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Learner-centred Teaching in Technical and Vocational Education and Training

Perspectives and Reviews of Six Asia-Pacific Countries

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SHORT SUMMARY

Learner-centred Teaching in Technical and Vocational Education and Training: Perspectives and Reviews of Six Asia-Pacific Countries

A learner-centred approach to teaching in Technical and Vocational Education and Training (TVET) is based on learner engagement, autonomy and outcome-based activities to support professional development. This report analyses the status of learner-centred TVET teaching in six selected countries across Asia and the Pacific, including China, Republic of Korea, Samoa, Sri Lanka, Thailand, and Uzbekistan. The countries were selected because of their geographic diversity, access to national experts, and potential around learner-centred TVET.

The first part of the study is a review of the theoretical background on the learner-centred approach and TVET teaching with an international scope. A total of 25 indicators were used to assess three components of TVET teaching in the region. The analysis includes 17 examples corresponding to the selected indicators. The findings showcase lessons learned and recommendations for countries to self-assess their TVET teaching strategies. These examples will help to inform future projects and capacity building in each sub-region of Asia-Pacific.

As a result, seven proposals are identified and discussed to promote the development of learner-centred TVET teaching in the region. These proposals include: 1) supporting national reform of the pedagogy based on the results of pilot projects; 2) increasing two-way communication between students and teachers; 3) producing learning materials adapted to learner-centred methods; 4) using technology in the learning process; 5) implementing competency-based learning to support the learner-centred pedagogy; 6) integrating transversal and core skills; and 7) developing teachers' capacities by employing a learner-centred approach. These proposals (on reform, teaching method, use of materials, etc.) also address gender dimensions throughout the planning, implementation and review process. Conclusions from the study provide lessons learned as well as proposals for further research and implementation of learner-centred TVET teaching in Asia-Pacific.



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"Since wars begin in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed"

Learner-centred Teaching in Technical and Vocational Education and Training

Perspectives and Reviews of Six Asia-Pacific Countries

Foreword

The Education 2030 agenda clearly shows the need for rethinking technical and vocational education and training (TVET) and skills development. Among the ten education targets, two are TVET-related: 1) to ensure equal access to affordable and quality TVET for all (SDG4.3) and 2) to increase the number of youth and adults with relevant skills for employment, decent work and entrepreneurship (SDG4.4).

UNESCO has been promoting a learner-centred approach for many years. This vision is relevant for many TVET areas, such as the balance between demand and supply, the definition of competencies, teaching methods in institutions, work-based learning, teacher training, student guidance, policies, and support from development partners. To provide a detailed report adding value to the existing literature, this study focused on a specific dimension, which is *learner-centred teaching methods (pedagogy) in TVET institutions*.

According to the 1990 World Declaration on Education for All, UNESCO Member States acknowledged that active and participatory approaches promote learning acquisition and help learners to reach their fullest potential. A decade later, the Dakar framework reiterated an international policy commitment to active learning pedagogies. In 2015, the Incheon Declaration, known as Sustainable Development Goal Four (SDG4) restated a world-wide commitment that education institutions and programmes should be adequately and equitably resourced with enough quality teachers and educators using learner-centred, active, and collaborative pedagogical approaches.

There are extensive research and studies on how to develop a good TVET system defined either as general guidelines or as recommendations for specific countries. There are also reports on TVET teaching methods and teacher training. Learner-centred teaching methods are largely promoted in primary, secondary and even higher education. However, there is limited information on how to implement learner-centred teaching methods in TVET institutions.

This publication is an attempt to respond to such knowledge gaps in learner-centred approaches in TVET. This study, 'Learner-centred Teaching in Technical & Vocational Education and Training – Perspectives & Reviews of Six Asia-Pacific Countries', aims to identify a set of standards and criteria using international benchmarks to provide examples of best practices that harness the potential of learner-centred approaches in TVET teaching. The cases and examples come from a review of the situation in six countries, namely, China, Republic of Korea, Samoa, Sri Lanka, Thailand, and Uzbekistan, covering the five sub-regions of UNESCO Asia-Pacific. The study focuses on teaching methods inside TVET institutions, which represent the majority of TVET-related teaching, although work-based learning is developing in many countries. Nevertheless, the selected cases show how companies can be involved. The conclusions provide lessons learned, proposals for implementing learner-centred teaching in TVET institutions, and suggestions for future research. It is hoped that this study will facilitate a better understanding of the potential of learner-centred approaches in promoting innovative pedagogies and future implementation in Asia-Pacific TVET institutions.



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- ▶ **China:** Dr Liu Yufeng (Director of Division of International Cooperation and Comparative Education Research, Central Institute for Vocational & Technical Education).
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- ▶ **Thailand:** Dr Siripan Chomnoom (Senior Advisor for the Office of Vocational Education Commission).
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Mr de Nadaillac, as the lead consultant, consolidated the six country reports as part of a broader regional analysis.

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This report was initiated by Mr Libing Wang, Chief of Section for Educational Innovation and Skills Development (EISD) and coordinated by Mr Wesley Teter, Senior Consultant, EISD, UNESCO Asia and Pacific Regional Bureau for Education.

Table of Contents

Foreword	4
Acknowledgements	5
Executive summary	8
1. Introduction	11
1.1 Background of the study.....	11
1.2 Scope of the study.....	12
1.3 Methodology	13
2. Definition of learner-centred TVET teaching	14
2.1 A brief historical background of the learner-centred pedagogy.....	14
2.2 The promotion of learner-centred approaches by UNESCO.....	15
2.3 The learner-centred pedagogy from an international perspective	15
2.4 Learner-centred methods applied to TVET teaching.....	18
2.5 The definition of learner-centred TVET teaching used in this report.....	20
3. Three parameters that impact implementing a learner-centred approach	21
3.1 Cultural traits influencing learner-centred teaching	22
3.2 The existence of policies and laws promoting improved teaching methods.....	24
3.3 The various possible structures of a TVET curriculum	26
3.4 Conclusion: TVET systems promoting a competency-based curriculum	30
4. Implementation of learner-centred pedagogical situations	32
4.1 International background: multiple ways to learn.....	32
4.2 Component 1: Engagement and participation of learners	33
4.3 Component 2: Autonomy of learners on content and method of learning, with teachers' guidance and support	36
4.4 Component 3: Outcome-based activities that integrate skills and knowledge to prepare for a professional life	41
4.5 Conclusion: many learner-centred dimensions but cultural challenges.....	44

5. Traditional and digital learning materials	45
5.1 International background: the importance of mixing learning materials.....	45
5.2 The basic needs: getting suitable traditional TVET teaching materials	47
5.3 The increasing influence of digital technology	47
5.4 Conclusion: blended learning driven by a learner-centred approach	49
6. Teacher development.....	50
6.1 International background: situation and teacher development guideline	50
6.2 The importance of TVET teaching loads and teacher motivation	52
6.3 Primarily informal collaboration among teachers.....	53
6.4 A lack of training in learner-centred methods in pre-service teacher education	54
6.5 Training on learner-centred teaching included in in-service training programmes	55
6.6 Conclusion: the need to improve teacher development.....	56
7. Conclusion and proposals	58
7.1 Synthesis of the findings.....	58
7.2 Seven proposals for the development of learner-centred TVET teaching	59
7.3 Advancing learner-centred TVET in Asia-Pacific.....	64
References.....	66
Appendix 1: Overviews of TVET systems of participating countries	68
Appendix 2: Gender sensitivity guidelines	72

Executive summary

In the context of Sustainable Development Goal 4 (SDG4) on quality education, one of UNESCO's priorities is to support a learner-centred approach in technical and vocational education and training (TVET) in Asia and the Pacific.

Extensive prior research explores how to develop good TVET systems. However, while a learner-centred pedagogy is promoted in primary, secondary and higher education systems, there is limited information on how to implement the specificities of this pedagogy in TVET institutions, especially in Asia-Pacific. To address this gap and to support the preparation of its 2022–2024 work plan, the UNESCO Asia-Pacific Regional Bureau for Education implemented a study on learner-centred TVET teaching in Asia-Pacific from June to September 2021.

The first part of this study was a literature review of TVET teaching and learner-centred approaches in Europe and Asia-Pacific that showed that a learner-centred approach is based on **students' participation, engagement, and autonomy that supports their professional development and assimilation**. Then the situation in six selected countries (China, Republic of Korea, Samoa, Sri Lanka, Thailand, and Uzbekistan) was analysed. Each country report followed the same research framework, including the application of a gender lens, and provided examples of cases and situations corresponding to components and criteria defined in this study for a learner-centred TVET pedagogy.

The proposed concept of learner-centred TVET teaching is outlined in **Table 1**:

Table 1: Proposed Learner-centred TVT teaching concept

Input	Three components for TVET teaching situations
 National policies supporting learner-centred TVET teaching and providing autonomy to the institution.	<i>Engagement</i> and participation of learners through various learning situations.
 Curriculum based on competencies/learning outcomes that integrate core and functional knowledge and skills.	<i>Autonomy of learners</i> on content and method of learning with teachers' guidance and support.
 A culture supporting two-way communication between teachers and students, as well as collective activities.	<i>Outcome-based activities</i> that integrate skills and knowledge to prepare for a professional life.
 Teachers trained on learner-centred approaches during pre-service and in-service teacher training.	
 A variety of teaching materials integrating digital technologies.	

To identify precise learner-centred situations, several indicators, written in terms of behaviours, were allocated to each of the three teaching situation components, for a total of twenty-five indicators. The country reports describe the usual TVET teaching practice corresponding to these indicators. In addition, the six countries offered over **seventeen examples of learner-centred teaching situations**.

The review of learner-centred TVET teaching experiences in the six countries showed that there is no direct correlation between TVET implementation and national parameters, such as a country's population, its level of centralization, or its socio-economic or educational context. The study found that implementing learner-centred approaches in the six countries reviewed was hampered by three main factors:

1. Five of the six countries do not have **laws or policies** explicitly mentioning, supporting and promoting a learner-centred TVET pedagogy.
2. The culture of respect towards teachers limits **student autonomy**, their participation in activities, their feedback on the teaching received, and their capacity to decide what and how they learn.
3. A learner-centred pedagogy does not seem to hold significant **importance in pre-service teacher training**, although it is more actively promoted within in-service teacher training.

But this study also identified positive trends towards a learner-centred approach:

- ▶ Priorities for TVET systems in the six participating countries mention the **importance of teacher development** and the increasing role of **digital technologies** in the learning process.
- ▶ All participating countries tend to use **curricula that are based on competencies or learning outcomes**, although they do so at different levels of implementation. Most of these countries provide a certain degree of **autonomy to the TVET institutions** to adjust method and content. Thanks to this model and the time spent at companies, students see how what they are learning relates to 'real-world' work.
- ▶ All countries are using various **modalities of digital technology** for students' self-learning, knowledge sharing, and interactions between students and teachers.
- ▶ Many initiatives and cases at the TVET institutions show **the motivation of teachers and managers to focus on students' needs and knowledge and to help students learn independently**. This demonstrates the importance of employing not only a top-down approach by way of laws and policies from education ministries, but also a bottom-up approach provided by more autonomy to colleges.

There are gender-related gaps, and this will require further research and analysis.

In the last chapter, this study presents **seven proposals to develop learner-centred approaches:**

1. Supporting national reform of the pedagogy based on the results of pilot projects.
2. Increasing two-way communication between students and teachers.
3. Producing learning materials adapted to learner-centred methods.
4. Using technology in the learning process.
5. Implementing competency-based learning to support a learner-centred pedagogy.
6. Integrating transversal and core skills.
7. Developing teachers' capacities by employing learner-centred approaches.

The study concludes by proposing areas for further research and development. UNESCO is working to address these research priorities and needs for technical assistance at national and regional levels.



1. Introduction

1.1 Background of the study

Promoting TVET is highlighted in the Sustainable Development Goal (SDG4) Education 2030 agenda (UNESCO, 2016), as stated in Targets 4.3 and 4.4, respectively: 'ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education' and 'substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.'

While TVET policies are in place in most countries, many policies follow supplier-centred TVET provision and delivery. Individual needs and gendered differences, especially for those with vulnerabilities and/or disadvantages, are considered or addressed to only a limited extent. Teacher capacity building also tends to focus on improving knowledge and skills in relation to technology and modern equipment, while overlooking the skills and attitudes that would help teachers form a rapport with learners, assess their personal needs, and provide relevant support when required.

To implement a learner-centred TVET support system in Member States tailored to suit individual needs and qualities as well as to enhance outcomes, UNESCO has defined three priorities:

1. Develop research proposals and national case studies to assess learner-centred TVET policy and implementation.
2. Develop a model for learner-centred TVET supply for diverse settings in Asia and the Pacific.
3. Elaborate on indicators for gender mainstreaming to support learner-centred TVET in Asia and the Pacific.

1.2 Scope of the study

The purpose of this study is to support UNESCO's mandate for TVET in the context of SDG4.4 and to help reach the following outputs:

- ▶ Member States are prepared to implement learner-centred TVET approaches and to support provisions for better training outcomes and expansion of access for all, including groups with disadvantages and vulnerabilities.
- ▶ Improving the TVET quality through learner-centred approaches in Asia and the Pacific.

There are extensive research and studies on how to develop a good TVET system defined either as general guidelines or as recommendations for specific countries. There are also reports on TVET teaching methods and teacher training.

Learner-centred teaching methods are largely promoted in the primary, secondary and even in higher education. However, there is limited information on how to implement learner-centred teaching methods in TVET institutions.

This regional study provides the international background, definitions, guidelines, best practices, and recommendations for efficient learner-centred TVET teaching and proposes ways to support it at the macro level (policy), meso level (school and community), and micro level (school environment and teachers).

Learner-centred TVET teaching can be implemented in various environments (school-based, apprenticeship, and dual vocational training), but this study focused on school-based settings as it represents the majority of formal TVET interventions. Moreover, the dual vocational training and apprenticeship examples heavily depend on business sector involvement at national and local levels.

TVET is a generic term covering many levels, programmes, and target groups. The research and corresponding national reports focused on formal TVET for youth with curricula at the ISCED levels of 3 to 5 (UIS, 2012) and their corresponding levels in the national qualification framework of the countries concerned.

1.3 Methodology

This report, written from May 2021 to September 2021, synthesizes data from two main sources:

- ▶ Country reports from six selected countries based on a common research framework, the selected countries being: China, Republic of Korea, Samoa, Sri Lanka, Thailand, and Uzbekistan. These six countries come from the five sub-regions covered by UNESCO Asia-Pacific.
- ▶ A literature review on TVET teaching and learner-centred approaches in Europe and Asia-Pacific. Two books have been especially used for this report:
 - A 2015 European Centre for the Development of Vocational Training (Cedefop) research paper on learner-centred pedagogies in TVET in fifteen Member States included ten case studies: *Vocational pedagogies and benefits for learners: practices and challenges in Europe*.
 - A study of Michele Schweisfurth in 2013: *Education-Poverty and International Development, Learner-centred Education in International Perspective: whose pedagogy for whose development?*

Six selected national experts wrote a report on the situation in their respective country. They reviewed relevant documents and interviewed representatives of TVET institutions to provide practical and real-life situations, as well as case studies to understand gender dimensions. The time and resources were too limited for detailed research, including field data collections, observations, and focus group discussions. The opinions mentioned in this document come from the experts in charge of the study and do not represent any official governmental statement.

This report is split into chapters that correspond to the main components of TVET and a learner-centred approach. Each chapter starts with an introduction reviewing the key conclusions from the international benchmarks; then the situations, practices, and cases from the six countries; and a conclusion. The last part of the report includes lessons learned, conclusions, and suggestions for practical implementation.



2. Definition of learner-centred TVET teaching

2.1 A brief historical background of the learner-centred pedagogy

The academic foundation of learner-centred pedagogy is rooted in research which started with Socrates ('I will only ask him and not teach him!').

