skills network, matching of skills, or skills-based hiring, we are generally using the word skills in place of competencies.

But when we're referring to academic programs established with learning outcomes that are competency statements, it's important to use the term competencies. Skills badges, for example, can be joined with various credentials, but the higher education community understands competencies to be different from skills. This creates additional confusion when communicating about skills across organisations.

Formal vs. Informal Learning - whereas formal learning happens in a training-based organisations, workplaces, mobile devices, classrooms, online over the internet or through e-learning portals, informal learning is based on practical and lifelong learning. Formal education is often assessed and recognised by some form of credential, whereas informal learning is often not assessed or recognised by a credential that can be used by the learner.

Higher Education - education undertaken after the completion of secondary education, including vocational, university and postgraduate study, typically delivered by traditional education providers.

Employer/Corporate Education - also referred to as industry education. This is education developed or co-developed by businesses and employers and delivered to employees. Corporate education can range from regulatory requirements, such as training in occupational health and safety to management training courses offered to executives. Typically recognised within the business, recognition of corporate education can be difficult to transition to other businesses or industries.

Vocational Education - vocational education and training is education and training that focuses on providing skills for work. Whereas higher education is mostly about knowledge, theory and thinking skills, vocational education typically provides practical job-specific skills.

Skills Ecosystem - comprising sectors within the education industry that facilitate the recognition, validation and sharing of learners skills rather than blanket qualifications. Sectors include learning management systems (LMS), assessment platforms, badging agents, credential exchanges, skills standards and certification authorities. The Skills Ecosystem is an evolving space as skills gain traction across education and employer groups and as technology develops to better meet the needs of learners.

Skills Recognition Continuum - the process education providers must undertake to identify, align and recognise skills in a meaningful way for the other stakeholders in the Skills Economy. It defines not only what must be done and in what order, but also how each step can be accomplished utilising existing systems and technologies.

Skills Core - the skills infrastructure of an institution or organisation and how connected and aligned it is to deliver meaningful skills recognition and employability outcomes for their learners. Your Skills Core Score is a measure of how well an institution or organisation has progressed along the Skills Recognition Continuum and identifies the gaps where further work is needed.

Talent Mobility - a learner's ability to move between positions within their company, within businesses within their industry and between industries. How well the learner can collect, organise and share proof of their skills, knowledge and capabilities.

References

Edalex (2021). Edalex 2021 Employability Outcome Survey. https://www.edalex.com/whitepapers/edalex-2021-employability-outcomes-survey

The Burning Glass Insitute (February, 2022) The Emerging Degree Reset *How the Shift to Skills-Based Hiring Holds the Keys to Growing the U.S. Workforce at a Time of Talent Shortage.* https://static1.squarespace.com/static/6197797102be715f55c0e0a1/t/6202bda7f1ceee7b0e9b7e2f/1644346798760/The+Emerging+Degree+Reset+%2822.02%29Final.pdf

Evolllution (June, 2022). Flying the Skills Plane with Duct Tape and Chewing Gum: The Design Challenges - Part One. https://evolllution.com/programming/credentials/flying-the-skills-plane-with-duct-tape-and-chewing-gum-the-design-challenges-part-1/

M. DePrisco (May, 2022). In Training We Trust: Reskilling And Digital Transformation, Forbes. https://www.forbes.com/sites/forbesbusinesscouncil/2022/03/09/in-training-we-trust-reskilling-and-digital-transformation/

M. Baker Stein (July, 2021). Why the Future of Work Needs a Shared Language to Describe Skills. https://www.edsurge.com/news/2021-07-28-why-the-future-of-work-needs-a-shared-language-to-describe-skills

Open Skills Network (Jan, 2022). Tracing the Boundaries: The Power of Definitions in the Skills Ecosystem. https://www.openskillsnetwork.org/post/tracing-the-boundaries-the-power-of-definitions-in-the-skills-ecosystem

S. Gallagher (December, 2021) The Still-Evolving Future of University Credentials, EdSurge. https://www.edsurge.com/news/2021-12-21-the-still-evolving-future-of-university-credentials

Wellspring Initiative (November, 2021) Digital Credentials and Competency Frameworks: Exploring Employer Readiness and Use. https://drive.google.com/file/d/1hcemnEfJQs9fXHj8fJUpteBsZekE4kaX/view

K. Gurchiek (May, 2022). Skills-Based Hiring Guidance Issued for Federal Jobs, SHRM. https://www.shrm.org/resourcesandtools/hr-topics/organizational-and-employee-development/pages/skills-based-hiring-guidance-issued-for-federal-jobs.aspx

M. Itzkowitz (January 2022). Out With the Old, In With the New: Rating Higher Ed by Economic Mobility, Third Way. https://www.thirdway.org/report/out-with-the-old-in-with-the-new-rating-higher-ed-by-economic-mobility

J. Park (November 2021). Promises and Challenges of Blockchain in Education. https://slejournal.springeropen.com/articles/10.1186/s40561-021-00179-2#:~:text=There%20are%20also%20challenges%20of,al.%2C%202019%2C%20p.

Open Skills Network (2022). https://www.openskillsnetwork.org/

C. Torres (December 2021). Skills and Competencies: What's the Difference?, Degreed. https://blog.degreed.com/skills-and-competencies/

D. Leaser (November 2021). Will Microcredentials be the Rx Needed to Fix Our Ailing Degree Systems?, Evollution. https://evolllution.com/programming/credentials/will-microcredentials-be-the-rx-needed-to-fix-our-ailing-degree-systems/

About Edalex

Learning gets personal – Unleash the power of your skills data, digital assets and personal credentials

Edalex is an edTech company on a mission to surface learning outcomes, digital assets and the power of individual achievement. Founded in 2016, Edalex develops technology solutions that extract hidden value from educational data to make it accessible and more meaningful.

Edalex brings together the team behind the CODiE award-winning **openEQUELLA** open source platform that centrally houses teaching and learning, research, media and library content.

openRSD was released by Edalex in 2022 to help create, store and share rich skill descriptors (RSDs) and RSD collections. openRSD uses Edalex's open source technology stack to create locally- and globally-relevant libraries of RSDs that are open to all contributors and consumers. Tools in openRSD include localisation, approval workflow, version control and other important functionality.

Visit edalex.com

Edalex | Credentialate | openEQUELLA | openRSD

@Edalex
@EdalexSolutions
Channel Edalex

About Credentialate

Introducing the world's first Credential Evidence Platform

Credentialate is the world's first Credential Evidence Platform that helps discover and share evidence of workplace skills. Launched In 2019, it was initially developed in close collaboration with leading design partner, UNSW Sydney, in support of a multi-year, cross-faculty community of practice and micro-credential research project. Credentialate has continued to evolve at an accelerated pace, informed in partnership with educators and industry leaders from around the world.

Credentialate provides a Skills Core that creates order from chaotic data, provides meaningful insight through framework alignment and equips learners with rich personal industry-aligned evidence of their skills and competencies.

Visit edalex.com/credentialate

2022 AUSTRALIA & NEW ZEALAND EDTECH 50 Holon IQ

2021 AUSTRALIA & NEW ZEALAND EDTECH 50 Holon IQ

Credentialate

THE EDTECH AWARDS COOL TOOL FINALIST 2022