The term 'child-centred' was first used in Froebel's *The Education of Man* in 1906 (Schweisfurth, 2013).

In the early 20th century, several researchers developed the main ideas associated with learner-centred pedagogy. John Dewey from the United States focused on a school for life in a democracy that encourages critical thinking, Montessori emphasized children's independence in learning, Piaget researched child development and the importance of exploration and pleasure, and Freinet developed inquiry-based learning and the pedagogy of work. Later, in the UK, Lowden supported the development of a curriculum linked to a learner-centred approach while Paulo Freire, from Brazil, focused on adult learning based on

questioning and awareness. Lev S. Vygotsky also had an important influence on pedagogy as a founder of constructivism. We should also mention Paul Ginnis, who summarized how neuroscience can support learning.

In summary, the learner-centred pedagogy integrates the following models¹:

- ▶ Behaviourism: learning is accomplished when a proper response is demonstrated following the presentation of a specific environmental stimulus.
- ▶ Cognitivism: the conceptualization of students' learning processes that addresses the issues of how information is received, organized, stored, and retrieved by the mind.
- ▶ Constructivism: learning must be meaningful by providing opportunities for experience-sharing activities so that learners construct knowledge rather than simply take in information passively.
- ▶ Inductivism: theories can be derived from or established on the basis of facts.

2.2 The promotion of learner-centred approaches by UNESCO

UNESCO has been promoting learner-centred approaches for many years.

The Incheon Declaration of Education 2030 (UNESCO et al., 2015) states that '[e]ducation institutions and programmes should be adequately and equitably resourced with sufficient numbers of teachers and educators of quality using learner-centred, active and collaborative pedagogical approaches'; and 'therefore, beyond mastering work-specific skills, emphasis must be placed on developing high-level cognitive and non-cognitive/transferable skills, such as problem-solving, critical thinking, creativity, teamwork, communication skills and conflict resolution, which can be used across a range of occupational fields.'

According to the World Declaration on Education for All (UNESCO, 1990, Article IV), 'active and participatory approaches are particularly valuable in assuring learning acquisition and allowing learners to reach their fullest potential.'

The Dakar framework reiterated an international policy commitment to active learning pedagogies (UNESCO, 2000).

2.3 The learner-centred pedagogy from an international perspective

Many people think that learner-centred methods will have the power to reduce dropouts, increase efficiency, and address boredom at school. But there is a lack of robust evidence on their effectiveness in general education, with possible declining standards of literacy and numeracy (Schweisfurth, 2013, p. 19). Evidence shows mixed results in international assessments such as PISA. The difficulty is that learner-centred teaching effectiveness depends on the context, quality of teaching, and how it is understood and implemented.

¹ <https://lidtfoundations.pressbooks.com/chapter/behaviorism-cognitivism-constructivism/>

In Europe, there is relatively little literature that examines the impact of vocational pedagogy on learners. Research shows that learner-centred TVET pedagogies have impact on motivation and engagement. There are promising associations but no solid data confirming the impact on satisfaction, dropout prevention, achievement, or progression (Cedefop, 2015, pp. 12, 43).

Moreover, the approach often focuses on the process and not the results. If a government is promoting students' rights, then they can be used as the main reason for implementing learner-centred methods.

Then there are the various definitions.

Bronfenbrenner (1979) explains that human development is impacted at three levels and by three layers: microsystem (family, religion, classroom, peers), exo-system (community, school), and macro-system (political, society, nationality, culture, economics). These layers will be very different from country to country.

In her study, Schweisfurth proposes the following components of a learner-centred approach from an international perspective: Learner-centred teaching is a fluid technique based on positions between a 'talk and chalk' method to independent work, authoritarian to democratic style, extrinsic to intrinsic learner motivation, fixed to fluid knowledge, and fixed to negotiated content. In her definition, learners will learn better with: 1) cognition: they have more control of their knowledge rather than having to follow a fixed curriculum; 2) emancipation: they have more freedom as they learn based on dialogue with teachers; 3) preparation: the learning process prepares them for citizenship and professional life by developing soft skills, such as critical thinking, listening and teamwork (Schweisfurth, 2013, pp. 11–13, 21–36).

Based on her study in four very different countries (China, Gambia, South Africa, and Russia) and a literature review, Schweisfurth (2013, p. 125) considers a set of lessons learned that can support the implementation of learner-centred methods. They are summarized below:

- ▶ The engagement towards this method must fit with the interest of the state and its economic development.
- ▶ Learner-centred education produces long-term effects that do not always fit with the short-term results needed by governments, which often change, as is the case in many Western countries. Policy-level decisions might not bring long-term pedagogical change.
- ▶ The implementation of learner-centred education should not be associated with so-called compulsory 'modernization' of a country based on foreign (often Western) models but rather, associated with real, identified needs.
- ▶ Learner-centred education is a multi-faceted pedagogy; the context shapes which elements policy-makers and practitioners will buy into. For example, a country could support the engagement of learners through various pedagogical activities but not the component where a student's autonomy increases. A well-done lecture perceived as 'teacher-centred' could also be highly motivating.
- ▶ Instability and poverty are likely obstacles to the sustainable implementation of learner-centred education.

- ▶ A common understanding between policy-makers and teachers is essential.
- ▶ There is not one learner-centred teaching model. There must be a pedagogical nexus as a set of linked, interactive, and reinforcing influences on students' motivation integrating various components, such as curriculum structure, teacher-student relationships, parents' support, and community involvement. Each context will have its own combination (Hufton and Elliott, 2000).
- ▶ Learners' rights are in line with agreed rights conventions: the right to express their views, to have their wellbeing protected from violence, to have equal access to education, and to seek and use information. If fear of punishment is allowable in the education system then it would not meet minimum standards. Classroom experience can help prepare people for democratic participation and economic citizenship, including through creative problem solving, transparent relationship modelling, and respect of universal human rights.
- ▶ Disjuncture between local cultural practices and schooling experiences will be unhelpful. A good fit is needed.

It is important to consider that countries are not homogenous. What is feasible and suitable in one country maybe not be in another. This also applies to the sub-national level due to local, regional cultures, traditions, and environments (three layers mentioned above by Bronfenbrenner). Learner-centred education needs to be flexible based on the interconnection of components (e.g. policy, curriculum, teachers, assessment, community), as well as adapted to the country. But there needs to be agreed minimum standards.

Based on standards proposed by Schweisfurth (2013, p. 143), **Table 2** defines the minimum standards for learner-centred education.

Table 2: Proposed standards for a learner-centred education

Minimum standards for a learner-centred approach	What is open to interpretation based on the context of each country
Lessons should engage learners in a variety of ways. Regular feedback enables measurement of engagement levels.	How to engage and to determine if learners are all engaged the same way?
There is mutual respect between teachers and pupils, with fair and transparent relationships, and punishment does not violate rights. Build trust not based on fear (i.e. authoritative but not authoritarian style for teachers).	How formal can relationships be? The level of questioning should be in relation to the teachers.
Ensure learning tasks build on learner's existing knowledge and learning zone so they can succeed. Teachers need to know what students already know by using formative assessment or feedback.	To what extent does the understanding of existing knowledge (origin, level and nature) refer to the knowledge of the individuals or to the class collective?

Minimum standards for a learner-centred approach	What is open to interpretation based on the context of each country
<p>Dialogue is used, after which students can exercise, demonstrate, and develop their own knowledge. This is open to critical questioning.</p> <p>Group answers should not be overused.</p>	<p>How much dialogue, and how does it fit in the lessons?</p> <p>The qualitative nature and tone of dialogue would differ in classes of fifteen students from those with sixty students.</p>
<p>Curriculum is relevant to learners' lives and to their perceived future needs, in a language accessible to them. It integrates the local situation and context.</p> <p>Curriculum is based on skills and outcomes including critical and creative thinking skills. skills for citizenship.</p> <p>Learning by doing and experiential learning are promoted.</p>	<p>What kind of content and learning materials? How far are they nationalized through a curriculum framework or localized at the institutional level?</p> <p>How can technology support?</p> <p>What are the allowable modes for critical thinking and communication conventions used to express or resolve points of disagreements?</p>
<p>Assessments follow these principles by testing skills and allowing for individual differences. Assessment is not purely content driven, and success is not based only on rote learning.</p>	<p>Who sets assessment tasks and the balance of centralized and local testing?</p>

Source: Adapted from Schweisfurth (2013).

The literature review mentioned above shows that there has been little work on the role that gender plays in learner-centred approaches and on gendered approaches that have been developed to deal with specific issues related to gender.

2.4 Learner-centred methods applied to TVET teaching

For Marope, Chakroun and Holmes (2015): 'The introduction of competency-based curricula has required additional training, as have pedagogical reforms intended to change instruction from a teacher-centred model to one that is learner-centred' (p. 113). And: 'Reforming technical and vocational education and training institutions to make them more inclusive also calls for new pedagogical approaches and learning materials' (p. 82).

The goals set by Education and Training 2020 (Council of the European Union, 2009, pp. 3–4) mentioned the importance of making learning attractive and providing personalized learning and transversal key competences. In 2008, as the learning outcomes were introduced, the Council of Europe recommended in the same report that 'curricula should be used as a tool to encourage more learner-centred approaches in education and training'.

As mentioned in the Cedefop report (2015, p. 8), 'the learner-centred pedagogy remains a "fuzzy" concept in literature and policy debate and, in consequence, difficult to apply with precision in

research and practice’ and that ‘there is no clear understanding of the term “learner-centred pedagogy” among policy-makers or practitioners nationally or across Europe’ (p. 17).

This report also noted that, overall, TVET pedagogical change has not been widely identified in Europe as being of critical importance: ‘Too often, learner-centred pedagogies have been advocated, but implementation has not taken place or has not been judged as successful’ (p. 10).

In another report, Lucas (2014) highlights that vocational pedagogy is under-researched and under-theorized.

In the same paper, he also adds that ‘teaching vocational education is different from teaching academic subjects as it is a mix of three components: physical materials (practical skills), people (soft skills), symbols (theory)’.

In its research, Cedefop (2015) adapted and applied the multidimensional model of TVET (see **Table 3**) teaching developed by Dutch researchers Bruijn and Leeman.

Table 3: Multidimensional model of TVET teaching

Dimension	Evidence for high performance in this dimension
Formation and vocational identity.	Skills and knowledge are connected to the development of attitudes, beliefs and values associated with a vocation or occupation.
Authenticity of task.	Learning activities are real or realistic work tasks performed in real or realistic contexts.
Reconciliation of subject-oriented and thematic material.	Subject learning and other learning experiences are connected for the learner; for example, theoretical knowledge is applied in practical tasks.
Construction.	Students are able to formulate problems and seek solutions.
Adaptative instruction and modelling.	Teachers adapt their support to the current understanding and capability of learners, seeking progressively to reduce support, for example, through using learning materials.
Coaching.	Students are guided through learning: they are shown how to learn and progress.
Development of self-regulation skills.	Learners are encouraged to develop self-management and organizational skills.
Development of reflection.	Through reflection on learning and work experiences, students develop autonomy, expertise, and habitus.

Source: Cedefop, 2015, p. 18.

Based on these eight components, Cedefop (2015, p. 8) proposes the following definition of learner-centred teaching: ‘The learner-centred teaching method is a teaching method based on alternative approaches which are more responsive to the interests and needs of individual learners: a) to engage

them fully and increase motivation; b) to increase the control that individuals or groups of learners exercise over teaching and learning; c) to give greater attention to outcomes or competences of individual learners as well to their personal attitudes or capability for learning.’

2.5 The definition of learner-centred TVET teaching used in this report

As mentioned above, pedagogical change in TVET has not been a major and explicit policy priority at the European level. The situation is similar in Asia-Pacific. The political, administrative, economic, social, and cultural contexts are so different among countries such as China, Republic of Korea, Uzbekistan, Samoa, Thailand, and Sri Lanka, that it seems impossible to provide a common pedagogical approach for TVET.

But as Michele Schweisfurth (see chapter above) proposed, guidelines can be offered.

That is the purpose of this study.

Based on the previous chapters reviewing the overall definition of learner-centred education in countries with various levels of development, the policy-level definitions promoted by UNESCO, and international benchmarks on TVET teaching, learner-centred TVET teaching defined in this study should demonstrate the following three components:

- ▶ *Engagement* and participation of through various learning situations.
- ▶ *Autonomy of learners* on the content and method of learning with teachers’ guidance and support.
- ▶ *Outcome-based activities* that integrate skills and knowledge to prepare for a professional life.

For these three parameters, criteria and examples are defined and offered in Chapter 5. They have been defined mainly by using the conclusions from Schweisfurth (2013) and the Cedefop study on TVET teaching (2015).



3. Three parameters that impact implementing a learner-centred approach

Schweisfurth identified five parameters influencing the implementation of a learner-centred approach (Schweisfurth, 2013, pp. 37–61): the political environment; the economy with available financial resources at the school and teacher level; the traditional educational context concerning teachers, curriculum content, assessment methods and teaching materials; the demography and the number of students in the classroom; and the local culture.

For this study regarding TVET teaching, we propose three parameters impacting learner-centred teaching:

- ▶ The culture and its consequences on the relations between teacher and student, as well as on the relations between parents and TVET institutions.
- ▶ TVET system and laws.
- ▶ The way the curriculum is structured.

3.1 Cultural traits influencing learner-centred teaching

3.1.1 International benchmarks

One behaviour viewed as intelligent or advanced in one culture might be viewed as unsuitable or nonsensical in another. The way teachers view the ideal student is different between cultures.

In some cultures, the teacher's authority can be perceived as a sign of care, and punishment makes clear to a student that they have violated group norms and morals (Schweisfurth, 2013).

In the case of Russia, as mentioned by Schweisfurth (2013, pp. 95–104), 'the notions of personal freedom are at odds with the caring but authoritative ideal in the Soviet teaching model which promoted personal and group self-regulation among pupils on the basis of clear codes of behaviour and respect.'

In an elitist culture, the learner's intrinsic motivation valued in a learner-centred approach can, in fact, be driven by the extrinsic motivation of succeeding that has been internalized.

Overall, the cultural context can be perceived as an essential parameter because culture shapes education and education shapes culture. From experience, pedagogies that are not in harmony with the cultural context are bound to face difficulties.

However, while learner-centred education must consider cultural aspects and the associated local values, the cultural aspect should not conflict with the essence of this approach, which could be the case if a culture tolerates humiliation of learners, for example. Culture is not sacred nor monolithic. The Universal Declaration of Human Rights, to which almost all countries are signatories, established an agreed human rights framework and clear definitions to help set boundaries.

Hofstede (2003) highlighted two key cultural parameters impacting a learner-centred approach:

- ▶ The power dynamic in relationships (among students and between student and teacher): do students have to show respect and focus on listening, or can they openly discuss and ask many questions to other students and the teacher? Are students willing to take part in activities with other students and express their ideas, or are they passive?
- ▶ Collectivity: do students engage in collective activities (teamwork, projects), or do they mainly study individually?

The gender perspective, not highlighted in this literature, is connected to cultural values and beliefs thus expected to impact TVET.

This comparative study among the six countries reviews these two parameters. The perception of TVET teaching by the parents is also addressed because they can impact the implementation of this pedagogy. For example, Schweisfurth (2013) highlights how historians often remark that working-class parents were significantly less enthusiastic about learner-centred experiments than middle- or upper-class parents.

3.1.2 From the country reviews: mainly one-way communications

Country reports from Republic of Korea, China, Thailand, and Sri Lanka show a similar tradition of student behaviour towards teachers: students must respect their elders (parents, teachers), and teachers are perceived as experts. As a consequence, students are less likely to ask questions to not risk contradicting teachers. Students do not generally object to teachers who will then ensure that this behaviour continues. In Samoa, values refer to obligations that a Samoan owes to their family, community, church, and individual sense of Samoan identity. Children are expected to assist their parents, significant adults, and elders in everyday activities. However, while students show respect and obedience, they are not afraid to ask questions and interact with their teachers. In Uzbekistan, the status of teaching staff is recognized by the society and the state; therefore, students should also respect them. In this country, the report mentions that teachers usually make most of the decisions.

We see that most countries mention the importance of respecting teachers and the limited opportunities for 'two-way' communication in which the teacher and students could discuss things equally. Two perceptions limit this equality: 1) How students perceive teachers' status: Teachers are older, and they have the knowledge, so if they speak, they are right and must therefore be respected; 2) The way teachers look at students' behaviours, even if, as explained in the introduction on the international background, 'the way the teachers will view the ideal student is different among cultures'. In various Asian countries, students are often afraid to ask questions, as their teacher could get a bad impression of them.

One-way communication, more common than the recommended two-way communication, limits the implementation of a learner-centred pedagogy as defined in this report, especially the first two components defined in the Chapter 2.5 (engagement and autonomy). Nevertheless, the increased integration of project-based learning in classes or as a final assessment provides opportunities for individual expression through sharing and feedback with the teacher, external partners (companies, community), and among students.

In addition, behaviours are changing thanks to the increased cooperation from companies, learning outcomes and competencies-based curricula, students' exposure to the world through the internet, the integration of soft/core skills (analytical skills, critical thinking, teamwork), and new pedagogical approaches (project-based learning, case studies). Learning now comes from everywhere: businesses, the internet, friends, and teachers. This will impact student-teacher interactions.

In the six countries, parents do not seem to be involved nor to be significantly concerned by the impact of a learner-centred approach. The focus is mainly on results and job opportunities more than on potential life skills and personal development. In Thailand, TVET students, who are mainly from low-income families, especially those in small institutions in rural areas, have parents who are not actively involved in the teaching and learning process. The case study for China explained that parents first attach importance to students' formation of good moral character, and then to the acquisition of professional ability, attention to scores and grades. For Republic of Korea, the focus is on academic achievements. In Uzbekistan, parents recognize the importance of participative activities. For Samoa, most parents pay respect to and believe in trainers and TVET institutions as most of the TVET programmes have already been accredited by the national system of qualification.

3.2 The existence of policies and laws promoting improved teaching methods

3.2.1 International benchmarks

The international benchmark shows that precise pedagogies or learner-centred education are often not mentioned in education documents, but the values expressed often directly connect to it. In most European countries, policies supporting learner-centred education started in the 1980s, with a large variety of interventions and priorities. Key drivers in the policies supporting a learner-centred approach include the implementation of an outcomes-based curriculum, the expansion of apprenticeship and dual vocational training, and the focus on teachers and policies supporting better access to diverse groups of learners, especially from disadvantaged socio-economic backgrounds.

At the policy level, the European experience has shown that there are several conditions for a successful implementation of learner-centred TVET teaching (Cedefop, 2015):

- ▶ A decentralization strategy has been explicitly linked to improving teaching and learning methods.
- ▶ The implementation of a new learner-centred policy should have clear and realistic connections with existing policies or practices.
- ▶ Governments must be aware that the implementation of a learner-centred method is not a cheap option as it requires teachers' time as well as a variety of learning materials beyond books and boards.

Beyond adherence to and enthusiasm for its implementation, a good understanding of learner-centred approaches is essential to avoid misconceptions, such as the ones mentioned in the case of the South Africa Outcomes Based Education implemented after 1997: 'In the old paradigm, teachers possess all knowledge; the new paradigm says that learners possess knowledge and the ability to learn but teachers interpret that as teachers do not need to have knowledge' (Schweisfurth, 2013, p. 105).

Overall, local initiatives supporting teachers are generally thought to be more effective since they also address some cultural issues, and there are direct links between class size, teaching strategies, and learning effectiveness.

As a conclusion, vocational pedagogy as a whole, and learner-centred teaching especially, needs to be well-integrated into TVET policies, promoted, and financially supported. Implementing policies for a learner-centred pedagogy requires both bottom-up activities and top-down directives that should be well-coordinated. Monitoring and evaluation of the implementation are essential to ensure effectiveness.

The review of the six countries revealed two situations:

- ▶ Countries where laws supporting TVET do not explicitly mention learner-centred approaches.
- ▶ One country where laws supporting TVET explicitly mention learner-centred approaches.

3.2.2 From the country reviews: laws support TVET but not learner-centred approaches explicitly

At a national level, the review of the TVET systems in the six countries² shows challenges and strengths specific to each country, and most seem to have clearly structured TVET systems, except for Uzbekistan, where a large reform is still ongoing. The need to have continuously good collaboration between schools and industries, the integration of technologies in teaching, and the importance of supporting teachers (motivation and skills) are often mentioned as priorities of development.

The Republic of Korea, Samoa, and Thailand reports indicate that the term 'learner-centred TVET teaching method' is not clearly nor strongly defined, nor is it stated as a priority in laws, strategies, and policies. But this approach is promoted indirectly by various initiatives, depending on the country: learning outcomes/competency-based TVET, increased programme flexibility, autonomy and decentralization, use of technology, national human resource development plans focusing on people skills for the 21st century, lifelong learning concepts, and education reform integrating more core and soft skills. For example, in Thailand, according to the Vocational Education Act (2008), TVET must be provided to school age learners and working people according to their aptitude and interests. TVET should be carried out through flexible, diverse methods. All these ideas support an evolution of the teaching method: the roles of teachers must change, they must be co-learners in industries with students, sharing knowledge and experiences, fostering and reflecting thinking and problem-solving skills.

In Samoa, improving TVET teaching was identified as a sector-wide need in education. Professional standards for TVET trainers were developed in 2015. They have three grades clearly stating the importance of knowing the theory and practices of pedagogies adapted to students.

In Uzbekistan, the Education Sector Plan for 2019–2023 is a key national policy instrument promoting innovative, alternative, and flexible pedagogical practices for education, including preschool, general, secondary, and higher education. There is no specific law or other policy document governing the introduction of a student-centred teaching method. However, a government resolution has recently been adopted introducing a dual education approach, and it is expected that participants' (teachers, students) role and sphere of responsibility in the education process will change.

In Sri Lanka, the education system is mainly centralized with some local autonomy under Provincial Councils. However, all schools are governed by general policies administered by the central government. The system is based on several laws and policies supporting and setting the framework for the use of a competency-based approach (national policy on training and vocational education, the National Vocational Qualification Framework, national policy on competency-based training). They promote the concept of learner-centred TVET teaching, but there is no explicit reference to this method.

In China, the situation seems different from the other countries, as learner-centred teaching is explicitly promoted. In 2017, the State Council issued its thirteenth five-year plan for the development of national education, and it mentions learner-centred teaching through a series of student-centred vocational education policies: education should 'teach students in accordance with their aptitude'

² See Appendix 1.

and ‘meet different learning needs.’ In 2019, the State Council issued the ‘modern education in China 2035’, which put forward eight basic concepts promoting the modernization of education, requiring more attention to all-round development, to all involved parties, to lifelong learning, to teaching students in accordance with their aptitude, and to the unity of knowledge and practice. The action plan for improving quality and cultivating excellence in Vocational Education (2020–2023) emphasizes improving learner-centred specialities and curriculum teaching evaluation system. The competency-based concept, paying attention to cultivating students’ specialty skills and transferable skills, was also introduced.

In conclusion, concerning laws supporting TVET teaching, similar to the European situation reviewed in Chapter 2, the six countries show that there are laws, plans, and policies promoting quality TVET teaching but without clearly mentioning an evolution towards a learner-centred approach. China seems to be the exception, promoting learner-centred teaching in several official documents and plans. But for all countries, the overarching guideline is to improve the quality of TVET education to adapt to economic needs. But as mentioned in the international review, the policy-level statements must be well understood and transferred into practice, especially at the teacher level. A certain level of decentralization and bottom-up approaches are needed.

3.3 The various possible structures of a TVET curriculum

3.3.1 International benchmarks

In principle, the learning-outcomes approach to curriculum design implies learner-centred teaching. However, there are two risks which could distract from the learner-centred approach: 1) putting too much emphasis on the assessment of these outcomes and 2) not considering the local context if they are organized at the national level.

A curriculum can be designed as a series of modules, each having one or several associated learning outcomes³, or each can be seen as having broad learning outcomes which can be addressed in several modules to support real projects and professional situations. In some cases, a curriculum can have both: learning outcomes for each module and overall learning outcomes for the whole curriculum.

As for the option to split knowledge and skills, there are two approaches: 1) one module with a learning outcome focusing on either a specific bit of knowledge or skill, or 2) one module with learning outcomes integrating knowledge and skills. The decision impacts the teaching organization. In the first case, teachers are likely to be split according to a certain knowledge or skill, and in the second case, one teacher might be asked to teach both theory and practice.

If the curriculum is strongly centralized, then the flexibility, connection between modules, and the knowledge and skills taught will depend on certain school leaders and teachers. Usually, the more autonomous the school regarding some parts of the curriculum, the more likely that a learner-centred approach will be implemented. A suitable model would be to give a school the capacity to create learning outcomes or at least knowledge and skills at the local level, in addition to the broad learning outcomes defined at the national level.

³ The description in this chapter refers mainly to the European experience using the term ‘learning outcome’. In Asia, the term ‘competency’ is also often used.

From the European experience, a small number of broad learning outcomes tend to enable more flexibility and to support learner-centred teaching.

In practice, the Cedefop report (2015, p. 64) found that ‘the tacit knowledge of vocational teachers is of great importance in terms of organizing and ‘concreting’ the learning in relation to the more or less abstract defined learning outcomes.’ During activities, teachers are likely to focus more on tasks and activities rather than on the outcomes.

This Cedefop report also found that where there is emphasis on transversal skills (soft or generic skills), such as organization, teamwork, communication, and planning, in the curriculum, the learner-centred approach is encouraged, especially if these skills are taught with a transversal approach across modules and subjects with project-based or professional situation learning.

Overall, policy-makers and TVET practitioners should work together to link theoretical knowledge, practical skills, and transversal skills into a more integrative pedagogy based on outcomes, one that bridges the two environments of school and workplace.

A session’s duration is important. If, as it is the case in some countries, the session is forty-five minutes long, students hardly have time to plan various learner-centred activities, such as experimentation, practice, debriefing, and synthesis.

The assessment method also has an enormous impact on what is taught and how it is taught. The learner-centred approach should be supported by an assessment of learning outcomes based on professional situations and on the integration of knowledge and skills. It should also enable core skills assessment more easily through projects, presentations, and teamwork products.

3.3.2 First approach: curriculum linked to one national competency system

In Republic of Korea, TVET curricula and content are centralized with a rather rigid, supplier-centred approach to the pedagogy and its content. Although cases of more flexible learner-centred TVET teaching have been observed, those approaches are not widely distributed. The modular curriculum follows competencies, and each module fits the national competency standards (NCS) (over 1,000 modules). Some schools might take some units of competencies from one module and others from other modules and teach those competencies together. It is possible to adjust up to 50 per cent of the content, but even the adjustment should come from recognized materials. These modules tend to focus on skills and knowledge, not generic skills. The assessment follows the NCS at three levels.

As Sri Lanka has a unified TVET system based on its National Vocational Qualification (NVQ) System, training centres and teachers do not have the authority to prepare their own curricula or make any changes to already developed curricula. The system is based on competencies developed with industries that clearly specify what a competent worker in that occupation does in their workplace. The curriculum is called ‘Competency-based curriculum’. The number of units of competence may vary from occupation to occupation. If one competency standard for a given occupation consists of eight units of competence, then the curriculum should also represent these eight units. Each curriculum has three components: curriculum outline, trainer’s guide, and learner’s guide. A curriculum’s content includes modules, tasks, steps, performance criteria (standards), and skills or

knowledge required to perform said tasks. Generic skills, such as communication, working in teams, or planning, appear as units of competence for any given occupation. Assessments are based on competencies, used as evidence to confirm whether a candidate can demonstrate the application of the skills, knowledge, and attitudes specified in the competency standard to specified performance standards. Registered/licensed assessors must ensure whether the evidence submitted by the candidate during the assessment are valid and sufficient. Usually, several forms of valid evidence should be submitted in the candidate's portfolio.

3.3.3 Second approach: curriculum integrating competencies

Thailand does not have one unified national competency system. Several organizations provide national qualifications (mainly, the Office of Vocational Education Commission of the Ministry of Education, the Ministry of Labour, and the Thai Professional Qualifications Institute). Curricula have competencies for each module, as well as learning outcomes at the curriculum level that integrates every module linked to the occupational standards prepared by the Thai Professional Qualifications Institute. The learning outcomes have four components: 1) ethical, moral, and desired characteristics; 2) knowledge of general mathematics, sciences, English, ICT, and those specific to an occupation; 3) communication skills, using ICT, and selection and application of tools and equipment in related occupational process; and 4) application and responsibility.

The structure of the curriculum includes:

1. Core competencies related to transversal skills, thinking and problem skills, communication, and ICT that cover around 21 per cent of the curriculum.
2. Occupational competencies focusing on specific skills, as well as ability and responsibility in each field.
3. Elective occupational competencies to be selected by the learner.
4. Extracurricular activities included in two hours every week of each semester to help students learn, or enquire about what they want to learn, independently through student clubs, organizations, or other means.

The TVET curriculum must be reviewed every five years. Institutions can adjust the content of compulsory and elective subjects, establish new subjects, and design teaching and learning process or methods, but they need to do it in cooperation with their industry partners. The curriculum can be changed as required by industry partners, with confirmation of job opportunities for students, before becoming the 'institutional curriculum'.

During a two- or three-year curriculum, the assessment process is implemented not only by teachers, but also by in-company trainers with a focus on theory, practice, and transversal skills that cover 'personal effectiveness competencies' required by employers and Thai society. There is an assessment of the final learning outcomes at the end of the programme, in addition to the subject assessment. This might last two or three days, with the help of assessors from the provincial committee.

In Uzbekistan, the development, implementation, and updating of state educational standards, qualification requirements, curricula, and programmes are carried out by the Ministry of Higher and Secondary Specialized Education. Traditionally, many training programmes have vague learning objectives. They focus on skills performance and not than just knowledge acquisition. The 2020 reform requires that professional standards and qualification requirements must be consistent with the levels of the national qualifications framework (NQF). Based on these professional standards, a standard (model) curriculum for TVET institutions is developed. The students' learning outcomes according to the NQF include knowledge, skills, and competency. The repartition of subjects varies depending on the programme and its level, but they are mainly split into special subjects, educational practice subjects, qualification practice subjects, professional subjects, and general academic subjects. TVET institutions are given the pedagogical freedom to adjust up to 20 per cent of the training work plans offered, taking into account employers' needs. A final assessment is carried out upon completion of training at an educational institution in the form of state certification. It is a comprehensive assessment of the level of students' knowledge, skills, and abilities in accordance with the requirements of the state educational standards. The evaluation includes participation of a proportion of representatives from companies or professional organizations. A future Asian Development Bank project will support the implementation of a modular competency-based system.

3.3.4 Third approach: curriculum being designed at the local level based on a national structure

In China, the Ministry of Education (MOE) publishes a speciality catalogue and speciality teaching standards. TVET institutes develop speciality talent training programmes according to the needs of regional economic and social development. The MOE requires TVET institutes to standardize the curriculum for each speciality's talent training programme. The speciality (skill) curriculum has some flexibility. At the Hebei Jiaotong Vocational and Technical College, both college and companies participated in the curriculum's design, basing it on projects and tasks using actual company production and technological situations. For example, the 'storage and distribution management' course is based on real job needs at modern logistics companies. The curriculum is based on standard coursework for logistics management in Higher Vocational Schools, national logistics skills competition rules, and learning cognitive rules, etc. The course was redesigned according to the company process, such as: warehousing cognition, warehousing and distribution operations, warehousing and distribution cost and performance management, and storage and distribution centre operation design.

China's vocational education curriculum is divided into common basic courses and speciality (skill) courses. Common courses include basic compulsory, elective, and specialized subjects that can be split into six to eight core courses, then specialized courses. Speciality teaching standards provide suggestions on the use of teaching methods, but teachers have a certain autonomy in the teaching process. For example, the teachers at Jinhua Polytechnic can choose teaching materials and relevant online courses as auxiliary teaching tools. They can independently adopt innovative teaching methods such as flipped classrooms or determine a course's assessment method. Some vocational education institute courses are outcome-based, and the vocational education curriculum generally integrates theory with practice.

The evaluation can be completed in many ways. For example, Hebei Jiaotong Vocational and Technical College combines process assessments and final assessments to allow for diverse evaluation elements, subjects, and methods. Nowadays, more attention is paid to the evaluation of students' comprehensive quality, learning ability, mode of thinking, critical thinking, resource acquisition ability, application of information means, and so on. The original teacher-only evaluation is shared with individual students (self-evaluation), learning partners (mutual evaluation within and between groups), teachers (teacher evaluation), and sometimes company tutor evaluation. The college uses information technology for evaluation (online platforms and interaction).

3.3.5 Fourth approach: mixed system of curriculum structures

In Samoa, the TVET system is not centralized. TVET providers are either under the government or the Mission. The curriculum structure is defined at the government level based on its NCS. Teachers have some flexibility in implementing teaching methods. Each curriculum consists of seven modules encompassing several components such as goals, attitudes, time, students and teachers, needs analysis, classroom activities, materials, knowledge and skills, language skills, and assessment. The total instruction time is twenty-five hours per week, which is five hours per day per a week, and it applies to either Year One and/or Year Two of the programme. Students' learning is promoted through a discussion-style interaction with others, empowerment, activities, and assessments. For example: in a Tourism and Hospitality course, one group learns about food and beverages, while other groups learn about bedding arrangements. Yet, at the end of the course, everyone must meet the NCS to be deemed competent. The curriculum content integrates theory and practice in the modules. In the case of the Samoa Qualifications delivered by the two TVET providers surveyed (Don Bosco Technical Centre – DBTC and Pesega Technical and Vocational Education and Training Institute – PTVETI), teachers must follow specific teaching methods. However, this did not stop the two TVET providers from continuously looking for new teaching methods to deliver their programmes.

TVET providers have the autonomy to make changes except for the curricula offering Samoa Qualifications. Trainers work with company experts and employers to develop the curriculum to ensure that competency standards meet those required in workplaces and to support a learner-centred approach.

The Samoa Qualifications assessment criteria require knowledge, practical skills, and learning outcomes assessed at the module level through examinations at the end of each term, with a structured exam paper that includes both multiple-choice and open-ended questions. There are also practical skills assessments during class projects and assessments during students' work experience at companies.

3.4 Conclusion: TVET systems promoting a competency-based curriculum

TVET curricula can have different structures. However, the trend in all countries is to link it to a set of competencies or learning outcomes needed at work. These outcomes support the implementation of the third component of our definition of learner-centred approach: 'outcome-based activities that integrate skills and knowledge to prepare for a professional life'. As mentioned in the international

background chapter, there are various of approaches, depending on a country's level of centralization and the structure of the national qualification framework. Either competencies or learning outcomes are defined at the module level (e.g. Republic of Korea, Samoa) or at both module and curriculum levels (e.g. Thailand). Some countries do not have a unified national system of competencies but rather have several systems in parallel (e.g. Thailand), with the TVET curriculum relating to one of these systems. If the curriculum includes the teaching and evaluation of competencies and/or learning outcomes, then generic skills, such as problem solving, teamwork, and communication, have more chances to be taught and evaluated. These skills are, in this case, connected to professional and functional skills (e.g. Sri Lanka). Generally, colleges have some flexibility in adjusting the curriculum to local needs (e.g. Uzbekistan). However, in the Chinese system, colleges seem to have greater autonomy in creating curriculum content by using a national format. In this case, the quality of the curriculum will depend on the kind and level of relationships between colleges and local companies.

This chapter focused on how a curriculum's structure can impact a learner-centred approach; to date, there is a lack of studies investigating how this structure can take into account a gender perspective, which is a gap and priority to address.



4. Implementation of learner-centred pedagogical situations

4.1 International background: multiple ways to learn

Due to the specificity of the vocational education pedagogy, Lucas, Spencer and Claxton (2012, p. 61) recommend that students learn by many 'learning by doing' or 'experiential' ways, combining reflection, feedback and theory. They offer a comprehensive list of approaches: watching, imitating, practising, teaching and helping, real-world problem-solving, thinking critically and producing knowledge, listening, transcribing, drafting, sketching, reflecting, being coached, competing, enquiry, feedback, conversation, virtual environments, simulations and role plays, and games. In addition, Lucas and Claxton (2013, p. 106), consider time and space of teaching as key success factors.

The UK's Office for Standards in Education (Ofsted) suggests that vocational education should fuse practical and theoretical learning content with the following principles: 'learning can be clearly applied to work related contexts, teaching methods balance theoretical and practical learning, practical tasks are engaging, contact with the work-place for learning purposes is well-planned

and complements other aspects of learning, vocationally relevant functional skills are practised at planned times, vocationally relevant vocabulary and vernacular is developed, vocationally relevant 'information and learning technology' is applied to vocationally relevant challenges, learners are developed as practitioners' (Lucas, Spencer, Claxton, 2012, p. 106).

The important role of project-based learning in TVET teaching is also mentioned in the USPECH programme (Drummer, Hakimov, Joldoshev, Köhler and Udartseva, 2018, p. 31).

The learner-centred TVET teaching in this study has the following three key components:

- ▶ *Engagement* and participation of learners through various learning situations.
- ▶ *Autonomy* of learners on the content and method of learning, with teachers' guidance and support of teachers.
- ▶ *Outcome-based activities* that integrate skills and knowledge to prepare for a professional life.

In the next three chapters, a list of criteria for each of these three components are defined. We describe practices, cases, and examples of teaching situations from the six countries that correspond to a component's criteria.

These cases are presented under one component and criteria, but often, they could also correspond to another component or criteria.

4.2 Component 1: Engagement and participation of learners

The first component of the learner-centred method reviewed in this study is to have the '*Engagement and participation of learners through various learning situations*'.

This component is shown with the following criteria and the corresponding practices from the six countries.

4.2.1 Students learn with different kinds of methods through a blended learning approach, including the use of technology

- In Thailand and Uzbekistan, the different teaching methods and use of technology in each class mainly depend on the content and learning-outcome standards, but they are based on teachers' competencies and learning resources.
- In Sri Lanka, the two main methods used are small group activities and flip-chart classroom exercises.
- In China, examples are found in the three gradual learning approaches of 'shallow learning based on video observation and teaching interaction', 'deep learning based on real field simulation and creative design', and 'hybrid learning based on online self-study and offline co-learning'. These applications include narrative, case analysis, demonstration, seminars, reality simulation, role play, and online and offline mixed teaching.
- In Samoa, lesson delivery is mostly made through traditional face-to-face learning in classrooms and workshops using projectors and TVs. Nonetheless, teaching and instructional methods might vary to suit students' learning needs. For instance, hands-on physical activities instead of simply listening to lectures.



Case study: Constructionism learning model at Maptaphut Technical College, Thailand

A petrochemical programme is organized at Maptaphut Technical College in cooperation with and with the support of industries. Companies are seeking technicians with not only technical competencies, but also with problem solving, learning to learn capacities, and other related personal effectiveness competencies. We can therefore say that the constructionism learning model has been successfully implemented in this case for over ten years. Generally, forty students engage in work-based learning in six petrochemical industries. For these two-year programmes, work-based learning is divided into one month in the first semester, two months in the second semester, and four months in the fourth semester. This programme has the following pedagogical specificities:

Meditation: Every day before the learning session, students must spend time meditating to clear stress and anxiety. Teachers serve as facilitators.

Micro world: Students are provided with a 'micro world programme' which helps facilitate their learning process on how to think systematically.

LEGO-LOGO: Students develop imagination, problem solving, and teamwork skills through LEGO-LOGO games.

Show and share: Students show and share what they learn, creating and developing new knowledge or learning points through various media.

Presentation and reflection: Individually or in teams, students learn or create and present not only among themselves but also with teachers, administrators, and industry representatives to reflect their improvement and learning.

4.2.2 Theory is taught based on student experiments conducted before the learning process, so they have opportunities to share existing knowledge before learning new knowledge

- This situation is rarely implemented in the countries surveyed. In Thailand, Uzbekistan, and Samoa, theory is usually taught before the students can apply it and experiment with it.
- In China, students can upload curriculum resources to the 'vocational education cloud' platform, so that they can learn simple and understandable theoretical knowledge before class.



Case study: Driving school, Uzbekistan

Driving lessons are organized by a vocational school providing basic TVET knowledge. During the lessons (teaching driving skills), the teacher plays out situations with students using pictures. He shows the situation on the roads, and students can play the role of the police or the chauffeur, assessing whether the situation is right or wrong. The theoretical part of the lesson is based on practical examples taken from various cases. Thus, students gain knowledge of driving. Here, the teacher considers the exact knowledge of the students to ensure that in a real situation, they can act correctly as a driver.

4.2.3 Students ask teachers a lot of questions

- As mentioned in the previous chapter which reviewed the impact of culture on learner-centred teaching, in several countries, students mainly follow what teachers say without asking too many questions. However, students often ask more questions when they study practical subjects or when they are in small groups.

4.2.4 Students learn in different places (classrooms, workshops, libraries, outside, in companies, etc.)

- For all the countries, there are two main important parameters: teaching style and available facilities. Teachers can be encouraged to use different locations to increase students' concentration and participation. Spending time at a company is a part of the TVET programmes.

4.2.5 Students use different learning materials: textbooks, exercises, smartphone applications, e-learning, role-play scripts, internet searches, equipment, etc.

- Similar to the criteria above, the two parameters of teaching style and available facilities in the school are important here. All basic teaching materials used include workbooks or worksheets. Additional materials can be used like maintenance manuals, safety precautions, animations, videos, pictures, network resources, equipment and user manuals, smartphone for learning and e-learning, laptops, etc.
- The use of technology and digital equipment is described in more detail in the following chapter.

4.2.6 There are discussions and critical questioning among students

- In Thailand, students discuss, debate, or learn from each other more than they do through direct interaction with teachers.
- For all the countries, interactions depend on the teaching style.
- Samoa reports that teachers are encouraged to initiate interactive discussions and create group projects/activities, such as working on individual projects.

4.2.7 Students self-evaluate and give feedback to other students

- Self-evaluation and giving feedback to other students can be organized through individual or group work presentations, show and share sessions, and reflection.
- In Thailand, young students usually pay respect to older students. Therefore, only positive feedback is given, no negative remarks. Usually, interaction occurs more during practical activities.
- In Samoa, self-evaluation is either not formalized or formalized with an evaluation form, at the end of the year showcase, for example.

4.2.8 Students regularly review the situation of the class

- This review is not formally done except in China, where a student steering group regularly checks on the teaching situation under the leadership of the school.

4.2.9 Students work in small groups, for instance: one small group in charge of theory and one small group in charge of practice, before mixing results

- Depending on the teaching topic and style, working in groups is mentioned used.
- Practice sessions in the workshops and laboratories provide many opportunities to work in small groups.
- In China, there are many opportunities for group activities to develop teamwork and problem solving. Students participate in many collective activities and teamwork projects. For example, the Hebei Jiaotong Vocational and Technical College currently has eighty-five associations. The teaching system of Sino-German Technical School of Qingdao West Coast New Area is designed to enable students to carry out several collective activities with fifty-four associations, including sports, skills, singing, and reading.
- In Thailand, the national policy on 'project based-learning' is promoted by three methods: 1) in specific subjects, 2) integrating both theory and practice of every subject, and 3) through extra-curricular activities. Eventually, the teacher will identify the leader in the group who can support the others.
- Samoa mentions how projects are used to assess students at the end of the year.
- In Sri Lanka, there are some collective activities, and students can give feedback to each other. The influence of the Buddhist attitude is believed to impact their attitudes towards communication in these collective activities.
- For Republic of Korea, though collective activities are encouraged in modern schools, team projects are uncommon and often inactive.

4.3 Component 2: Autonomy of learners on content and method of learning, with teachers' guidance and support

The second component of the learner-centred method reviewed in this study is to have the 'Autonomy of learners on the content and method of learning, with the guidance and support of teachers.'

This component is shown with the following criteria and the corresponding practices from the six countries.

4.3.1 There is an assessment made during intake to determine how each student can be supported in the best way; assessment can use questionnaires, interviews, or potential tests

- In Thailand, Sri Lanka, and Samoa, the assessment made during intake includes discussions, interviews, and potential tests, as well as an analysis of the available background information on students.
- In China, in each class, teachers prepare a preview of the next class so that students can review it through online learning and complete an online test first. Teachers can obtain direct insights and adjust the offline class methods beforehand. In another example, teachers use questionnaires, interviews, and other methods to analyse the learning situation, focusing on students' basic knowledge, cognitive abilities, and learning and professional characteristics to support effective teaching.

4.3.2 Students select what they want to learn based on their results, and they reach out to teachers when a task is too easy or too difficult; they can choose the order and pace of activities or exercises

- For most countries, students cannot select what they want to learn, but they often have the autonomy to select the projects they have to do to show their knowledge and skills. They can eventually select elective subjects proposed in the curriculum (e.g. Thailand).
- Teachers set different tasks for different learners or different groups in the class.
- The countries reviewed do not talk about teachers providing individualized learning paths, except for case studies, problem-solving situations, and some practical work.



Case study: Students take role of teachers and session leaders for their classmates, Republic of Korea

The school was teaching TVET-related English to support their graduates in obtaining overseas jobs. Many students were uninterested or had a limited understanding of English. However, a few students who had promising English grades from junior high school were interested in English classes. Those students acted as helpers for other students and frequently reviewed their classmates' progress and reported back to the teacher. The teacher, then, would consider the feedback to improve their teaching approach. With helper students acting as session leaders, the lessons often occurred in a small group setting. This helped the other students pay more attention to the lessons. The teacher asked them to help their classmates and taught them the lesson content before each lesson. Helper students would then teach the content to their classmates during the lesson.

4.3.3 Students use individual development plans, personal action plans, or portfolios

- In this case, the teacher or administration keeps a file or document of each student's details. Eventually, students could be encouraged to have a personal portfolio to showcase their learning and practical work.
- Samoa mentions that every student is required to have an individual development plan.

4.3.4 Teachers support students in organizing their learning and seeking knowledge independently

- This process is not systematic. It mainly depends on teachers being willing to provide guidelines of expected learning for students to learn on their own and to support students in organizing their own learning and finding knowledge by themselves.



Case study: Science-based TVET programme at Phang-nga Technical College, Thailand

The main aims of this programme are to develop mathematics and science knowledge, thinking, and problem-solving skills, as well as interpersonal skills and entrepreneurship by using local resources. A project is assigned in each of the six semesters during the three-year vocational secondary programme. The method is based on active learning under the concept of integration of science, technology, engineering, mathematics (STEM) with the project-based learning (PBL) model. It has five steps:

1. Fact-finding: the principles and guidelines of fact-finding for entrepreneurship in the community are delivered through discussion and interaction between teachers and students. Then, students are provided with opportunities to explore problems and issues which might provide entrepreneurship opportunities by using local resources. They practice questioning, observing, and interacting with teachers, parents, and people in the community.
2. Idea development: Problem-solving methods or alternatives are used to find an innovation or new technology.
3. Learning issues: After developing the idea, students investigate related theories and practice. They seek out knowledge and experiences from experts in the field, related agencies in the community, and other learning resources to ensure the success of their innovation or model.
4. Planning: After confirming the idea, a project plan is developed, and key partners, activities, resources, and drivers are identified.
5. Implementing and evaluating: The project is carried out as planned and evaluated with the support of teachers, other teams, parents, and the local community.



Case study: Automobile mechanic course leading to NVQ levels, Sri Lanka

A trainer observed that at the final assessment conducted by external assessors, a fair number of students (eight out of twenty in the class) failed to achieve the qualification, as they could not perform to the level required by the unit of competencies. Moreover, several students failed to score high marks at on the theory assessment.

At the centre's workshop, there was only one engine model (training aid). The trainer used this training aid to demonstrate to students how to overhaul an automobile engine. He usually started by teaching the theory first, before introducing the key parts of the engine and explaining their functions. The trainer realized that it had not been an effective approach for teaching theory. Since he had close contacts in the industry, he managed to get three discarded but functioning automobile engines from a company, free of charge. The trainer then administered a learner-centred approach to overcome the drawbacks he had faced earlier, as illustrated below.

Activity	Trainer Centred	Learner Centred
1. Introduce an engine's key parts using the workshop's cut-away model.	x	
2. Observe, listen, sketch, and answer questions from the trainer.		x
3. Trainer overhauls Engine 1, asking questions at each step.	x	
4. Note steps, sketch, and answer questions from the trainer.		x
5. Trainer splits students into three groups to develop a performance guide (checklist).		x
6. Trainer splits students into three groups to overhaul an engine assigned to each.		x
7. Trainer has each group measure their respective engine's head, block, and crank.		x
8. Trainer guides students to access internet, books, and publications to gather theory.		x
9. Trainer gets each group to present related theory to other groups.		x
10. Trainer gets each group to assess the performance of other groups using their performance guide.		x

4.3.5 Teachers act as coaches to help students find solutions and theories independently, without directing them

- In Thailand, teachers provide alternative learning methods and explain how to look for related information on the internet.
- In Samoa and Uzbekistan, coaching means that teachers can correct, direct, observe, and provide feedback.
- In China, teachers help students solve problems by using theory through observation and drawing fault trees, before finding out the lack of knowledge, checking, and making up for deficiencies through oral questions or written tests. Using an information platform, teachers release learning tasks and address students' learning problems.



Case study: Art school, Republic of Korea

The school used to be an ordinary TVET school in which students enrolled due to having low grades in junior high school. They had low motivation to learn or to attend school.

However, one of the teachers noticed some students' interest in music and dancing and persuaded them to participate in related extracurricular activities such as performing a musical.

With the teacher's guidance, students organized a musical performance for the end of the school year. They divided themselves into acting and technical roles, then learned on their own. The teacher acted as a coach while students taught themselves how to perform a musical with acting and singing, using relevant technologies.

Student interest and attendance rates rose high, and at the end of the school year, they performed their musical. After this successful initiative, several new students also wanted to join the musical club. Eventually, the school became a music and arts-related TVET school.

4.3.6 Teachers encourage students to evaluate themselves to improve performance

- Overall, evaluation is usually the teacher's role, even if students could evaluate themselves.
- In Thailand, the implementation of expected learning outcomes or competency standards has become an important tool for students to evaluate themselves and monitor their improvement, through reflection or feedback from friends and teams.
- In China, there are case studies of multi-dimensional evaluation: teacher evaluation, enterprise evaluation, student self-evaluation, and mutual evaluation by using an artificial intelligence teaching evaluation system developed independently by teachers.

4.3.7 Students have the opportunity to explain what they learned, how they learned, why they failed, and why they succeeded

- This activity does not seem to be formalized unless it is a group project or during practical subjects.
- In Thailand, students have 'show and share' activities when they come back from internships at companies, when they share what they learned.

4.3.8 Students give feedback on teacher performance

- In China, there are discussions and interactions among students and teachers, as well as online evaluations.
- In Samoa, students could fill out evaluation forms to assess the course and the trainer and provide feedback on areas that need improvement.
- There is no formal teacher evaluation in the other countries.

4.4 Component 3: Outcome-based activities that integrate skills and knowledge to prepare for a professional life

The third component of the learner-centred method reviewed in this study is to have '*Outcome-based activities* integrating skills and knowledge to prepare for a professional life.'

This component is shown with the following criteria and corresponding practices from the six countries.

4.4.1 Teachers state and discuss expected learning outcomes at the beginning of and during a new chapter, lesson, or module so that students know what they should be learning in each session and course and how this learning applies to their future job

- Depending on the curriculum's structure, learning outcomes and topics are introduced.

4.4.2 Students complete projects and activities that integrate different subjects, as well as theory and practice

- Projects occur in all countries. It is an important component of TVET teaching.
- In Thailand, projects may be assigned to an individual or to groups of students for one or several subjects at the same time. Project-based learning has provided students with learning experiences on how to think systematically, how to work in teams, problem solving, and how to apply what they learn. At each TVET institute, a budget is allocated for student projects in each programme to ensure quality project-based learning. Projects must cover at least one main objective: 1) to improve quality of life; 2) to perform better in a career; 3) to conserve energy; 4) to produce food; 5) to produce arts and crafts; 6) to develop software and embedded system innovations; 7) to develop medical breakthroughs; 8) to develop bio-technology and 9) to develop tools for mini-smart farming.



Case study: Jinhua Polytechnic College, China

The school implemented a project tutorial system. Each student and teacher have a tracking management manual that records a project's relevant information, such as innovative ideas, scheme diagrams, discussion records, etc.

The teaching process is divided into five stages: theme determination, autonomous learning, collaborative learning, product production, and product display.

Through the study of professional knowledge in the early stage, students set the theme of the project in combination with their own interests and solve problems through online and offline learning and data collection. They also conduct multiple group discussions with other team members to put forward solutions, determine design schemes, divide work, and collaborate in carrying out product processing and production, before finally displaying the results.

The tutor team and other students evaluate the work and encourage good projects to participate in various innovation and entrepreneurship competitions at all levels.



Case study: Students take on teaching and session leader roles, Uzbekistan

The teacher motivated students to create a model of their school based on inexpensive materials and to calculate a budget. At first, among the group, active students explain to others their proposals for reconstructing the school's laboratory and the tasks for each participant. A small group of students lead the process and started small, by building a model reconstruction of their laboratory. This situation motivated another group to do a bigger project, a model of a reconstruction of the whole school. Later, this project was approved by the school administration and is now awaiting budget approval.

4.4.3 Teachers provide feedback to students with a focus on integrating their learning into their professional life

- This is done naturally during a course, notably through practical sessions, but the precision and impact will depend on teachers.

4.4.4 Student assessments include knowledge gained, technical skills, and transversal skills (analytical skills, listening, teamwork, problem solving, critical thinking, etc.)

- This is implemented in all countries, but this integration depends on the structure of the curriculum (see previous chapter).



Case study: DBTC and PTVETI TVET schools, Samoa

DBTC students are assessed on practical skills and knowledge for carrying out projects. For example, students in the Welding Programme manufactured low-cost outdoor playground equipment for the Early Childhood Centre as part of their annual projects. While doing so, students built their competencies and gained experience.

To assess their practical skills, PTVETI students also had projects, which were showcased during the Annual Parents & Teachers Open Day. Students could opt to take their projects home at a minimum cost, or stakeholders, such as employers invited to the Open Day, might buy them.

4.4.5 Students practise tasks and use equipment that correspond to a profession

- This was implemented based on the equipment and facilities available at the respective school.



Case study: Fix It Centre project, Thailand

This project's targets were not only to expose students to work-based learning experiences in the community but also to provide them with interpersonal skills, real situation problem-solving skills, and communication skills.

Students worked in teams to repair equipment in the community. For this project, mobile units with teachers and students were arranged by TVET institutions to serve people in rural areas.

Agricultural machinery and equipment, as well as household appliances, were repaired by TVET students with guidelines and advice from teachers.

People in rural areas also learned how to maintain or to fix machinery and equipment themselves.

This project helped students ask questions, face real situations and complicated issues, and solve problems. It was a good learning experience for them and an opportunity to develop entrepreneurship or self-employment in the field they were training for. Students were not obliged to take part in this programme. The customers provided evaluations of the students.

4.4.6 Students are supported in their choice of subjects connected to their motivation for their future work

- This was mainly done through elective subjects and, in some cases, having a career guidance counsellor available inside the school.

4.4.7 Teachers develop students' sense of belonging to their future occupation

- Overall, students developed a sense of belonging mainly when they could spend time at a company. In all the countries, the use of real-life projects in teaching and the importance of cooperation between teachers in colleges and tutors in companies were mentioned as crucial to support the sense of belonging.



Case study: Goodee Academy, Republic of Korea

The school analysed the core competencies that companies expected from their employees and began a project-based course tailor-made to those needs.

Students had the chance to learn directly from field experts.

The school expanded beyond the NCS learning modules and considered specific company needs for additional teaching content.

Real industry settings were taken into consideration for students' practices. Field experts from companies participated in the TVET teaching and provided feedback to students. They took part in students' final presentations of their project results. They also mentored students, updating them on recent industry trends. They lectured on industry developments or took on a small number of students, communicating with them through online SMSs or other methods convenient for them. Through the help of the mentors, students felt they gained an advantage in terms of job opportunities.

4.5 Conclusion: many learner-centred dimensions but cultural challenges

Twenty-five criteria have been proposed to define the three components of learner-centred TVET.

The component 'Outcome-based activities that integrate skills and knowledge to prepare for a professional life' seems to be the most implemented. Practice workshops and learning periods at companies are now essential components of TVET teaching.

There are also interesting examples, cases, and practices of behaviours that show shifts towards greater student autonomy:

- ▶ The teacher supports students in organizing their learning and seeking knowledge independently.
- ▶ The teacher acts as a coach to help students find the solution or theory by themselves, without directing them.

There are also other situations that support a learner-centred approach, such as working in groups and using various learning materials depending on available equipment and teaching style.

Several criteria for the other two components ('Engagement and participation of learners through various learning situations' Autonomy of learners on content and method of learning, with teachers' guidance and support.) are not well implemented, notably:

- ▶ If theory is taught based on student experimentation before a lesson, they have opportunities to share existing knowledge before integrating new knowledge.
- ▶ Students ask many to the teacher.
- ▶ Students regularly review the class situation.
- ▶ The teacher sets different tasks for different learners or different groups in the class.
- ▶ Students give feedback on their teachers' performance (for example, with questionnaires).

These five missing criteria show the lack of feedback culture and student autonomy. They relate to the chapter on the impact of culture on teaching. Nearly all countries surveyed mentioned the importance of showing respect to teachers. Changing the perception of the teacher's role and building a new kind of relationship between teachers and students are surely the most disruptive aspects of a learner-centred method. Students and teachers, as well as parents and school management, need to change their perceptions.

For the 'engagement' component, further studies would be needed to analyse the way the needs of female and male students are identified before learning and how they are engaged or can be engaged during the learning.



5. Traditional and digital learning materials

5.1 International background: the importance of mixing learning materials

There is a wide variety of teaching materials, such as books, lab sheets, videos, photos, equipment, and software. Each country has its own regulations on learning materials: it can be a competitive market like it is in England, centralized and following a set of procedures, or localized at the initiatives of teachers.

By creating their own materials and making use of authentic local materials, teachers can support a learner-centred approach. Teachers might have ideas on how to create learning materials, but they need several components: confidence (going out of their comfort zone), time (especially if they have to work other jobs to compensate for a low salary), resources from the school (often financial), teamwork to support motivation, and a school leader who promotes teaching innovation.

Mixing various learning materials definitively supports a holistic pedagogical approach, increasing student engagement and autonomy (Components 1 and 2 in this study), because it covers various learning styles and cognitive capacities.

Digital technology is now an essential part of learning materials. It can support a learner-centred method, but, as explained in the UNESCO report on ICT in education in Asia (Thang Tze, Park, 2018), the institution cannot integrate ICT without being ready: strategic readiness, organizational readiness, pedagogical readiness, technical readiness, operational readiness, and learner readiness. Overall, technology-based learning materials include:

- ▶ Common internet-related tools, such as emails, discussion boards, and chat rooms, can provide supplementary support to learners outside of class time.
- ▶ E-learning modules deliver precise knowledge in small segments, ranging from thirty minutes to two hours, including exercises, tests, videos, text, quizzes, or documents to download. As they are often created for computers, they are not always suitable for smartphone use.
- ▶ Webinars are sessions of thirty to sixty minutes with one or several lecturers, often including questions/answers sessions.
- ▶ Mass Open Online Courses (MOOCs) are available online courses which provide a lot of content with exercises and quizzes. Course durations can vary, but they are usually over ten hours, split into many modules.
- ▶ Online training sessions are short lessons of one to two hours with a reduced number of participants. Learning occurs through with interactions among participants and between participants and the teacher (exercises, discussions, presentations, etc.). Many software programs can support these interactions.
- ▶ Smartphone apps for learning have a different approach and can be used in three ways:
 - Micro-learning: instead of face-to-face trainings, the learner receives regular quizzes and bits of knowledge on their phone, over a couple of weeks.
 - Learning reinforcement: a smartphone app is used to strengthen knowledge over the course of a traditional face-to-face classroom session or after. Students receive short quizzes to review their learned knowledge on a weekly basis.
 - Training or behaviour reinforcement: reinforcement also happens after formal learning, but in this case, the questions focus on behaviour change and not only on knowledge.

Blended learning integrates digital technology with traditional face-to-face training. Teachers can structure courses and deliver their instructions more flexibly and creatively than in a traditional classroom setting. They can spend less time giving whole-class lessons and more time meeting with students individually or in small groups to help them with specific concepts, skills, or questions.

5.2 The basic needs: getting suitable traditional TVET teaching materials

In the six countries, teaching materials are mainly produced at the local level by academics, schoolteachers, teacher training institutes, and experts. Technological equipment is bought from foreign countries. Government support varies depending on the country and the duration of the studies.

The review mentioned learning material donated by industry partners (e.g. Thailand) or prepared in cooperation with companies (e.g. China).

There are only a few cases of teaching material being prepared by students and that was in relation to student projects. For example, at the Guangzhou Panyu Polytechnic of China, teaching material is divided into three types: finished product procurement, teacher work, and student work. Finished product refers to that which is purchased and directly used as teaching models; teacher work is when teachers buy raw materials, such as leather for leather art design, and make the products for teaching; student works are designed and made into products by using raw materials on the basis of observing a teaching model made by the teacher. The teacher then selects some student work deemed exceptional for the next session or for different classes.

5.3 The increasing influence of digital technology

The use of digital technology became essential for mitigating the impact of the COVID-19 pandemic on traditional face-to-face teaching modalities.

All the country reports described how teachers asked students to look for information online on tablets, mobile phones, or computers. Students might have also interacted with their teachers and fellow students through online communication if internet access was available.

Accessibility depended on school resources and locations (large cities or countryside). For example, in Samoa, internet fees are an issue, smartphones are forbidden during class, and there are limited availability of computers and tablets.

In contrast, China developed a series of teaching software, cloud platforms, MOOCs, and mobile apps. The educational technology used gradually transitioned from the more traditional projector, internet use, computers, and tablets, to modern e-learning, mobile learning apps, and other innovative methods. Most courses mixed learning methods according to students' learning status and attention level. Schools have access to digital teaching (learning) resource platforms, such as Superstar, Love course, Deshi, and Youmu.⁴ To promote a reform of teaching modes, the first fifty batches of online and offline mixed teaching mode demonstration courses were approved in 2020.

⁴ <http://erya.mooc.chaoxing.com/>, www.icourse163.org, <https://app.dascomsoft.com/>, <http://www.umooc.com.cn/>



Case study: Jiangsu Taicang secondary vocational school, China

Topic: Piston and connecting rod assembly and maintenance in an automobile engine structure and maintenance course.

Before class, teachers uploaded tasks online (to understand the structural composition and potential damage related to a piston and connecting rod assembly) and asked students simple questions.

Students answered according to their existing knowledge or by searching for information on the internet.

Teachers developed statistics based on students' answers.

In class, a case is introduced: after a car drove into the rain, it stalled and was trapped in water. The driver tried to move through the water by force but still could not start the engine after a lot of effort. After the rain stopped, it still would not start. Students were divided into groups to discuss the cause of the issue and to make a maintenance plan. The teacher guided students in how to analyse potential causes, such as a bent or broken piston connecting rod. Solving the problem of the car breakdown is a task that the students must complete. Each group member made efforts to implement a plan, explained the steps and completed the assignment. Teachers gave a demonstration and offered guidance when necessary. Finally, teachers evaluated the results of each group.



Case study: Sino-German Technical School of Qingdao West Coast New Area, China

Education technology was used in the following ways: 1) teachers used a platform to prepare lessons before class, and schools used the platform to preview students' progress before class by checking their self-study behaviour and evaluation results online; 2) teachers organized teaching and monitoring, then implemented online teaching activities according to the prepared lesson, so that students could learn, ask questions, and share online; 3) teachers helped students with offline activities, such as training operations or case discussions; and 4) teachers could assess student performance with learning outcomes analysis, online homework submissions, and their online interaction with students.

In Republic of Korea, since 2018, digital textbooks with Augmented Reality and Virtual Reality (AR/VR) content have been produced and distributed in schools. Some of TVET colleges also began developing VR learning content: Hanyang Industrial High School received six booths with head mounting curing systems (HMCs), PCs, and large monitors with AR/VR content for car engine maintenance. Yeosu Industrial High School introduced VR experiences in the process of designing and building maker-spaces with four VR booths including head-mounted displays (HMDs), PCs, and other equipment.



Case study: National competition for self-learning know-how of TVET college students, Republic of Korea

A competition was launched to encourage TVET college students who were learning at home due to COVID-19 to share their special learning methods. Competitors submitted essays or UCCs (user-created content), explaining or demonstrating their personal learning tips based on the content of the online teaching provided by their schools. In total, 992 essays and 252 UCCs were submitted. The UCC winner shared a video of listening to online teaching, self-study methods, and recommendations.

In Thailand, many online TVET learning resources were developed and provided by related agencies and industries. Over 300 online learning programmes (3 to 12 hours) were produced by experts from various fields throughout the country. Fabrication labs were established in fifty leading TVET institutions supported by engineers so that they could integrate project-based learning into fabrication lab maker-space stations. Students learned about digital fabrication using equipment such as 3D printers, laser cutters, vinyl cutters, milling machines, and programmable microcontrollers. STEM education was also integrated, and 9,000 KidBright boards were provided to 180 TVET institutions to inspire students to learn computer programming, coding, and other activities designed by them.

In Uzbekistan, online educational learning resources and materials for TVET have been developed and put on a learning portal for all educators.

5.4 Conclusion: blended learning driven by a learner-centred approach

The selection of suitable teaching materials from books to sophisticated technology depends on an institution's financial capacity, the teaching plan, and the subjects taught.

The traditional model is to teach vocational theory in the classroom, basic vocational skills in a school-based training workshop, and more specialized skills and work ethics in the workplace. But education technology is disrupting this model.

Digital educational material is becoming essential to acquire new knowledge, to share among students, or to experience situations. It can support a learner-centred approach but on the condition that teachers use this method while focusing on students. The motivation should always be to use technology for learner-centred teaching, not to use technology for the sake of technology. If teachers develop a learner-centred teaching plan, they may find suitable materials that are traditional or digital. The COVID-19 pandemic has boosted the use of digital technology, but the future lays in a blended learning model that integrates various modalities, such as using face-to-face teaching, workshops, time spent at companies, and individual guidance, along with e-learning, online learning, MOOCs, software, learning platforms, open source, and so on.



6. Teacher development

6.1 International background: situation and teacher development guideline

As mentioned by UNESCO and the ILO (2016, p. 32) in their recommendations on the status of teachers: 'Teachers should be given the essential role in the choice and the adaptation of teaching material, the selection of textbooks and the application of teaching methods, within the framework of approved programmes'. In many countries, teacher autonomy regarding pedagogy is an essential motivation in choosing this profession.

The TVET teacher standards prepared at the Association of Southeast Asian Nations (ASEAN) level by the GIZ's Regional cooperation programme to improve the training of TVET personnel (RECOTVET) (Spoettl, Tahir, and Kilner, 2019) includes 'V11: Improve learning and interaction processes by choosing and developing suitable methods'.

But there could be resistance to implementing new pedagogical approaches:

- ▶ In many countries, people enter teaching as a default option because their qualifications do not allow them to pursue a more desirable profession. It is not well paid, but teachers may have time to pursue other work. If teachers

are not motivated, they will not be interested in their students' needs and may be unwilling to use new teaching methods. As mentioned by Schweisfurth (2013), teachers in developing countries are often under-qualified, under-motivated, and overworked, which means they may have other priorities than implementing innovative teaching methods.

- ▶ Teachers may feel their behaviour challenged. Sometimes, experienced teachers, especially those with a professional career background, may be more likely to be reluctant to adopt innovative learner-centred approaches.
- ▶ They may face multiple barriers that often lead them to develop a negative attitude to employing learner-centred approaches and other innovative pedagogies. 'These obstacles include pressure of work, difficult students, assessment inspection and demands, multiple reforms, pressure to improve productivity, and peer group pressure' (Cedefop, 2015, p. 69).

Six conditions are found to support teachers in the implementation of a learner-centred approach: 1) a suitable class size; 2) setting up teams of teachers who work together on a daily basis; 3) motivating teachers to change based on incentives (in cash or in kind); 4) the support of school leadership; 5) networking and peer learning among teachers, schools, universities, and research centres; and 6) local environment and relationships with the community and companies.

Regarding pre-service and in-service teacher development, as mentioned in the report on the future of TVET Teaching (UNESCO-UNEVOC, 2020, pp. 9, 28), one trend is that '[h]igh quality in-service training should include industry exposure, transversal skills and pedagogy'. One final recommendation is 'including components such as learner-centred pedagogy, transversal skills and inclusive methods improve teaching-learning outcomes'.

In the same report, UNESCO-UNEVOC (2020, p. 45) states that:

- ▶ Transversal and applied skills, such as problem-solving and collaboration, need to be integral to curricula, and teachers and trainers need grounding in learner-centred pedagogy as much as content to learn how to build learners' practical and applied skills.
- ▶ Teachers and trainers are expected to possess future-oriented skills, be self-directed learners, and be sensitive and inclusive about gender, cultural and learning differences, and social disadvantages.
- ▶ They need training in gender responsive/inclusive pedagogy, managing cultural/linguistic diversity, and teaching students with special needs to make lessons and class interactions more equal and inclusive.

The country reports of the European research (Cedefop, 2015) suggests that continuous professional development (CPD) plays a more important role in promoting pedagogic reform and learner-centred pedagogies than the initial teacher training. CPD enables group trainings or networks of teachers and provides continuing support from their own institutions.

As recommended in the ILO-UNESCO report (2018, p. 26), 'CPD opportunities must be made as accessible as possible: this can include online and distance learning opportunities, modular approaches, establishing professional learning communities and informal peer-to-peer learning and curating online resource banks for TVET teachers'. For Mohammad and Harlech-Jones (2008), successful interventions include intensive one-on-one mentoring.

For pre-service or in-service teacher training, it is essential that teacher development also uses a learner-centred approach. Long lectures on learner-centred theories will not make teachers change their practice.

On the impact of digital technology, the toolbox of teaching (GIZ-RECOTVET, 2019, p. 90) highlights: 'The traditionalist teachers in learning and teaching need to migrate, adopt and adapt skills to meet the needs of digital native learners. The development of skills in the digitized and digitalized world requires a new way of thinking, shifting from receptive, passive learning and teaching methods to action oriented self-reliant approaches in learning and teaching methods.'

6.2 The importance of TVET teaching loads and teacher motivation

The official number of weekly teaching hours varies depending on the country: eighteen hours in Republic of Korea, ten to thirty hours in China, eighteen to thirty hours in Thailand. Uzbekistan states a maximum of thirty-six hours teaching, and Sri Lanka has a fifteen-hour minimum of teaching in thirty hours of work per week. In Samoa, teachers must work forty hours per week, teaching five or six hours a day. The real number of hours will mainly depend on the school and the subject. If a lot more students apply for automotive studies than for agriculture, the teaching load will not be the same for the two programmes. The six countries did not mention whether teachers have mandatory external activities that could reduce their time available for CPD, but it is possible that these activities may not be tracked.

Performance appraisals and acquiring points for promotions are used to motivate teachers to take part in various projects and apply new teaching methods. In Thailand, using a learner-centred method can have a positive impact on a teacher's career path. In Republic of Korea, if they participate in government-driven innovative learning projects, teachers can earn points for promotion, but these projects do not necessarily promote learner-centred methods.

In Uzbekistan, the TVET teaching staff is divided into two groups: teachers who only teach theory and masters who provide or guide practical training in workshops. Without specific incentives, the motivation to change teaching methods is limited.

In China, the State holds a teaching skills competition every year to promote a certain teaching level. At the institutional level, many vocational colleges assess vocational teachers' performance with teaching quality as a main evaluation indicator. TVET institutes have created a system to encourage teachers to drive more teaching reforms, for instance, a project to promote classroom teaching innovations or special instruction improvement training by means of case sharing, experience exchanges, and demonstration courses. Teachers and students are encouraged to participate in major events, such as the National Vocational College skills competition, the National Vocational College teachers' competition, and other related competitive activities.

6.3 Primarily informal collaboration among teachers

Samoa, Uzbekistan, Sri Lanka, and Republic of Korea did not mention any formal national system of collaboration among TVET teachers, although it could exist at the school or discipline level. The Uzbekistan report mentioned the future development of a Learning Management System that would support increased cooperation among teachers including sharing materials on teaching methods.

In Republic of Korea, it is not common for teachers from different subjects to collaborate. Teachers in the same subjects often form regional networks to share new teaching materials, trends, and methods. Several networks operate independently without governmental support.

In Samoa, teachers could form groups by department.

In China, many vocational institutes have set up teaching teams and teacher studios. This organizational construction allows teachers from different subjects to work together, which reflects the interdisciplinary nature of vocational education. The college promotes the formation of teaching teams through rewards and commendations.

In Uzbekistan, an English teacher association set up a system of professional competency development from foundation to internationally recognized national expert that shows different teaching roles: trainer, coordinator, and moderator. There is a formal classification based on points. It aims to promote creative teachers, self-development, the construction of teaching materials, and reflection.



Case study: Professional Learning Community, Thailand

Teachers are required to participate, at least fifty hours a year, in a Professional Learning Community (PLC) at their institutions as a requirement for promotion. The PLC process facilitates developing their teaching methods. The PLC is implemented based on the following steps: 1) teachers and administrators organize PLCs at the institution; 2) teams analyse teaching and learning problems to identify areas needing improvement/development; 3) instructional design and planning for strengthening teaching and learning processes; 4) show and share and revise; 5) teaching and learning delivery through collaboration; 6) evaluation and reflection; and 7) summary and dissemination of new teaching and learning methods.

PLCs are strengthened by the Centre of Vocational Manpower Networking Management, which aims to strengthen TVET in twenty-five leading occupational programmes. It provides opportunities for teachers in the same occupational programmes to exchange best practices, problems and issues and for learning from industry partners.



Case study: Collaboration of teachers, China

At Guangzhou Panyu Polytechnic, the school has built a teacher network among sixty-five teaching and research offices, forming teaching teams according to majors, professional directions, course groups, or courses. All teaching staff are divided into corresponding teaching and research offices according to majors or course categories to take part in activities. The teaching and research office guide teachers as they prepare lessons collectively.

At Chongqing Tourism School, tourism teachers cooperate with teachers of Western food to effectively combine catering service courses with Western food courses. Chinese teachers and preschool education teachers form a team to prepare lessons together and effectively integrate professional teaching into Chinese instruction. Tourism teachers, English teachers, Chinese teachers, and computer teachers form a team to organically adapt the tour guide service in English and Chinese. By using computer technology and other disciplines, they jointly built a course around describing Chongqing scenic spots.

6.4 A lack of training in learner-centred methods in pre-service teacher education

In Republic of Korea, the formal pre-service TVET teacher training occurs at the university level and covers many subjects, but the focus is often not on pedagogy. For example, the Technical and Industry Education teaching course at the Korea National University of Education has thirty-four subjects, with only three pedagogy courses and one transversal skills course.

In Samoa, most trainers at both TVET providers are either primary or secondary schoolteachers, who therefore have teaching experience, whereas the rest have trade experience but no teaching experience. Formal pre-service training of teachers just started in 2019. The National University of Samoa offers a Bachelor of TVET with some emphasis on learner-centred teaching, with its first graduates expected to graduate at the end of 2021.

In Thailand, TVET teacher education programmes at the technical education universities train on various instruction methods, including blended teaching and learning, student-centred teaching, STEM education, and others. Teaching methods at universities also integrate learner-centred methods.

In China, learner-centred methods are included in pre-service teaching with modules like ‘five things for teaching preparation’ and ‘how to do well in teaching reflection’. They receive training on core or transferable skills, such as guidance, detection, listening, leadership, etc. (e.g. Beijing Polytechnic). The teacher training content at Hebei Vocational University of Industry and Technology includes: teaching skills with a student-centred curriculum, teaching experience sharing, communication skills in classroom teaching, educational information technology, and teaching applications, as well as flipped classroom teaching practices.

In Uzbekistan, theory teachers can come directly from university and teach at a TVET college, but they must complete a 576-hour training course to meet the pedagogical prerequisites. Learner-centred techniques are not common in the TVET system yet. Therefore, future young teachers who are going to complete a bachelor's or a master's programme at universities might only have a few hours on learner-centred teaching, which will not be enough for practical use at TVET institutes.

In Sri Lanka, there is no pre-service teacher training for newly recruited teachers. They are not given any training before starting their new career. Training is provided after the new teacher has been recruited.

6.5 Training on learner-centred teaching included in in-service training programmes

In Republic of Korea, learner-centred teaching techniques are covered in some courses to some extent, but not with a heavy emphasis. Courses on transversal skills are closely related to career guidance and counselling to help students get jobs.

In Samoa, both TVET providers surveyed have been offered to undergo the Certificate of Adult Teaching (CAT) and/or International Standard Training (IST) which lasts five whole days, for four weeks, to build the capacity in teaching methods. These trainings include learner-centred teaching methods, as well as the composition of core and transversal skills.

In Thailand, teachers must complete a minimum of 50 hours training per year (it can be over 200 hours including onsite industry training). Active teaching and learning have been emphasized. However, in-service training is organized according to special projects or policy at the central level, not regularly.



Case study: Chevron Enjoy Science Project, STEM for TVET, Thailand

STEM for TVET was implemented by KENAN Foundation Asia, between 2016–2020, and financed by Chevron. It also received support from several government agencies. Two main curricula, including active physics and interactive mathematics, were selected for training teachers. The training programmes, conducted by experts from the United States, focused on new teaching methods. There were also teaching mentors who provided suggestions and advice on the project-based inquiry approach throughout the entire project.

The project's main target was to improve teaching competencies on strengthening student thinking and problem-solving skills. Sixty TVET public institutions were involved. Two science and two mathematics teachers from each institution were trained, then a total of 720 teachers were trained. This project used Eisenkraft's concept (2003), which identified seven learning phases to motivate students and have them be able to apply what they learned as part of the KENAN Foundation project. The seven phases are: 1) elicitation, 2) engagement, 3) exploration, 4) explanation, 5) elaboration, 6) evaluation, and 7) extension.

This project was said to be successful in changing teachers' roles to becoming facilitators and co-learners.

According to the policy in China, every vocational education teacher must receive training within five years. At the same time, governments and vocational institutes arrange different kinds of training for vocational education teachers. The content included student-centred vocational education. In 2019, the Ministry of Education issued the 'National teaching innovative team construction plan for vocational institute teachers'. The programme puts forward a series of constructive tasks, including focusing on students, improving the education mode of combining morality with technology, combining work with study, breaking the traditional mode of subject teaching, exploring new teaching methods such as 'action oriented' teaching, project-based teaching, situational teaching, work process-oriented teaching, etc. Collaborative research on the articulation between secondary and higher vocational education is another project. This project focuses on the development of integrated theory and practice curricula, action-oriented teaching, teaching and research exchanges, and project cooperation. Therefore, teachers could conduct research as well as develop articulation curriculum between secondary and higher vocational education, teaching materials, and digital resources. Lectures and seminars are organized in schools. Most in-service teachers at Beijing Polytechnic have received learner-centred technical training. The training courses generally last one to three weeks. At Jinhua Polytechnic, exceptional teachers are entrusted to carry out targeted training programmes according to their needs. There are about forty programmes in the whole year, two of which occur every week with each having two to four class hours.

Until last year, teachers in Uzbekistan were obliged to participate in 144 hours of professional development, broken down to 36 hours per week for four weeks. The content included both subject-knowledge and pedagogical skills. This system is presently being reformed with the assistance of development partners who support a learner-centred approach, notably a significant ADB project to develop a competency-based approach that includes adjusting programmes and teacher training.

In Sri Lanka, in-service teacher training does not focus on trainee-centred methodologies other than a few learner-centred techniques. There are three main projects supporting learner-centred TVET teaching methods for teachers: 1) a new one-year training programme for teachers implemented by the University of Vocational Technology; 2) a Swisscontact project training teachers as part of a several-weeks programme; and 3) a training methodology programme proposed by the Vocational Training Authority. As of now, these three programmes have only reached a few hundred teachers.

6.6 Conclusion: the need to improve teacher development

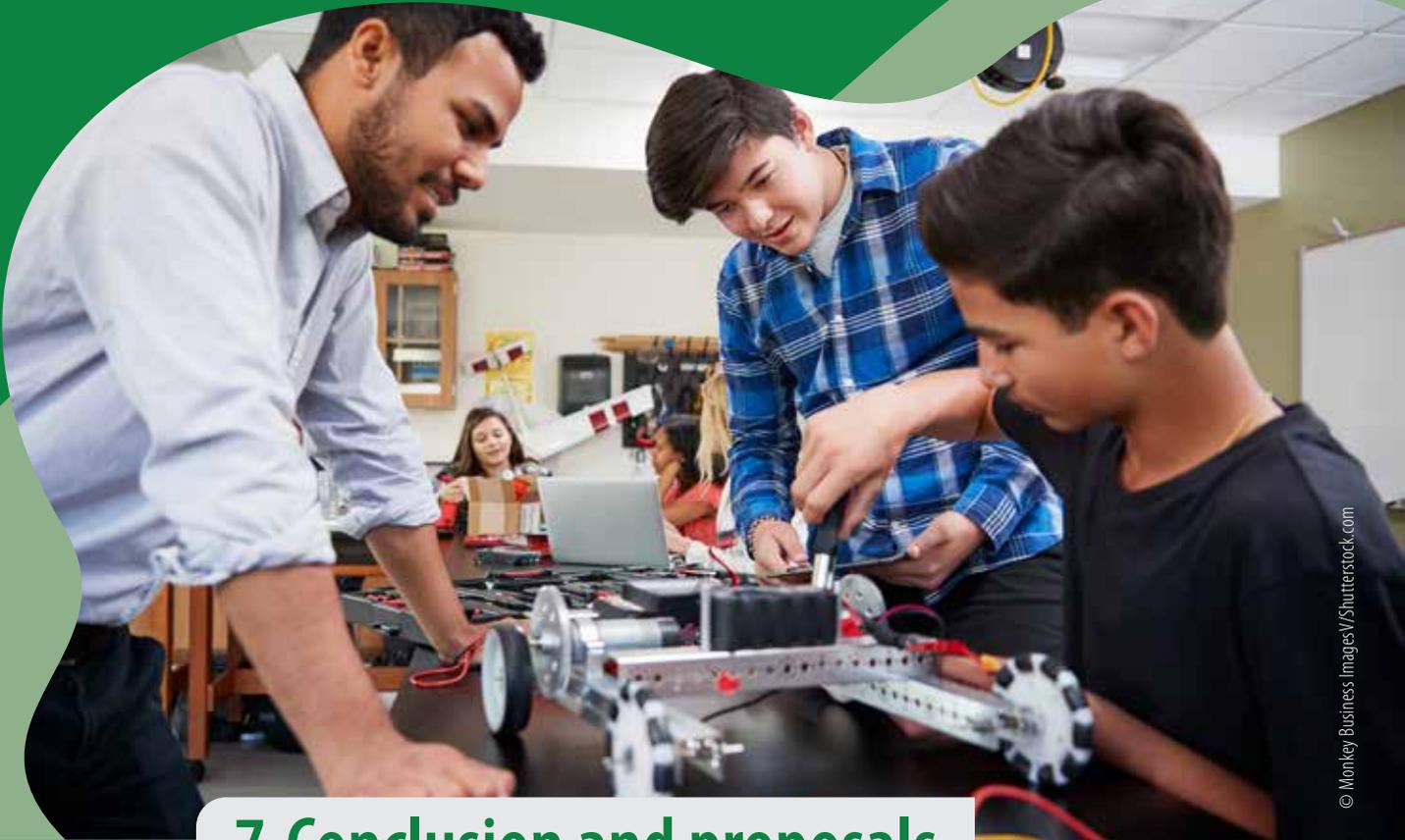
The review of the situation in the six countries shows that teaching hours vary, but overall, they could offer opportunities for teachers to prepare learner-centred pedagogies. Some countries mention various incentives (salary, promotion, career path, competition) to promote innovative teaching methods. Belonging to a network and a community of practice can also support the motivation to improve, but to have a significant impact, it must be driven at the national level (e.g. Thailand) or at the local level authority (e.g. China).

The situation of pre-service training courses for future teachers is very different from one country to another. Some programmes, such as in Thailand, are long (three-year bachelor's or four-year master's degree in technical education) and can include learner-centred approach training. In other countries,

like Sri Lanka, although there is a comprehensive competency-based system, teachers do not seem to be prepared to use learner-centred methods to support it. These conclusions correspond to the international background stating that pre-service teacher education does not usually emphasize a learner-centred approach.

As with the international background, the six-country review confirms that in-service teacher development provides more opportunities to support learner-centred methods as it is included in compulsory training for teachers. The study did not allow for checking if the pedagogy used during these in-service teacher training courses also used learner-centred methods.

Except for China, there is no mention of significant training on skills like coaching, mentoring, or listening, all of which support the implementation of a learner-centred method.



7. Conclusion and proposals

7.1 Synthesis of the findings

In conclusion, the review of learner-centred TVET teaching in the six countries shows that there is no direct correlation between its implementation and the size of country, the level of centralization, or socio-economic and educational situations. Overall, there are positive trends as well as challenges to use this pedagogy.

The study found that the implementation of the learner-centred approach in the six countries reviewed was hampered by three main factors:

- ▶ Five of the six countries do not have laws or policies explicitly mentioning, supporting and promoting a learner-centred TVET pedagogy.
- ▶ The culture of respect towards teachers limits student autonomy, their participation in activities, their feedback on the teaching received, and their capacity to decide what and how they learn.
- ▶ A learner-centred pedagogy does not seem to have a significant importance in the pre-service teacher training, although it is more actively promoted within in-service teacher training.

Nevertheless, the study identified positive trends pointing towards a learner-centred approach:

- ▶ Priorities for TVET development in the six countries mention the importance of teachers' development and the increasing role of digital technology in the learning process.
- ▶ All participating countries tend to use curricula based on competencies and learning outcomes, although they do so at different levels. Most of them provide a certain level of autonomy to the TVET institutions to adjust method and content. Thanks to this model and the time spent in companies, students see how what they are learning relates to 'real-world' work.
- ▶ All countries are using various modalities of digital technology for students' self-learning, knowledge sharing, and interactions between students and teachers.
- ▶ Many initiatives and cases at the TVET institutions show the motivation of teachers and managers to focus on students' needs and knowledge and to help them learn independently. This demonstrates the importance of employing not only a top-down approach by way of laws and policies issuing from education ministries, but also a bottom-up approach provided by more autonomy to colleges.

In the literature on TVET teaching and learner-centred methods listed in the bibliography of this report, there is no mention of differences in the way a female or male teacher will implement a learner-centred pedagogy in TVET institutions. Likewise, the experts' reports from the six countries do not mention any specific cases linked to a teacher's gender that might support or reduce the opportunity to apply this pedagogy.

Nevertheless, based on a literature review, a guideline on gender sensitive vocational training with ten criteria is proposed and presented in Appendix 2. It is generic and should suit any age range. The type of guideline is also proposed by the International Federation of Red Cross and Red Crescent Societies⁵.

To move towards more learner-centred TVET teaching, seven action plans are proposed based on the literature review, the situations in the six countries, and suggestions from the national experts.

7.2 Seven proposals for the development of learner-centred TVET teaching

These proposals include: 1) supporting national reform of the pedagogy based on the results of pilot projects; 2) increasing two-way communication between students and teachers; 3) producing learning materials adapted to learner-centred methods; 4) using technology in the learning process; 5) implementing competency-based learning to support the learner-centred pedagogy; 6) integrating transversal and core skills; and 7) developing teachers' capacities by employing a learner-centred approach.

These proposals (on reform, teaching method, use of materials, etc.) should address possible gender dimensions throughout the planning, implementation and review processes.

⁵ <https://www.rcrc-resilience-southeastasia.org/document/guidelines-for-gender-sensitive-training/>

7.2.1 Supporting national reform of the pedagogy based on the results of pilot projects

The need to drive learner-centred teaching at the policy level is essential as demonstrated by the literature review and the example from China.

Purpose: Build a new culture of teaching based on learner-centred methods.

Output: A student-centred TVET teaching manual adapted to the local context based on international benchmarks and the implementation and dissemination of learner-centred methods through various modalities (online platform, seminars, rewards, etc.).

Main activities:

1. Form an international team that includes experts from countries willing to promote student-centred TVET.
2. Hold three or four international team workshops to reach the same understanding of definitions, concepts, and standards of student-centred TVET, as well as a framework of international student-centred TVET guidelines.
3. Visit and observe examples of learner-centred activities during the workshop (in different countries).
4. Develop international guidelines for student-centred TVET based on conditions in various countries.
5. Adjust the guidelines to produce a national manual on learner-centred methods that include detailed methodologies.
6. Plan the implementation.
7. Implement in some curricula of selected colleges.
8. Hold an annual student-centred vocational education conference to share problems and challenges encountered during implementation and to clarify future work directions.
9. Develop training programmes for teachers on learner-centred TVET.
10. Publicize student-centred TVET through seminars, magazines and newspapers.
11. Provide necessary funding to teacher training institutions to offer courses on learner-centred pedagogy.
12. Encourage trainee teachers and in-service teachers to research and practice learner-centred pedagogy through study group activities (for instance, competitions for exemplary learner-centred teaching cases).
13. Create an online database (platform) of learning materials.
14. Review the guidelines for the TVET teacher registration and licensing to include the new TVET teaching methods as one of the criteria.
15. Introduce a student feedback system for teacher performance at TVET schools and apply the results to teachers' performance appraisals.

7.2.2 Increasing two-way communication between students and teachers

Teacher-student interactions should be promoted to counterbalance the possible impact of traditions and culture that could limit student expression in class.

Purpose: Reinforce active teacher-student and student-student interactions during TVET teaching.

Output: Teachers know how to set up situations where students are unafraid to speak up during lessons because incorrect answers are not rebuked.

Main activities:

1. Select a team of teachers from one curriculum at one school.
2. Train selected TVET teachers on the purposes of two-way communication, questioning techniques, and giving feedback.
3. Review the teachers' plans to reduce the amount of teaching content to give more time for activities, introduce open-ended tasks for students, and allow teachers and students to have more time for discussions and interactions.
4. Implement plans in some courses over several months, with regular debriefing sessions among teachers involved.
5. Make a final review and propose modalities for dissemination.

7.2.3 Producing learning materials adapted to learner-centred methods

The literature review and examples from the six countries demonstrated that using a wide variety of learning materials is an important component of learner-centred teaching.

Purpose: Develop high-quality learner-centred learning resources and maintain a uniformity of resources used.

Output: A group of teachers competent in developing high-quality learning resources.

Activities:

1. Draw up a learning resources development plan for supplying learner-centred teaching material.
2. Enlist a team of teachers who can be actively involved in learning resource development.
3. Involve enlisted teachers in the planning and development process.
4. Assign which team should develop what.
5. Get Master Teacher Trainers to provide guidance and assistance in developing learning resources (this support can be provided from time to time).
6. Review learning resources developed by Master Teachers.
7. Field-test developed learning resources and endorse the content.
8. Further develop field-tested learning resources.

9. Dispatch learning resources to respective training centres within the district.
10. Keep records of subsequent revisions and further development done.

7.2.4 Using technology in the learning process

Technology-based teaching materials are gaining importance in all countries. Cases from Republic of Korea have shown how technology can enhance learner-centred teaching.

Purpose: Develop the capacity of teachers to use learner-centred methods with the help of practical teaching equipment (e.g. technology, machines).

Output: Team of teachers capable of using technology in learner-centred approaches.

Main activities:

1. Select a team of teachers from one curriculum at one school with access to good-quality equipment and digital technology appropriate for the curriculum.
2. Train the team of teachers on learner-centred teaching with a focus on using technical and digital equipment.
3. Have participants demonstrate the methodology learned (group work).
4. Have participants prepare learner-centred lesson plans for given topics.
5. Have participants deliver their learner-centred lesson plans they prepared.
6. Review, evaluate, and provide a guideline of recommendations on how to use equipment and technology in learner-centred plans.

7.2.5 Implementing competency-based learning to support the learner-centred pedagogy

The six countries are using or strengthening a competency-based system enabling students to develop the skills they need - this is an essential prerequisite of a learner-centred pedagogy.

Purpose: Develop a student-centred learning platform for competency-based learning that supports experience sharing.

Output: A student-centred learning platform for competency-based learning.

Activities:

1. Select one curriculum or programme and a teacher coordinator.
2. Provides learners with required occupational standards and guidelines on how to acquire them through blended learning.
3. Have students ask questions on how to achieve those standards.
4. Have students from former or higher classes share their experiences and discuss issues.

5. Invite experts in the field or relevant industry representatives to highlight the needs for required competencies and for improved learning, allowing students to ask questions, discuss, debate, and interact among each other as well as with external experts.
6. Divide students into small groups of three to develop a platform or way they would like to learn through project-based learning, focusing on the required occupational standards.
7. Have each student group share their learning platforms, learning experiences, or learning points through the projects they developed.
8. Monitor and evaluate at the end of semester.

7.2.6 Integrating transversal and core skills

Most of the cases described how important it is to have both core and transversal skills taught and evaluated during learner-centred activities.

Purpose: Enhance core and transversal skills teaching and assessment in TVET.

Output: One curriculum including core and transversal skills development tried out.

Activities:

1. Revise competency units and related curriculum to better include teaching and assessing core and transversal skills.
2. Introduce the revised learning modules into TVET schools.
3. Train TVET teachers on how to teach core and transversal skills and integrate them with other skills.
4. Operate pilot TVET institutions for teaching and assessing transversal and core skills.
5. Disseminate the methods and outcomes, strengths, limitations, and potential for development of the pilot cases to other TVET schools.

7.2.7 Developing teachers' capacities by employing learner-centred approaches

The review of teacher training modalities shows that the learner-centred teaching method should be reinforced and applied to develop teachers.

Purpose: Get teachers to understand the impact of learner-centred teaching by having them practicing it themselves.

Output: Guidelines for the implementation of learner-centred methods.

Activities:

1. Select a team of teachers from one curriculum at one school.
2. Divide teachers into small groups of three to five people.
3. Have each group define student-centred teaching and share their teaching experiences, strengths and weakness, and best practices.

4. Have the groups develop guidelines for learner-centred teaching with a new teacher role: from knowledge transmitter to coach or facilitator, from controller of learning to creator of learning environments, from expert to collaborator and co-learner, from teaching how to use ICT to enhancing learning through ICT.
5. Have each group show and share their work, reflect, discuss, and debate.
6. Each teacher designs an individual plan for student-centred teaching, presents to the group and training facilitators for reviewing and revising.
7. Each teacher implements the plan at their institution during an assigned semester.
8. At the end of the semester, trained teachers attend a workshop to share their experiences, problems and solutions, positive impacts, and how to sustain it.
9. Prepare and disseminate a handbook for TVET student-centred teaching.

7.3 Advancing learner-centred TVET in Asia-Pacific

Making TVET more learner-centred is a vision impacting many areas of TVET. Thus, to provide a detailed report adding value to the existing literature, this study focused on teaching methods (pedagogy) inside TVET institutions.

The other reason for this choice is because, although work-based learning (internship, dual vocational training) is promoted in many countries, TVET teaching is still mainly implemented in dedicated public or private training institutions, and not in companies. The results of this study can then benefit a large audience.

But to support the vision of an overall learner-centred TVET, additional research is needed, including in the following areas:

- ▶ **Learner-centred TVET and labour market needs:** How can TVET institutions ensure there is an adequate balance between the needs and aspirations of learners and the realities of the labour market? What information and promotion system must be implemented to support this?
- ▶ **Learner-centred work-based learning:** How can TVET institutions ensure that in-company trainers use a learner-centred method, fostering suitable skills based on learner engagement and autonomy (e.g. offering quality apprenticeships and internships)? What should companies do to support learner-centred TVET in the workplace?
- ▶ **Learner-centred guidance and counseling:** What activities and support can TVET institutions provide to help students find suitable vocational orientation for their professional integration? What roles can TVET institutions offer to support lifelong learning and career orientation throughout their students' professional lives given a changing and disruptive world of work?
- ▶ **Learner-centred competencies:** How can TVET providers define and build a mechanism to regularly adjust competency standards to adapt to market needs? How to teach and develop skills like 'learning how to learn' that is becoming essential to support lifelong learning?

- ▶ **Learner-centred learning pathways:** How can TVET providers build learning pathways adapted to a student's learning style and personal and vocational needs, including through integrating various learning modalities such as: face-to-face teaching, work-based learning, project-based learning, self-learning using digital technology (e-learning, mobile learning, online learning), coaching, and mentoring?
- ▶ **Learner-centred TVET management:** What organizational structure and management must be developed to adapt to these learning modalities mentioned above? What top-down and bottom-up approaches can provide competency standards, curricula, teaching materials, and human resources necessary to address this new learning dynamic?
- ▶ **Learner-centred teacher and manager development:** How to train teachers and managers on these evolutions in learning? What professional development content and methods should be promoted? How to build teacher development processes using learner-centred modalities?
- ▶ **Learner-centred teaching materials:** How can TVET providers better engage learners in the production of teaching materials? How to make learners active in mentoring and teaching other students?
- ▶ **Learner-centred culture:** How can a learner-centred approach be integrated into national cultures and traditions? What aspects can change or evolve? How ready are managers, teachers and parents to accept new student behaviours? What kind of relationships with learners must they have to promote student autonomy?
- ▶ **Learning-centred policy and strategy:** How can decision-makers ensure that the policy level will always consider a learner-centred approach? How can the decentralization of a TVET system facilitate learner-centred TVET teaching? What are the different roles and opportunities for development partners to nurture these changes at policy and local levels?
- ▶ **Learner-centred pedagogy integrating a gender perspective:** How can learner-centred approaches can be applied in line with gender mainstreaming strategies? What are the different approaches? What learning materials and teacher behaviours can support gender equality in learner-centred TVET teaching?

This list is not exhaustive but provides ideas for further research that can help to movement towards more learner-centred TVET in Asia and the Pacific.

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Appendix 1:

Overviews of TVET systems of participating countries



China is the most populous country and the second-largest economy in the world. Its industrial structure has been gradually optimized, and great achievements have been made in the fields of science and technology, education, employment, and poverty alleviation. Three sectors (agriculture, industrial, service) were developed.

TVET comprises three levels: primary, secondary, and higher vocational education of three years study each. The third includes three-year and four-year higher vocational education:

- ▶ The scale of primary TVET is very small. In 2019, there were just eleven schools.
- ▶ In 2019, there were 10,078 vocational high schools in China, in which total enrolment was 15,765 million students.
- ▶ In 2019, the total enrolment of secondary vocational education schools was 16,634 million.
- ▶ In 2019, there were 14,233 higher vocational education institutes with 3-year programmes.

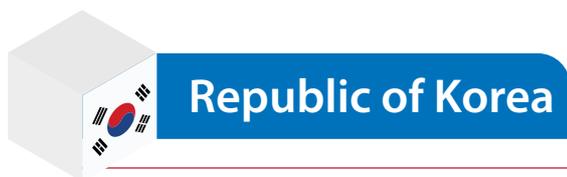
The proportion of secondary vocational education enrolment in high school shows a decreasing trend.

The four-year higher vocational education programme has just started to develop.

The main strengths of China's TVET system include integration of TVET development in the local economic development plan and measures conducive to its development, such as integration of industry and education, tax incentives, a wide range of specialties constantly being optimized, measures for promoting school/enterprise cooperation, and a system linking secondary vocational education to higher vocational education and undergraduate education.

There are challenges, such as adapting to economic transformations, the emergence of new occupations, the improvement of existing jobs (e.g. requiring analytical and problem-solving skills and creativity), the lack of motivation to participate in vocational education for some companies, vocational education teachers' lack of industry and enterprise experience, and lack of opportunities for international cooperation, and exchanges.

The trends lead towards increased quality, the introduction of a more operational school/enterprise cooperation policy and incentive mechanism, the construction of innovative teaching teams, the implementation of 'internet+' or 'intelligence+' teaching reforms, and the strengthening of international cooperation.



The Republic of Korea has been experiencing strong economic development over the past twenty years, which has brought about low unemployment rates and a strong manufacturing sector. However, Republic of Korea is now facing a quickly ageing population.

Republic of Korea has high education attainment, with one of the highest PISA scores in the world. Overall, the vocational education path does not have a positive image, with a decreasing number of institutions and a low percentage of students (18 per cent). Some schools have suffered from the mismatch between what they teach and what industry requires. Some students would choose to learn from private TVET institutions instead of regular TVET schools that focused on obtaining qualifications. In high schools providing vocational education, most classes are low in student achievement and employment rates. Students are perceived to be not self-motivated to learn. The government aims to change this perception, with the creation of new vocational high schools with a focus on quality and cooperation with industries. On average, classes have around nineteen students.

The main strengths of Republic of Korea's TVET system are an industry-driven curriculum reflecting the partnership with the business sector and the increasing annual budget plans for TVET.

There are challenges, such as difficult coordination, unequal digital literacy, and lack of innovative pedagogy to adapt to new technology.

The trends are towards an increased use of technology for teaching (e.g. AI, robotics, online content), more collaboration with businesses, and less centralization.



Samoa has a small population of less than 200,000 people with an economy historically dominated by village- and community-based agriculture but that is now supported by domestic employment and remittances from family members living and/or working overseas.

There is low education attainment: 3.6 per cent of the total population in the 2016 Census attained tertiary-level qualifications. TVET providers consist of one that is government-funded and 11 owned or funded by Missions/Churches (10 providers) for a total of 873 students. On average, classes have around thirteen students.

The main strengths of Samoa's TVET system include support for student dropouts or leavers, current strengthening of TVET within the education sector, and a growing number of NCS and Samoa Qualifications (SQs) developed for trade areas.

There are challenges, such as poor governance at institutional levels, underfunded TVET programmes, the absence of TVET pathways within the school sector and transitions from general schooling to specialized TVET institutions, and the lack of online modes of delivery.



Sri Lanka is an island with a population of 21 million. Agriculture plays the most vital role in the country's economy, while the garment industry brings the highest foreign earnings to the country. The GDP has decreased from 2015 to 2019, and the unemployment rate was 4.8 per cent in 2019. Four major national organizations regulate the TVET system: the Department of Technical Education and Training, the Vocational Training Authority, the National Youth Services Council, and the National Apprentice and Industrial Training Authority. They manage a total of 313 institutes and centres of a total of about 107,000 students and 2,630 trainers. The average number of students per class is twenty to twenty-five. The Skills Development Project (SDP), which commenced in 2000, established one unified TVET system based on National Vocational Qualifications on seven levels. Training programmes have a duration of six months to three years depending on the level. Recognition of prior learning is also promoted. The entire system is based on national competency standards prepared with industry representatives and developed and endorsed by the Tertiary and Vocational Education commission.

The main strengths include the system's structure, policies and regulatory framework; the competency-based approach, including assessment and manuals; and industry participation.

There are challenges, such as the lack of efficient use of training resources of training centres, the remuneration of trainers, and pre-service and in-service teacher training that impact the implementation of a learner-centred pedagogy.



Over the past four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income to upper-middle-income country in less than a generation. However, in recent years, economic growth has slowed. There is a low unemployment rate, a strong manufacturing sector, and a quickly ageing population. Thailand also has an important agriculture sector supporting a strong agro-industry.

Education attainment is still low and is often mentioned as a weakness impacting economic development (41.4 per cent of the population completed primary education as their highest education level). Initial TVET has two certification types: a three-year programme for a vocational certificate and then a two-year programme for a higher education diploma.

On average, classes have twenty students for practical classes and up to forty for theoretical classes, depending on the subject.

Around 50 per cent of TVET institutions are private.

The main strengths include government policies promoting TVET, a national qualifications framework (NQF), twenty-five Centres of Vocational Manpower Networking Management, and the integration of TVET in the 20-Year National Strategies and the Eastern Economic Corridor Development Plan supporting specific industrial zones.

There are challenges, such as the necessity to provide more attractive teaching methods that integrate various modalities, insufficient industry participation and involvement, the public image of TVET, and insufficient budgets for equipment and facilities.

The trends are towards curricula complying with occupational standards according to the National Qualification Framework, relationships between teaching and learning with required learning outcomes through not only teaching but also through students' self-paced learning, a change of teachers' roles to be more like facilitators, the use of digital technology, and open-entry and open-exit systems using validation of experience or accreditation of prior learning and credit bank systems.



Uzbekistan has a population distributed more or less equally between rural areas and cities. Its GDP growth over the five years before the COVID-19 pandemic ranged between 5 per cent and 8 per cent per year. Unemployment rate is high (7.16 per cent in 2021), and labour migration is an issue. Major sources of revenue include cotton, agriculture and minerals.

The country has lived through an important change in the education system with TVET having been completely reformed in 2018, due to the reform students were not recruited, colleges stopped working, and the number of teachers has been divided by six in two years.

Today, the system offers programmes from six months to three years. The formal TVET system comprises 339 initial vocational schools under the Ministry of Education, 195 colleges under sectoral ministries, and 194 technical schools (Technicum). The TVET system also includes 41 vocational multidisciplinary training centres established under the Ministry of Employment and Labour Relations (MOELR), as well as several private providers of vocational training services.

The number of students per class ranges from thirteen to thirty, but in an initial TVET, the minimum is twenty-six, who can be divided into small groups.

The main strengths include industry affiliations, the current reform to improve TVET management, the introduction of on-the-job training, and demands for a qualified workforce.

There are challenges, such as a need to develop a TVET strategy for 2030, the lack of involvement from the private sector to train TVET personnel, the lack of qualified TVET teachers, and rapid changes of regulations and documents.

The trends are towards a national qualifications framework, lifelong education, connections between TVET and higher education, flexible learning schedules, and the adjustment of TVET curricula.

Appendix 2:

Gender sensitivity guidelines

Gender Sensitive Training Guidelines

The research has not identified a gender-sensitive approach that would be specifically adapted to learner-centred TVET teaching, but it shows how the trainer has to pay attention to the personal context of the female learner and support their active participation.

1. As much as possible, the training course includes a mixed group of participants (men and women).
2. Some of the trainers are women.
3. Training materials (exercises, videos, pictures, manuals) shows equal participation of men and women demonstrating the use of the skills being taught.
4. The training environment considers a woman's needs. For example: separate toilets, cleaning facilities, safe place, or maternity corner, if possible.
5. The training time is suitable for caregiving, including by men and women
6. The practical work assigned by the trainer is based on the capacities of the men and women. For example, if there is a heavy load to be carried.
7. During small group exercises, the trainer ensures that the groups have a mix of men and women and supervises the small groups to check that both men and women have equal opportunity to practise and express their ideas.
8. The method enables people of all genders to participate equally in the activities and discussions.
9. The trainers encourage equal participation of men and women during activities, especially if there are more men than women. For example, asking questions directly to under-represented members to ensure their participations in discussions.
10. Trainers and training coordinators guarantee that there is no discrimination, verbal harassment (joke, insults), or physical harassment based on race, nationality, colour, gender, pregnancy, age, religion, or disability.

Literature review on gender sensitivity supporting the preparation of this guideline

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Learner-centred Teaching in Technical and Vocational Education and Training

Perspectives and Reviews of Six Asia-Pacific Countries

A learner-centred approach to teaching in Technical and Vocational Education and Training (TVET) is based on learner engagement, autonomy and outcome-based activities to support professional development. This report analyses the status of learner-centred TVET teaching in six selected countries across Asia and the Pacific, including China, Republic of Korea, Samoa, Sri Lanka, Thailand, and Uzbekistan. The countries were selected because of their geographic diversity, access to national experts, and potential around learner-centred TVET.

The first part of the study is a review of the theoretical background on the learner-centred approach and TVET teaching with an international scope. A total of 25 indicators were used to assess three components of TVET teaching in the region. The analysis includes 17 examples corresponding to the selected indicators. The findings showcase lessons learned and recommendations for countries to self-assess their TVET teaching strategies. These examples will help to inform future projects and capacity building in each sub-region of Asia-Pacific.

As a result, seven proposals are identified and discussed to promote the development of learner-centred TVET teaching in the region. These proposals include: 1) supporting national reform of the pedagogy based on the results of pilot projects; 2) increasing two-way communication between students and teachers; 3) producing learning materials adapted to learner-centred methods; 4) using technology in the learning process; 5) implementing competency-based learning to support the learner-centred pedagogy; 6) integrating transversal and core skills; and 7) developing teachers' capacities by employing a learner-centred approach. These proposals (on reform, teaching method, use of materials, etc.) also address gender dimensions throughout the planning, implementation and review process. Conclusions from the study provide lessons learned as well as proposals for further research and implementation of learner-centred TVET teaching in Asia-Pacific.

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